SONY

DIGITAL MOTION PICTURE CAMERA

F65

F65 UPGRADE KIT

CBK-65EL

OPERATION MANUAL English

2nd Edition (Revised 1)

Before operating the unit, please read this manual thoroughly and retain it for future reference.

WARNING

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

Caution
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. Do not open the outer case and disassemble or otherwise modify.

This Digital Motion Picture Camera is classified as a CLASS 1 LASER PRODUCT.

Tämä Digital Motion Picture Camera on luokiteltu 1. LUOKAN LASERTUOTTEEKSI.

Den här Digital Motion Picture Camera klassificeras som en LASERPRODUKT AV KLASS 1.

VAROITUS!
LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.

VARNING
OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERATS, KAN ANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING, SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.

Internal Laser Module Properties

Wavelength	: 850 nm
Emission duration	: Pulse Modulation
Laser output power	: 4 mW/channel (max)
Standard	: IEC60825-1 (2007)

Egenskaber for internt lasermodul

Bølgelængde	: 850 nm
Strålingsvarighed	: Pulsmodulering
Afgivet lasereffekt	: 4 mW/kanal (maks.)
Standard	: IEC60825-1 (2007)

Egenskaper för intern lasermodul

Våglängd	: 850 nm
Strålningens varaktighet	: Pulsmodulation
Lasereffekt	: 4 mW/kanal (max)
Standard	: IEC60825-1 (2007)

Egenskaper for innvendig lasermodul

Bølgelengde	: 850 nm
Strålingsvarighet	: Pulsmodulasjon
Utgangseffekt for laser	: 4 mW / kanal (maks.)
Standard	: IEC60825-1 (2007)

Caution
The use of optical instruments with this product will increase eye hazard.

For the customers in the U.S.A.
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

All interface cables used to connect peripherals must be shielded in order to comply with the limits for a digital device pursuant to Subpart B of part 15 of FCC Rules.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For the customers in Canada
This Class A digital apparatus complies with Canadian ICES-003.

For the customers in Europe
This product with the CE marking complies with the EMC Directive issued by the Commission of the European Community.
Compliance with this directive implies conformity to the following European standards:
• EN55103-1: Electromagnetic Interference(Emission)
• EN55103-2: Electromagnetic Susceptibility(Immunity)
This product is intended for use in the following Electromagnetic Environments: E1 (residential), E2 (commercial and light industrial), E3 (urban outdoors), E4 (controlled EMC environment, ex. TV studio).

This product has been manufactured by or on behalf of Sony Corporation, 1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan.

Inquiries related to product compliance based on European Union legislation shall be addressed to the authorized representative, Sony Deutschland GmbH, Hedelfinger Strasse 61, 70327 Stuttgart, Germany. For any service or guarantee matters, please refer to the addresses provided in the separate service or guarantee documents.

For the State of California, USA only
Perchlorate Material - special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate

For the customers in Taiwan only

廢電池請回收

AVERTISSEMENT

Afin de réduire les risques d'incendie ou d'électrocution, ne pas exposer cet appareil à la pluie ou à l'humidité.

Afin d'écarter tout risque d'électrocution, garder le coffret fermé. Ne confier l'entretien de l'appareil qu'à un personnel qualifié.

Attention
L'emploi de commandes ou ajustements ou l'exécution de procédures autres que celles spécifiées ici peut provoquer une exposition dangereuse au rayonnement.

Digital Motion Picture Camera est classée comme PRODUIT LASER DE CLASSE 1.

Propriétés du module laser interne

Longueur d'onde	: 850 nm
Durée d'émission	: Modulation d'impulsion
Puissance du laser	: 4 mW/canal (max)
Norme	: IEC60825-1 (2007)

Attention
L'emploi d'instruments optiques avec ce produit augmentera les risques pour les yeux.

Pour les clients au Canada
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Pour les clients en Europe
Ce produit portant la marque CE est conforme à la Directive sur la compatibilité électromagnétique (EMC) émise par la Commission de la Communauté européenne.
La conformité à cette directive implique la conformité aux normes européennes suivantes :
• EN55103-1 : Interférences électromagnétiques (émission)
• EN55103-2 : Sensibilité électromagnétique (immunité)
Ce produit est prévu pour être utilisé dans les environnements électromagnétiques suivants : E1 (résidentiel), E2 (commercial et industrie légère), E3 (urbain extérieur) et E4 (environnement EMC contrôlé, ex. studio de télévision).

Ce produit a été fabriqué par ou pour le compte de Sony Corporation, 1-7-1 Konan Minato-ku Tokyo, 108-0075 Japon. Toutes les questions relatives à la conformité des produits basées sur la législation européenne doivent être adressées à son représentant, Sony Deutschland GmbH, Hedelfinger Strasse 61, 70327 Stuttgart, Allemagne.

Pour toute question relative au Service Après-Vente ou à la Garantie, merci de bien vouloir vous référer aux coordonnées qui vous sont communiquées dans les documents « Service (SAV) » ou Garantie.

WARNUNG

Um die Gefahr von Bränden oder elektrischen Schlägen zu verringern, darf dieses Gerät nicht Regen oder Feuchtigkeit ausgesetzt werden.

Um einen elektrischen Schlag zu vermeiden, darf das Gehäuse nicht geöffnet werden. Überlassen Sie Wartungsarbeiten stets nur qualifiziertem Fachpersonal.

Dieser Digital Motion Picture Camera ist als LASERPRODUKT DER KLASSE 1 eingestuft.

Eigenschaften des internen Lasermoduls

Wellenlänge	: 850 nm
Emissionsdauer	: Pulsmodulation
Laser-Ausgangsleistung	: 4 mW/Kanal (max.)
Standard	: IEC60825-1 (2007)

Für Kunden in Europa

Dieses Produkt besitzt die CE-Kennzeichnung und erfüllt die EMV-Richtlinie der EG-Kommission.
Angewandte Normen:

- EN55103-1: Elektromagnetische Verträglichkeit (Störaussendung)
- EN55103-2: Elektromagnetische Verträglichkeit (Störfestigkeit)

Für die folgenden elektromagnetischen Umgebungen: E1 (Wohnbereich), E2 (kommerzieller und in beschränktem Maße industrieller Bereich), E3 (Stadtbereich im Freien) und E4 (kontrollierter EMV-Bereich, z.B. Fernsehstudio).

Dieses Produkt wurde von oder für Sony Corporation, 1-7-1 Konan Minato-ku Tokio, 108-0075 Japan hergestellt.
Bei Fragen zur Produktkonformität auf Grundlage der Gesetzgebung der Europäischen Union kontaktieren Sie bitte den Bevollmächtigten Sony Deutschland GmbH, Hedelfinger Strasse 61, 70327 Stuttgart, Deutschland. Für Kundendienst oder Garantieangelegenheiten wenden Sie sich bitte an die in den Kundendienst- oder Garantiedokumenten genannten Adressen.

Інформація для споживачів в Україні.

Обладнання відповідає вимогам:

— Технічного регламенту обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні (постанова КМУ від 03/12/2008 № 1057).

For the customers in the U.S.A.
SONY LIMITED WARRANTY - Please visit http://www.sony.com/psa/warranty for important information and complete terms and conditions of Sony's limited warranty applicable to this product.

For the customers in Canada
SONY LIMITED WARRANTY - Please visit http://www.sonybiz.ca/solutions/Support.do for important information and complete terms and conditions of Sony's limited warranty applicable to this product.

For the customers in Europe
Sony Professional Solutions Europe - Standard Warranty and Exceptions on Standard Warranty.
Please visit http://www.pro.sony.eu/warranty for important information and complete terms and conditions.

For the customers in Korea
SONY LIMITED WARRANTY - Please visit http://bpeng.sony.co.kr/handler/BPAS-Start for important information and complete terms and conditions of Sony's limited warranty applicable to this product.

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Chapter 1 Overview

1-1 Features

The F65 is a digital motion picture camera equipped with a Super 35-mm type CMOS sensor array with a total of 20 Megapixels.
The camera is incorporated with newly developed imagers and a digital signal-processing LSI that yield images of a high quality for cinematic, commercial, and dramatic production applications. The camera also supports the features of a "production camera" up to details in its shape, button and indicator layout, and materials of the parts.

Notes

- In order to use the various functions described in this manual, the software version of each connected device must be as follows.
  F65: V4.00 or later
  SR-R4: V4.00 or later
  SR-CP1: V4.00 or later
  CA4000: V2.0 or later
  BPU4000: V2.0 or later
  In addition, when operating the system with a CA4000 and BPU4000 connected, the SY_PLD of the F65 must be V4.000-01 or later. For details, contact your local Sony representative.
- The description in this manual assumes an F65 camera fitted with the CBK-65EL upgrade kit.

Superior picture quality and high performance

Super 35-mm type CMOS and PL mount

With the F65's Super 35-mm-type CMOS imagers and PL mount, most movie lenses designed for conventional 35-mm film cameras can be mounted without a converter.

Wide latitude and high-quality pictures

With its newly developed imagers, and unique 16-bit digital LSI, the camera achieves wide latitude and high-grade picture quality with minimal noise.

RAW image output

Outputs RAW image data, without camera signal processing or non-linear gamma processing, for increased convenience during post-production.

Multiple frame formats

The camera supports 3840/4096-pixel wide images for high-end content creation, including commercial and broadcasting program production as well as movie making.
The camera supports the following formats.

F65RAW mode: 23.98p, 24p, 25p, 29.97p, 50p, 59.94p, S47.95 (Select FPS), S48 (Select FPS), S59.94p (Select FPS), S60p (Select FPS)

F65RAW-HFR mode: S119.88p (Select FPS), S120p (Select FPS), 100P (when connected to a CA4000/BPU4000 system), 119.88P (when connected to a CA4000/BPU4000 system)

HD mode: 23.98p, 24p, 25p, 29.97p, 50p, 59.94p, S59.94p (Select FPS), S60p (Select FPS)

Imaging characteristics with wide color space

Sony's unique technology color filters allow the camera to capture images with natural-looking color reproduction close to those of the actual scene.

S-LOG gamma and 709(800%) gamma for monitors

The camera is equipped with S-LOG gamma for checking the entire dynamic range of the image, and 709(800%) gamma for general monitoring.

Mechanical rotary shutter

The camera is equipped with a mechanical rotary shutter that eliminates the rolling shutter effect common to conventional CMOS image sensors.

HD shooting

When used with the SR-R4 recorder, the camera can also shoot images in HD mode, in addition to RAW mode. SR-R4 version 1.4 or later is required to record in HD.

HFR (high frame rate) mode

Supports recording at 120 frames per second. Frame rates from 1 to 120 fps can be selected using Select FPS.

In HFR mode, the ND filter is set to Clear, and the mechanical rotary shutter cannot be used.
In addition, only when the frame rate is set to 120 fps, two cameras can be genlocked so that the phase of the images obtained are synchronized.
When a CA4000/BPU4000 system is connected, operation in 100P and 119.88P, twice the speed of 50P and 59.94P respectively, is possible.

2-system independent SDI outputs

Selectable, independent signal output on SDI1 and SDI2.

- A signal with a varied "look" (tone and color space) based on CDL or 3D LUT can be selected for output on SDI1.
- A video assist monitor image using Hi/Lo Key, MAG, or other effects can be selected for output on SDI2, in addition to the standard LUT.

Note

The SDI1 system supports "Graded ACES" and "Look Profile" settings that perform color conversion using a built-in 3D LUT. The F65 employs a 3D LUT with 17×17×17 lattice to obtain a contour line signal for areas of smoothly varying luminous intensity.
The recording signal is not affected, allowing the processing to be improved using a color grading tool that performs color conversion employing a higher-degree 3D lattice grid.

DVF-EL100 viewfinder connection

Connects to the DVF-EL100 OLED color viewfinder (option) that displays a high-resolution, accurate color reproduction image. [1)]

1) The DVF-L350/L700 viewfinder is not supported.

Connections for live operating systems

Connecting the unit to a CA4000 via an SKC-4065 and connecting an optical SMPTE cable between the BPU4000 and HDCU2000/2500 allows the unit to transmit signals and provide a power supply.
This allows the unit to operate as a system camera.

Design and shape

New compact design

For a high level of mobility in consideration of various shooting situations, such as inside a car, the camera is housed in as compact a body as possible. In addition, buttons and indicators are laid out to provide a familiar and intuitive user interface to users of conventional cinema film cameras.

Dockable system for the SR-R4 Portable Memory Recorder

A dockable interface system for docking with the SR-R4 is employed for versatility under shooting conditions and on-site demands.

Compatible with film-camera accessories

The F65 is designed to be compatible with a variety of film-camera accessories, giving users a broad array of choices. These include ARRIFLEX-made bridge plates, matte boxes, follow focus units, lens focus/zoom/iris servo control units, and more. These film-camera accessories can be attached to the F65 without modification, enabling users who principally work with film to fully utilize their existing assets.
The F65 is equipped with one 12 V DC and connector one 24 V DC[1)] output connector to supply power to accessories connected to the camera.

1) To supply accessories with 24 V DC power, the camera must have both 12 V DC and 24 V DC supplies, and the CAM POWER switch must be turned ON.

Assignable buttons

The F65 is equipped with assignable buttons on the side of the camera head.
The operator can assign frequently used functions, such as magnifying the image in the viewfinder, to assignable buttons to call these functions rapidly when working in the field.

Operational versatility

Cine mode

This mode records video without processing, on the presumption color grading is performed in post-production, while applying basic color grading to the VF/SDI outputs.
In Cine mode, the camera can be operated just like a conventional film camera.

Custom mode

This mode allows you to adjust the black/white level and the gain of the main signal when creating images on location.
The SY_PLD of the F65 must be V2.200-01 or later to use this function.

Shutter control

The shutter speed is adjustable in terms of shutter angle. You can also switch between a mechanical rotary shutter and an electronic shutter.

Sensitivity adjustment function

In Cine mode, the F65 employs an EI sensitivity indicator for shooting using a light meter, just as for film cameras, to

enable overexposure/underexposure processing in post-production.

ASC CDL

American Society of Cinematographers Color Decision List (ASC CDL) is a format for the exchange of basic color grading information, recommended by ASC. The CDL parameters can be specified by importing a CDL file or by adjusting using the F65Remote Look Plus remote control application or a web browser. The adjustments made are not reflected in the master video signal, but are saved as metadata in the SR-R4 recorder. When recording, the video can be monitored on the VF/SDI outputs by applying the values in metadata to the recorded material.

Note

Only CDL files that contain parameter values within the setting ranges defined in the <SDI1 ASC CDL> page of the VF/SDI menu can be imported.

Other features

USB host connectors

The camera is equipped with USB connectors (host) for connection with an optional Wi-Fi adapter (CBK-WA01) to enable wireless camera operation from a tablet or other Wi-Fi capable device.

Anamorphic format support

Normal VF/SDI video, without distortion, is output when using a 2x anamorphic lens.

Supports various setup methods

The F65 can be configured from a variety of devices. The basic configuration is performed on the camera's subdisplay. However, detailed settings can be performed from the menu (VF Menu) displayed in the viewfinder or on a monitor connected to the SDI OUT connector. You can also make detailed settings by displaying the menu in a web browser or on a tablet device, such as an iPad.[1,2)]

1) iPad is a trademark of Apple Inc.
2) The items displayed in the menu that can be configured using a web browser or a tablet device may vary. For details, see *"4-2 VF Menu List" (page 53)*.

1-2 Example of System Configuration

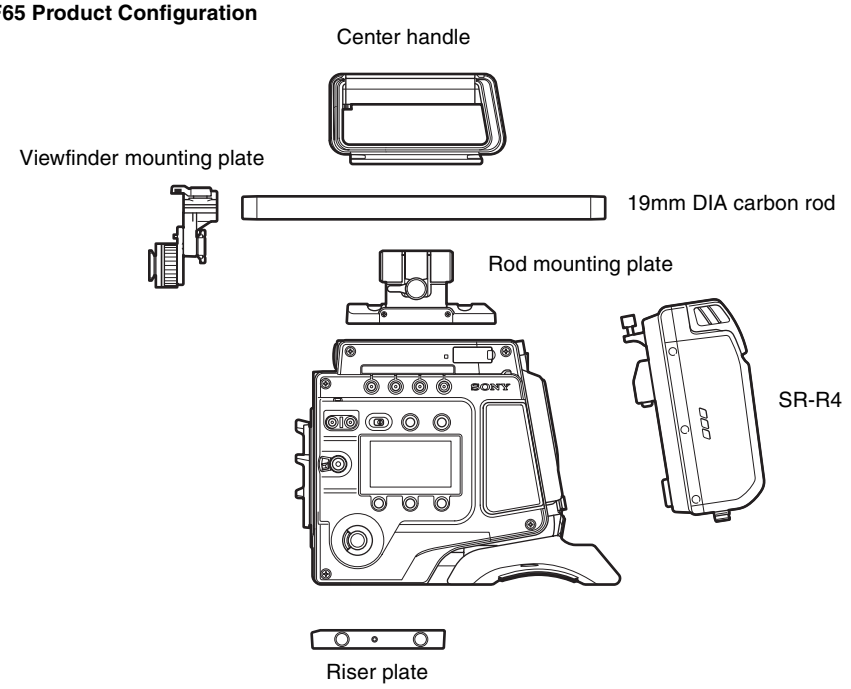
The diagram below shows a system configuration example for use of this camera.
This manual assumes the use of an optional Sony HD Electronic Viewfinder.

For more information about the fittings, connections, or use of additional equipment and accessories, see "Chapter 2 Installation and Preparations" (page 19) as well as the operation manuals for the connected equipment.

Viewfinder

Product	Model name
HD Electronic Viewfinder	HDVF-C30WR, HDVF-C35W, HDVF-20A, HDVF-200, DVF-EL100

F65 Product Configuration



Products for tripod mounting

Product	Model name
Bridge Plate	BP-8 (ARRIFLEX)
Shoulder Set	S-4 (ARRIFLEX)

Video recorder

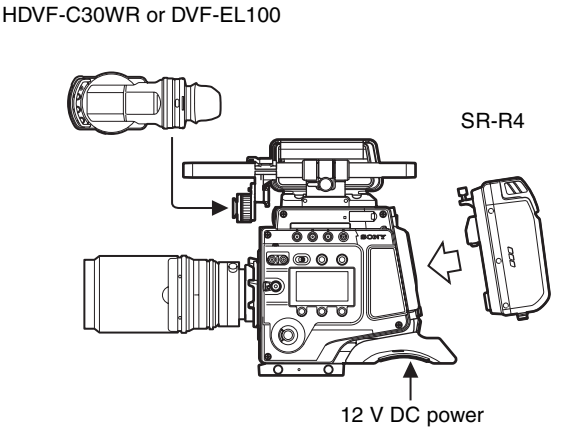
Product	Model name
Portable Memory Recorder	SR-R4

Note

If attaching and using products, such as a shoulder set, from other manufacturers, check beforehand that the product can be fitted correctly to the camera.

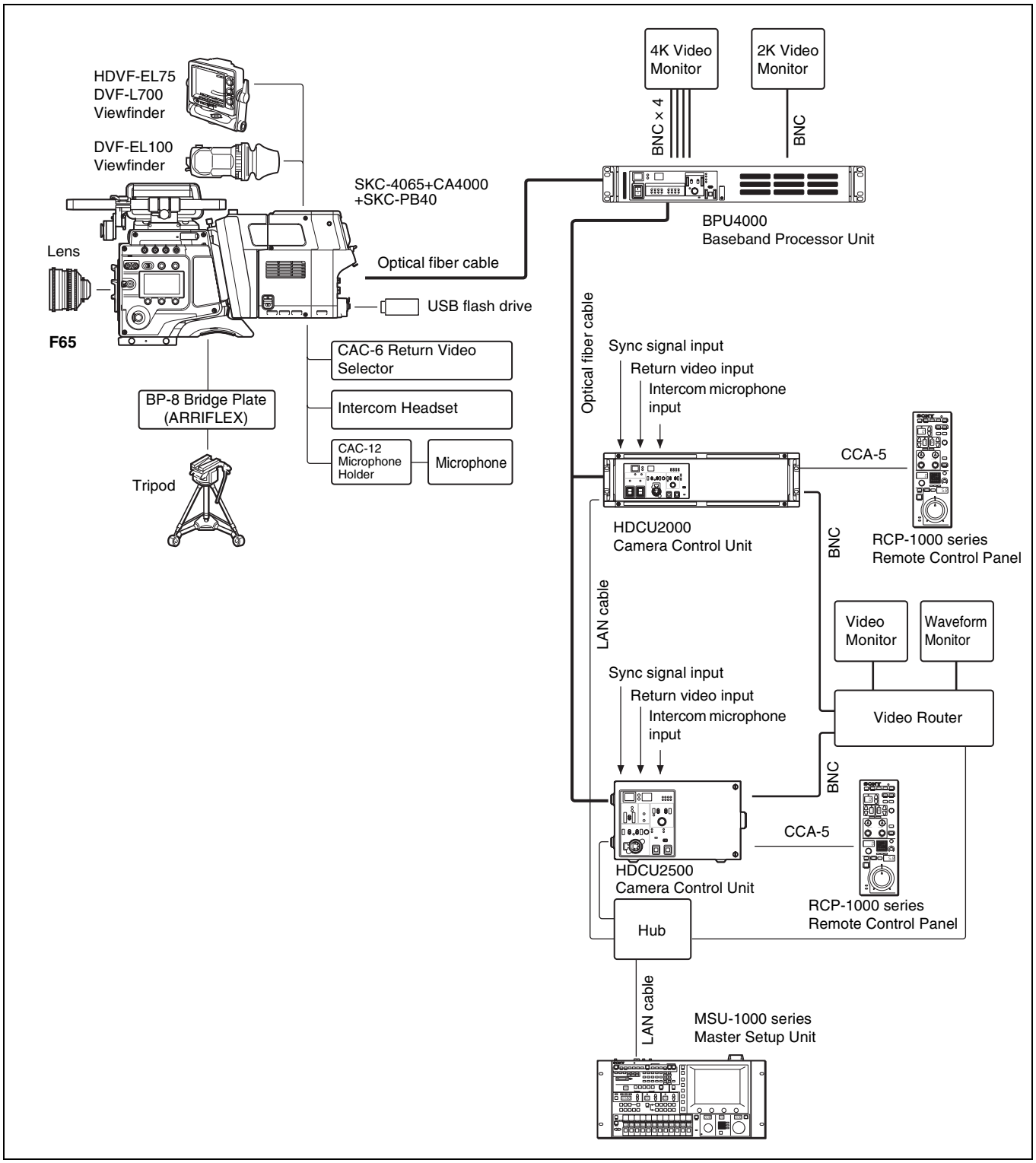
1-2-1 SR-R4 Docking System

An SR-R4 recorder can be docked on the rear of the camera head.
The SR-R4 power source is supplied via the camera's DC IN connector.



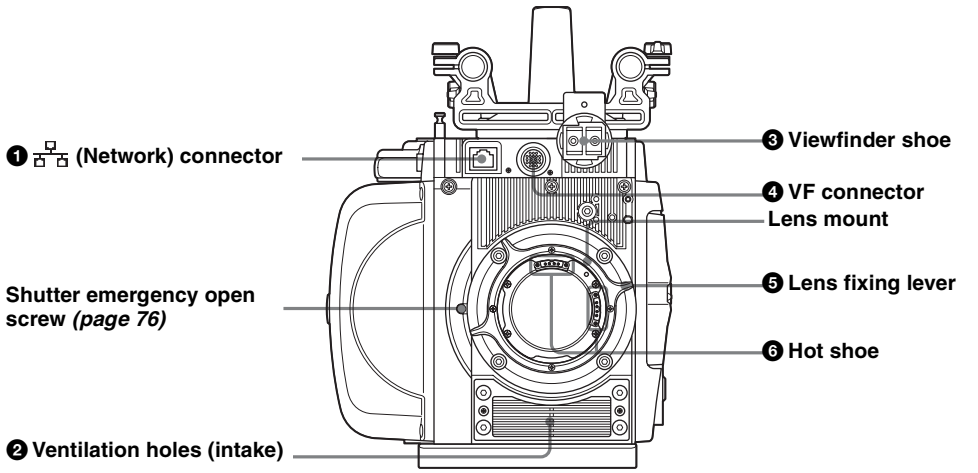
1-2-2 SKC-4065 + CA4000 Docking System

Mount an SKC-4065 on which a CA4000 is attached onto the rear of the camera.
When an SKC-PB40 (option) is attached to the CA4000, using the dedicated cable to connect the camera to the CA4000 allows you to supply power to the camera from the CCU.



1-3 Locations and Functions of Parts

Front panel



❶ (Network) connector (RJ-45 type, 10BASE-T/100BASE-TX)
Connects to a network cable when configuring the camera from a web browser on a computer.
For a network cable connection, the IP address must be configured in the Network menu in the VF menu.

For details, see "4-2-6 Network Menu" (page 68).

CAUTION

- For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to this port. Follow the instructions for this port.
- When you connect the network cable of the unit to peripheral device, use a shielded-type cable to prevent malfunction due to radiation noise.
- When operating the system with a CA4000 connected, network connection via this connector is not possible.

ATTENTION

- Par mesure de sécurité, ne raccordez pas le connecteur pour le câblage de périphériques pouvant avoir une tension excessive à ce port. Suivez les instructions pour ce port.
- Lors de la connexion du câble réseau de l'appareil au périphérique, utilisez un câble blindé afin d'empêcher tout dysfonctionnement dû au bruit de rayonnement.

VORSICHT

- Aus Sicherheitsgründen nicht mit einem Peripheriegerät-Anschluss verbinden, der zu starke Spannung für diese Buchse haben könnte. Folgen Sie den Anweisungen für diese Buchse.
- Verwenden Sie beim Anschließen des Netzwerkkabels des Geräts an ein Peripheriegerät ein abgeschirmtes Kabel, um Fehlfunktionen aufgrund von Störungen zu vermeiden.

❷ Ventilation holes (intake)

Note

Make sure that a gap of about 8 mm ($^{11}/_{32}$ inch) is maintained in front of the ventilation holes for cooling.

❸ Viewfinder shoe
Attach an optional viewfinder.

For details, see "2-5 Attaching a Viewfinder" (page 23).

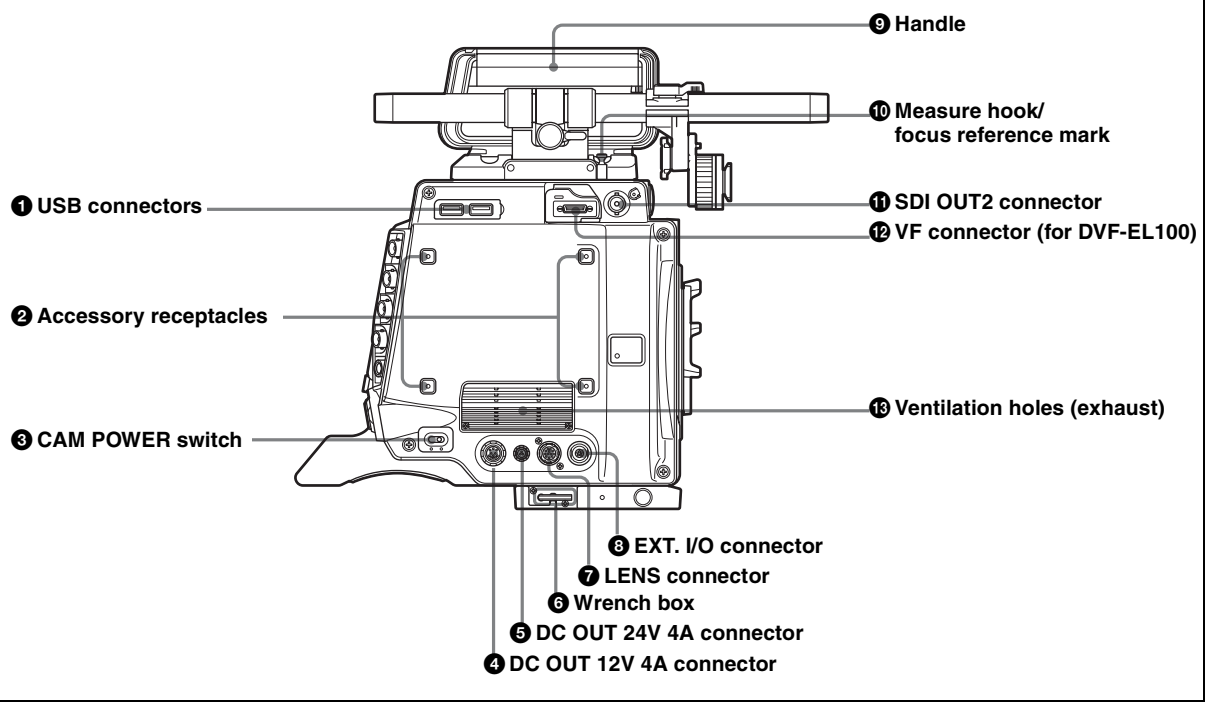
❹ VF (viewfinder) connector (20-pin)
Connects to the cable supplied with a viewfinder (optional).

❺ Lens fixing lever
When mounting a lens, turn the lever clockwise to secure the lens. To remove the lens, turn the lever counterclockwise.
If the lens fixing lever is difficult to operate due to the shape of the lens or accessory being mounted, you can remove the lever and attach it in a different orientation.

For details, see "2-4 Attaching a Lens" (page 21).

❻ Hot shoe
Supports the Cooke /i Intelligent Electronic Lens System and can record lens information as metadata.

Left panel



❶ USB connectors
USB 2.0 standard connector. Connect a CBK-WA01 Wi-Fi Adapter (optional) to enable communication with wireless LAN devices.

Note

When operating the system with a CA4000 connected, network connection via this connector is not possible.

❷ Accessory receptacles
For mounting accessories using M3 screws. The depth of the screws is 5 mm ($^{7}/_{32}$ inch).

❸ CAM POWER switch
Turns the camera power supply ON/OFF.

❹ DC OUT 12V 4A (12 V DC supply output) connector
Supplies 12 V DC power source to accessories, when the CAM POWER switch is in the ON position.

❺ DC OUT 24V 4A (24 V DC supply output) connector
Supplies 24 V DC power source to accessories when there is a 24 V DC supply connected to the DC IN connector and the CAM POWER switch is in the ON position.

❻ Wrench box
Stores a 3 mm ($^{1}/_{8}$ inch) wrench for attaching/detaching the handle.

❼ LENS connector (12-pin)
Controls the aperture remotely with the connection of a commercially-available iris servo unit.

❽ EXT. I/O (external control) connector (5-pin)
It is not used in this version.

❾ Handle
The handle is attached to the top of the camera head at the factory. It has two sizes of screw holes ($^{3}/_{8}$", $^{1}/_{4}$") for accessories on the upper side.

❿ Measure hook/focus reference mark
Use as reference for focusing.
For actual measurement of the distance from a subject, you can fix the end of a tape measure to the hook.
When shooting shallow depth-of-field images in high resolution, it is recommended that you adjust the focus using the camera or viewfinder magnification function.

⓫ SDI OUT2 connector (BNC type)
Outputs the SDI2 Look (single link) signal.

⓬ VF connector (26-pin, for DVF-EL100)
Connects to the DVF-EL100 viewfinder (option).

Note

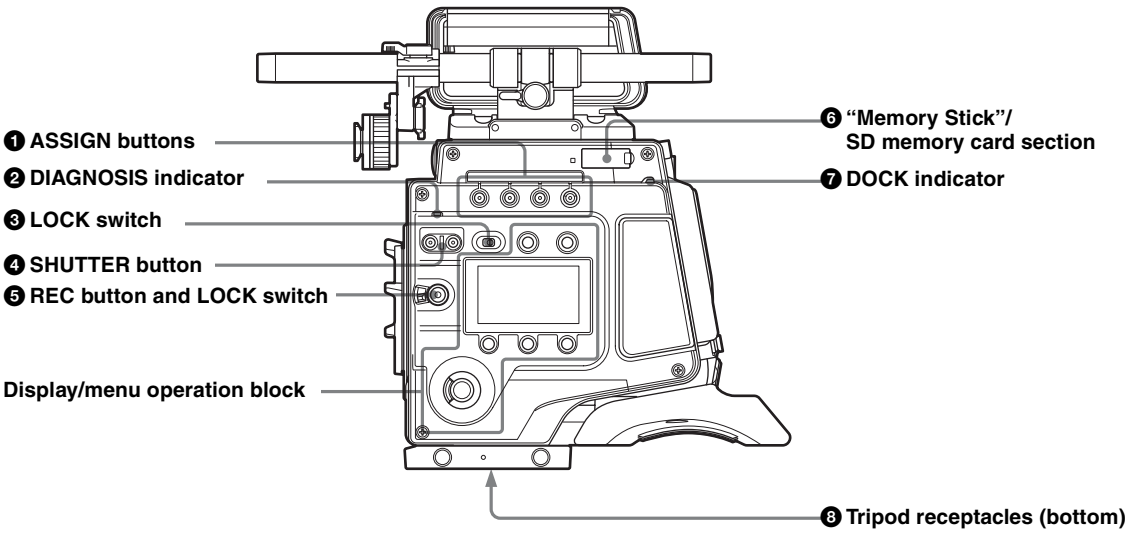
To reduce OLED burn-in, use the DVF-EL100 switch to turn VF DISPLAY (viewfinder display function) On/Off.

⓭ Ventilation holes (exhaust)

Note

Connectors and other parts positioned near the exhaust vents may become hot.

Right panel



❶ ASSIGN (assignable) buttons

You can assign various functions to these buttons, using the subdisplay or the menu displayed in the viewfinder or on a monitor.

ASSIGN button 1 is on the far left, and ASSIGN button 4 is on the far right.

For details, see "3-3-14 Assigning Functions to the ASSIGN Buttons" (page 37).

❷ DIAGNOSIS indicator

Indicates the diagnostics status.

Lit green: Normal

Lit red: Error

Flashing red: Fatal error

Lit yellow: Not ready

If the red or flashing red indication continues, consult your local Sony representative.

❸ LOCK switch

Locks operation of the side panel (excluding the REC and PAGE buttons).

❹ SHUTTER button

Switches between the electronic shutter and the mechanical rotary shutter.

Press the "M." button for one second or longer to switch to the mechanical rotary shutter, or press the "E." button for one second or longer to switch to the electronic shutter. The button indicator for the selected shutter is lit. The shutter indicator flashes when changing shutter.

Note

It takes about 20 to 40 seconds to change shutter.

❺ REC button and LOCK switch

The REC button starts/stops recording to the SR-R4 docked on the camera. The REC button indicator is lit while recording. The indicator flashes as a warning if the connected supply voltage drops.

When the LOCK switch is in the LOCK position, the REC button cannot be operated.

The REC button cannot be operated during REC REVIEW, PLAY, F.FWD, or REW mode on the SR-R4 to prevent overwriting.

For details on warning indications, see "Warning/Error Messages" (page 74).

❻ "Memory Stick"/SD memory card section

Slots for a "Memory Stick PRO Duo" and an SD memory card are provided behind the rubber cap. The access lamp turns red when a "Memory Stick PRO Duo" or an SD

memory card is inserted into a slot, and then turns off. It flashes red when reading to or writing from a "Memory Stick PRO Duo" or an SD memory card.
When the access lamp is flashing red, do not insert/remove the "Memory Stick PRO Duo" or SD memory card, or turn off the power.

❼ DOCK (docking) indicator
When an SR-R4 is docked, the light reception status of the recorder connectors is displayed.
Green: Good
Yellow: Caution level
Sensitivity has decreased, but signal can be transferred without error. Clean the recorder connector or replace the connector optical module as soon as practicable.
Red: Light detection error
A light reception problem occurred, and signal cannot be transferred correctly. Promptly clean the recorder connector or replace the connector optical module.
Off: No signal

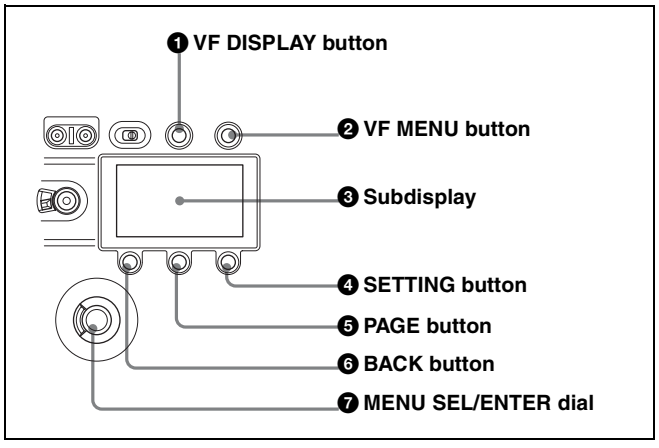
For details about cleaning the connectors, see "Cleaning the Recorder Connector" (page 77). For information about replacing the optical module, consult your local Sony representative.

❽ Tripod receptacles (bottom)
Mounting point for a tripod using $^{3}/_{8}$" tripod screws.

Display/menu operation block

Used to switch the monitor display between the subdisplay and the viewfinder, and to operate the menus.

For details on menu operations, see "3-3-1 Basic Operation of the Subdisplay" (page 30) and "3-4 VF Menu Basic Operation" (page 39).



❶ VF DISPLAY (viewfinder display) button
Displays the status screen on the viewfinder and monitor.

For details about the information displayed, see "3-7 Viewing and Setting the Viewfinder Display" (page 44).

❷ VF MENU (viewfinder menu) button
Displays the menu screen on the viewfinder and monitor. With the DVF-EL100 connected, press and hold this button for two seconds or longer to display the Digital VF Picture menu.

❸ Subdisplay
Displays the camera configuration settings. Press and hold the SETTING button (1 second or longer) to enter Settings Change mode.

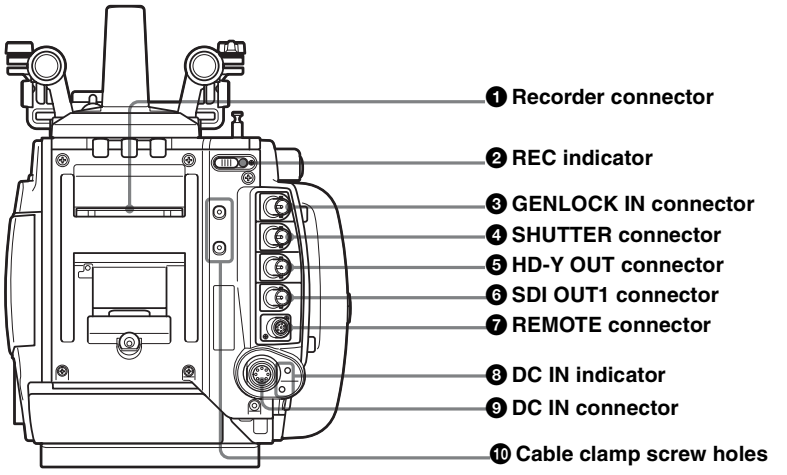
❹ SETTING button
Press and hold for 1 second or longer to enter Settings Change mode to change camera settings using the subdisplay.

❺ PAGE button
Displays the next page when the subdisplay is in Settings Change mode.

❻ BACK button
Cancels changes and returns to the previous screen when the subdisplay is in Settings Change mode or when displaying the menu in the viewfinder or on a monitor. Pressing the BACK button when the DVF adjustment menu is displayed returns the display to the VF menu page select screen.

❼ MENU SEL (selection)/ENTER dial
Turn the dial to select items and press to enter when the subdisplay is in Settings Change mode or when displaying the menu in the viewfinder or on a monitor.

Rear panel



❶ Recorder connector
Connects signal and power with the SR-R4 or CA4000 (with the SKC-4065 also attached) docked on the camera.

Note

Attach the connector cap on the optical connector when not connected to an SR-R4 to protect the connector.

❷ REC (record) indicator
The indicator is lit red while the recorder is recording. You can slide the cover to hide the indicator.

❸ GENLOCK IN (external sync signal input) connector (BNC type)
Connects to an external sync signal (HD 3-level sync) or HD-SDI signal for camera synchronization.
The sync signal is selected in the VF menu.

Note

When operating the system with a CA4000 connected, this connector is disabled.

❹ SHUTTER (external shutter) connector
It is not used in this version.

❺ HD-Y OUT connector
Outputs the Y-signal for the HD analog component signal. Used to synchronize external analog equipment.

❻ SDI OUT1 (SDI output 1) connector (BNC type)
Outputs the SDI1 Look (single link) signal.

❼ REMOTE connector (8-pin)
Controls the main line signal with the connection of the optional RM-B170 remote control unit or similar unit (custom mode).

Note

When operating the system with a CA4000 connected, this connector is disabled.

❽ DC IN (DC power input) indicator
A 10.5 V to 17 V indicator and 20 V to 30 V indicator are provided. When the CAM POWER switch is turned ON, the corresponding indicator lights up according to the voltage of the power source.

❾ DC IN connector (LEMO 8-pin)
Connects to a power cable with the supplied power cable connector.

For details, see "2-8 Preparing the Power Supply" (page 26).

❿ Cable clamp screw holes
Can be used to attach the supplied cable clamp.
There are also screw holes on the upper surface on the left panel side.

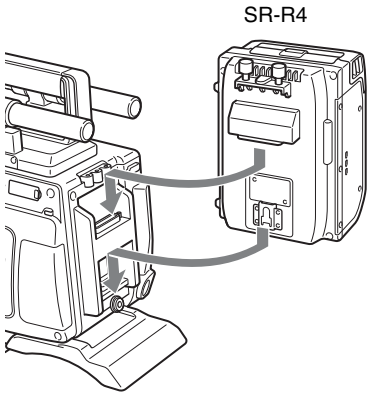
Installation and Preparations

Chapter 2

2-1 Mounting the SR-R4

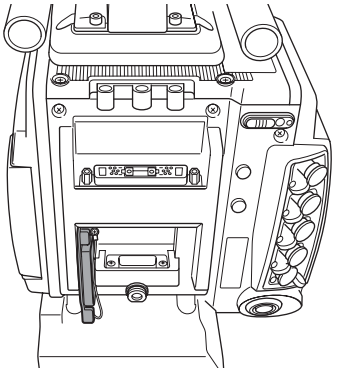
The SR-R4 docks on the rear of the camera head.

For details about mounting the SR-R4, refer to the Operation Manual of the SR-R4.



Notes

- SR-R4/SRK-CP1 software V4.00 or later is required.
- Always turn off the camera power supply when mounting the SR-R4.
- The recorder connector for connecting the SR-R4 is an optical connector. Attach the connector cap on the optical connector when not connected to an SR-R4 to protect the connector. After removing the cap, store it in the position shown in the following figure for safekeeping.



- When mounting the SR-R4, fix the camera head on a tripod in advance to keep the camera head stable.

  For tripod mounting, see "2-6 Mounting the Camera on a Tripod" (page 24).

- When the camera is used with the SR-R4 docked, make sure that the camera is securely fixed and stable so that it will not fall over.

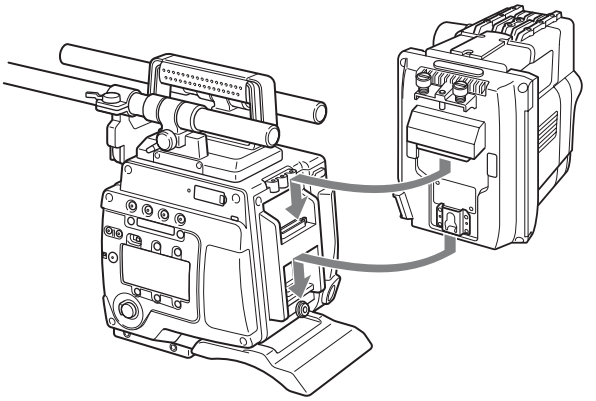
2-2 Mounting the SKC-4065 + CA4000

A CA4000 on which an SKC-4065 is attached can be docked on the rear of the camera for system operations.

Notes

- CA4000 and BPU4000 software V2.0 or later is required.
- Always turn off the camera power supply when mounting the CA4000 on which the SKC-4065 is attached.

For details on mounting, refer to the Operation Guide for the SKC-4065.

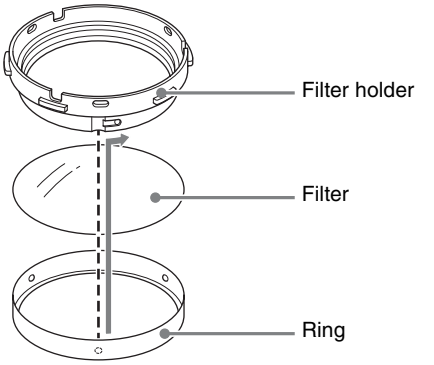


2-3 Attaching a Filter

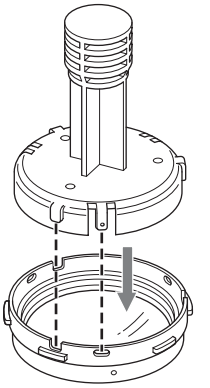
You can mount commercially available gel filters in the supplied filter holder and then attach them to the camera if you wish to use an ND filter in F65RAW-HFR mode or wish to use a filter other than those built into the camera. Recommended filter: Fujifilm neutral density filters

1 Place the filter template (metallic disc) on the gel filter, then trim the filter around the edge of the filter template.

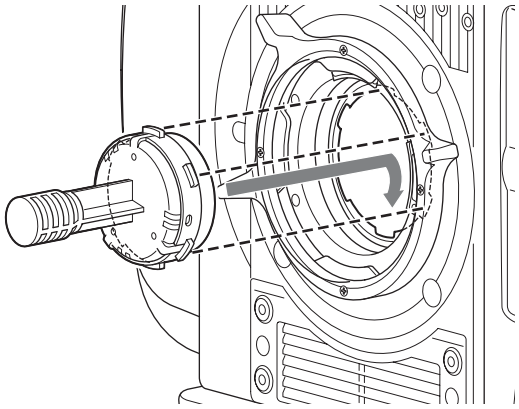
2 Remove the ring from the filter holder, place the filter on the ring, and then attach the holder.



3 Align the protrusion on the mounting tool with the notch on the filter holder, then insert the holder into the tool.



4 Align the notch on the filter mount with the protrusion on the filter holder, insert the mounting tool onto the filter mount, and then turn clockwise until it clicks into place.



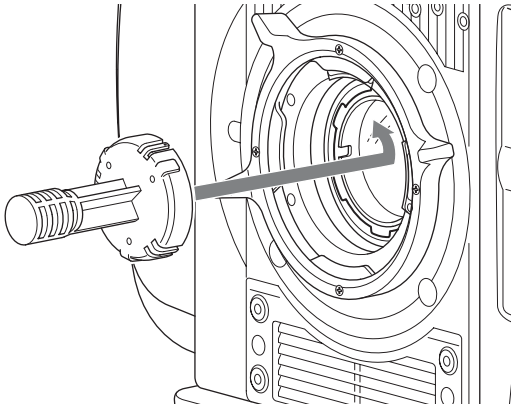
5 Pull the mounting tool straight off.

The mounting tool separates from the camera, and the filter is mounted in place.

To remove the filter

1 Align the protrusion on the mounting tool with the notch on the filter holder, then press the tool onto the filter mount.

Press the tool until it clicks into place.



2 Rotate the mounting tool counterclockwise, then lift the tool off the camera.

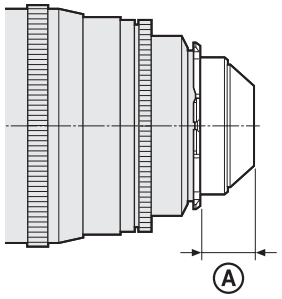
The filter holder is removed with the mounting tool.

2-4 Attaching a Lens

Attach a lens that conforms to the PL lens mount.

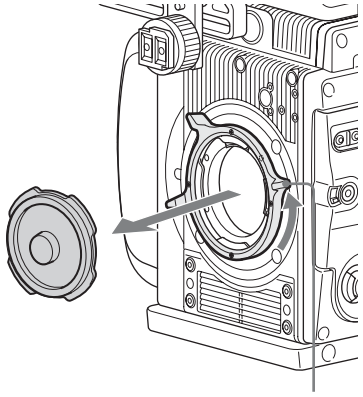
Note

Always use a lens whose projection from the flange (Ⓐ in the figure) is less than 31.5 mm (1 1/4 inch). Use of any lens that protrudes more than 31.5 mm (1 1/4 inch) will damage the internal filter.



For information on handling lenses, refer to the operation manual for the lens.

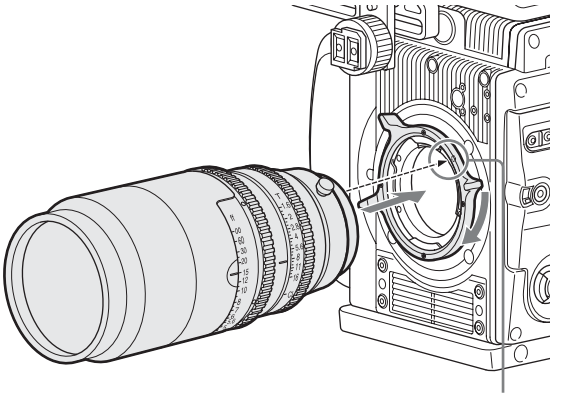
1 Rotate the lens fixing lever counterclockwise and remove the lens mount cap from the lens mount.



Lens fixing lever

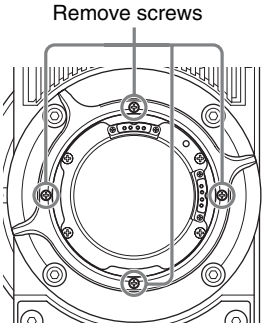
2 Align the lens' alignment pin with the notch in the upper part of the lens mount and insert the lens into the mount.

3 While supporting the lens, rotate the lens fixing lever clockwise to secure the lens.



Changing the position of the lens fixing lever

Remove the four screws from the face of the lens fixing lever indicated in the figure. Change the position of the fixing lever, reinsert the screws and securely tighten.



Adjusting the flange focal length

The optical section uses materials not susceptible to thermal expansion, so flange back adjustment is generally not required. However, if you want to make an adjustment, remove the lens mount and replace the shim with one of the appropriate thickness. At shipment, a 0.05 mm (0.0020 inch) shim is installed. The following replacement shims are available.

Note

When using the camera in HFR mode, the lens distance indicator may be slightly off, but this is not a malfunction.

For information about replacing shims, consult your local Sony representative.

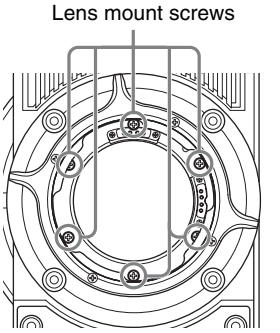
Part number	Thickness
4-260-711-03	0.02 mm (0.0008 inch)
4-260-711-13	0.03 mm (0.0012 inch)
4-260-711-23	0.04 mm (0.0016 inch)
4-260-711-33 (standard)	0.05 mm (0.0020 inch)
4-260-711-43	0.06 mm (0.0024 inch)
4-260-711-53	0.07 mm (0.0028 inch)
4-260-711-63	0.08 mm (0.0032 inch)
4-260-711-73	0.09 mm (0.0036 inch)
4-260-711-83	0.10 mm (0.0040 inch)

To change a shim

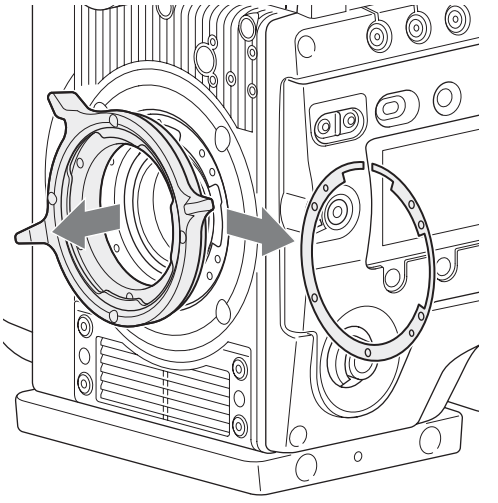
Note

Exercise care not to damage the internal wiring of the camera when changing the shim. Modifying a shim, scratching a surface, or introducing dust can change the flange back distance and damage the camera such that it cannot be restored to original condition, just as for a film camera.

1 Remove the lens mount screws (6).



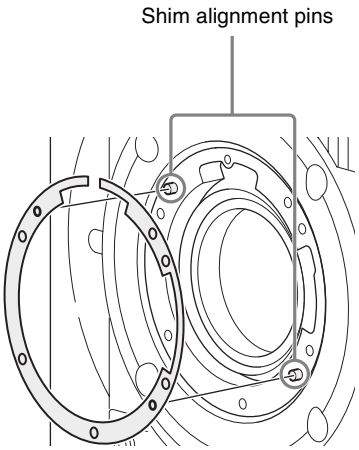
2 Pull the lens mount out by about 10 mm ($^{13}/_{32}$ inch) and remove the shim carefully.
Pass the shim slit over the wiring, taking care not to pull the wiring, when removing the shim.



Note

Pulling the lens mount out by more than 20 mm ($^{3}/_{4}$ inch) risks damage to the internal wiring.

3 Insert the replacement shim using the shim slit to clear the wiring, and align the camera screw holes and shim alignment pins.



4 Reattach the lens mount in its original position, and fasten the screws to a torque of 0.53 N·m (0.39 lbf).

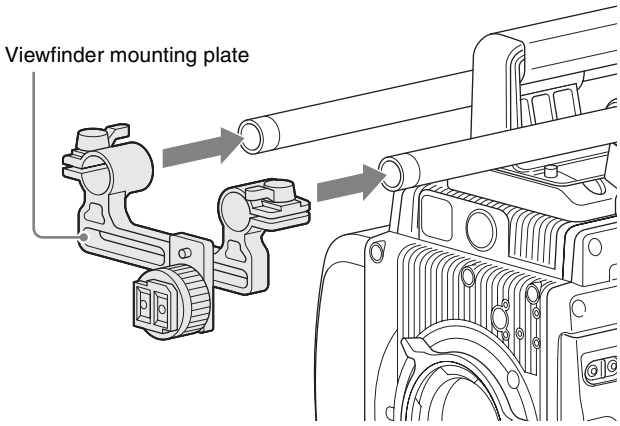
2-5 Attaching a Viewfinder

Caution

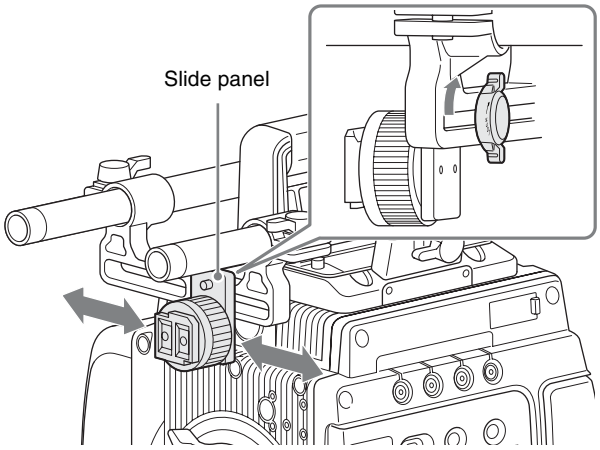
When the viewfinder is attached, do not leave the camera with the eyepiece facing the sun. Direct sunlight can enter through the eyepiece, be focused in the viewfinder and cause fire.

For details on the viewfinder, refer to the instruction manual of the viewfinder.

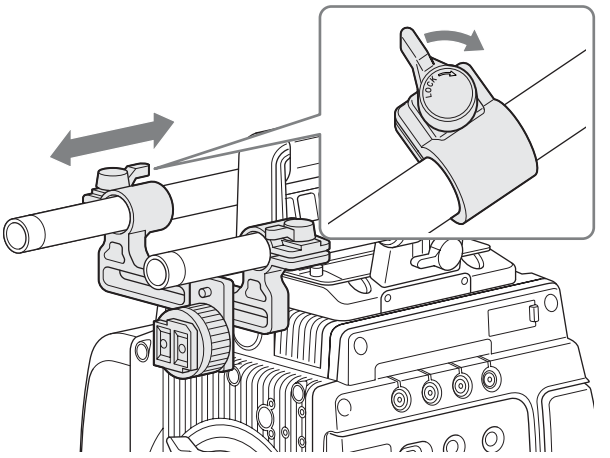
1 Pass the viewfinder mounting plate over the two rods.



2 Slide the slide panel left/right into position, and then turn the lever on the rear of the slide panel to lock it into position.

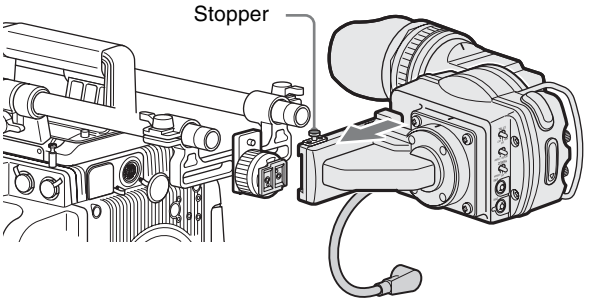


3 Slide the viewfinder mounting plate forward/backward into position, and then turn the lever to lock it into position.



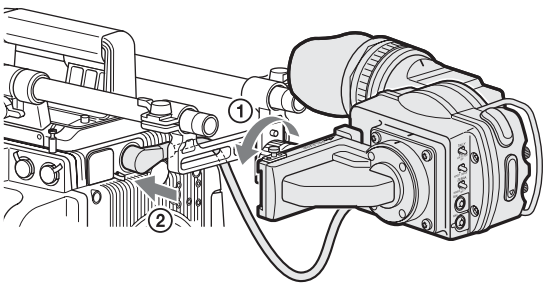
4 Fit the viewfinder to the viewfinder shoe and slide the viewfinder horizontally.

The viewfinder stopper automatically pops down.



5 Set the viewfinder to the most convenient position, tighten the viewfinder positioning ring (① in the figure below), and connect the viewfinder cable to the VF connector of the camera (② in the figure below).

When connecting the DVF-EL100, connect to the 26-pin VF connector *(page 15)* on the left panel.



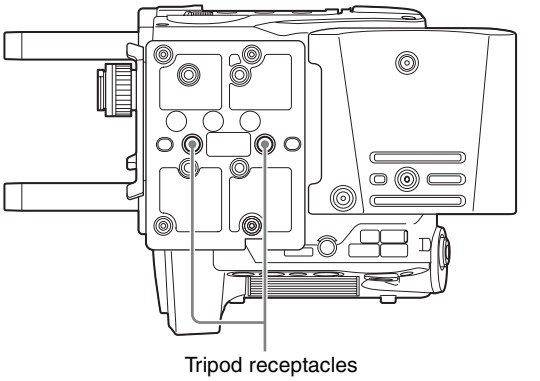
To detach the viewfinder

Loosen the viewfinder positioning ring, pull up the viewfinder stopper, then pull out the viewfinder by sliding it in the direction opposite than when attaching.

2-6 Mounting the Camera on a Tripod

The camera mounts on a tripod using two $^{3}/_{8}$" tripod receptacles that fit into the base of the camera head.

For details about mounting on a tripod, refer to the operation manual of the tripod.



Notes

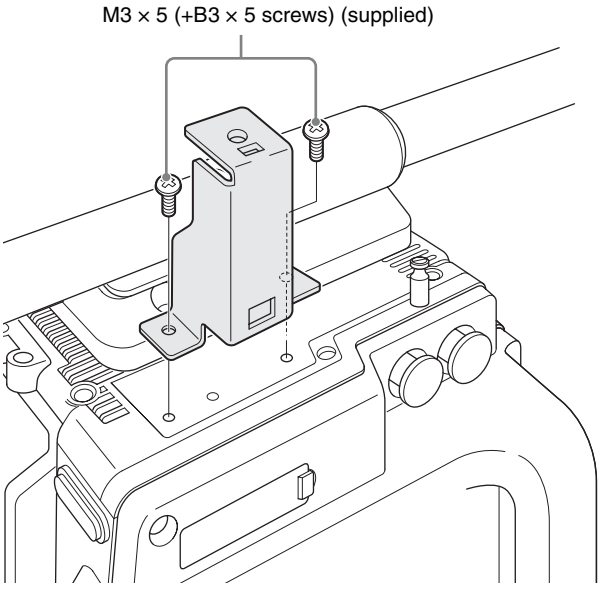
- Select an appropriate hole, considering the balance of the weight of the camera. If an inappropriate hole is selected, the camera may fall over.
- Check that the size of the selected hole matches that of the screw of the tripod. If they do not match, the camera cannot be attached to the tripod securely.

2-7 Mounting the CBK-WA01

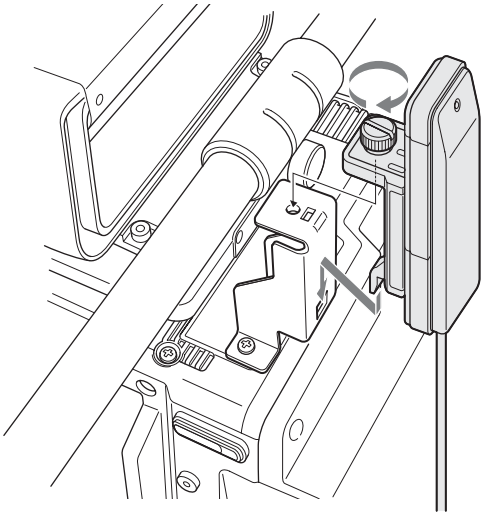
A CBK-WA01 Wi-Fi Adapter can be mounted on the camera using an optional Wi-Fi mounting bracket (part number: 4-418-596-01) for connecting Wi-Fi capable devices to the camera.

For information about obtaining the Wi-Fi mounting bracket, consult your local Sony representative.

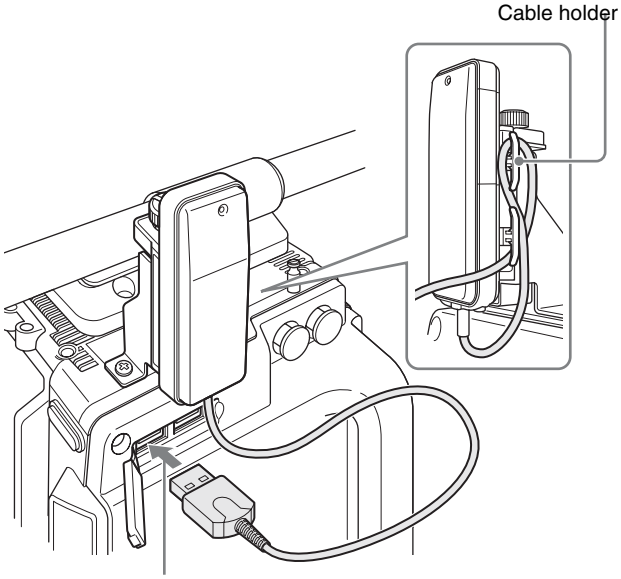
1 Attach the Wi-Fi mounting bracket onto the camera using the supplied +B3 × 5 screws.



2 Place the protrusions on the rear of the CBK-WA01 into the holes in the mounting bracket, and fasten the screw to secure the CBK-WA01 to the bracket.



3 Connect the CBK-WA01 cable to a USB connector on the camera. Wrap excess cable length around the cable holder.



2-8 Preparing the Power Supply

This camera operates at 12 V DC (10.5 V to 17 V).
To supply power to the camera, attach the supplied 8-pin power cable connector to a commercially available shielded cable, and then connect the cable to the DC IN connector (LEMO 8-pin) on the camera.

For details on connector pin assignments, see "Connector Pin Assignments" (page 82) in the Appendix. For details on the pin connections, consult your local Sony representative.

Notes

- Use of a power supply with 150 W or higher supply capacity is recommended to safely drive the camera. The specifications for the power supply cable should be chosen such that the voltage drop is less than 2 V. Example: If a 5-meter (16 ft 5 in.) AWG 18 × 3 cable is used to supply the camera and SR-R4, the voltage drop will be 0.5 to 1.0 V.
- If using the camera's 24 V DC output to drive peripherals, 12 V DC and 24 V DC power supplies must be connected to the camera via the DC IN connector (LEMO 8-pin) of the power cable (supplied).
- When using the SR-R4 docked on the camera, the connection of a 13 V to 17 V DC power source is recommended.

To turn on the camera

Set the CAM POWER switch to the ON position, and the camera is turned on.
Power is also supplied to viewfinder connected to the VF connector.
12 V or 24 V power can be fed to accessories via the DC OUT connectors. To supply 24 V power to accessories, 12 V and 24 V DC input power supplies must be connected via the DC IN connector of the camera.

For the pin assignment for the 24 V power supply DC IN connector, see "Connector Pin Assignments" (page 82) in the Appendix.

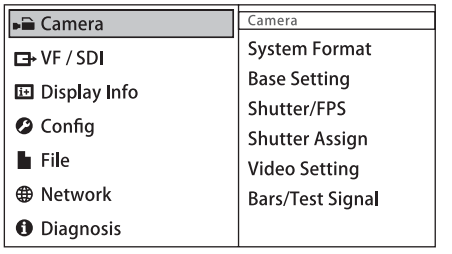
2-9 Setting the Date and Time

When the camera is used for the first time, the menu for setting the date and time is displayed in the viewfinder. Set the current date and time on the <Date/Hour Meter> page in the Config menu.
To set the menu using a monitor screen, connect a monitor to an SDI OUT connector.

1 Turn on the camera power supply.

2 Press the VF MENU button.

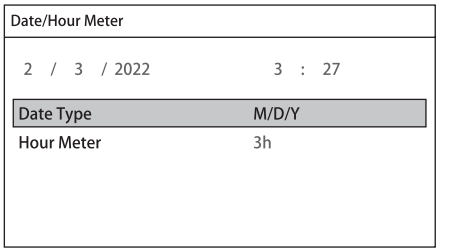
The menu appears in the viewfinder.



3 Turn the MENU SEL/ENTER dial to select Config, then press the MENU SEL/ENTER dial.

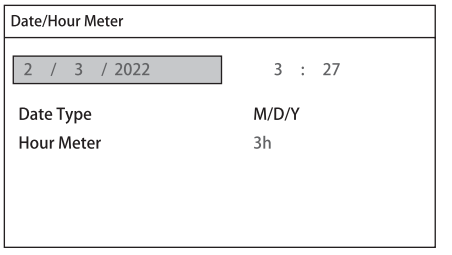
4 Turn the MENU SEL/ENTER dial to select Date/Hour Meter, then press the MENU SEL/ENTER dial.

The <Date/Hour Meter> page appears.



5 Turn the MENU SEL/ENTER dial to select Date, then press the MENU SEL/ENTER dial.

The date becomes editable.



6 Turn the MENU SEL/ENTER dial to set the date (year, month, day).

Turning the MENU SEL/ENTER dial moves to the next digit. Select the day, then press the MENU SEL/ENTER dial to confirm the setting.

7 Turn the MENU SEL/ENTER dial to select Time, then press the MENU SEL/ENTER dial.

The time becomes editable.

8 Turn the MENU SEL/ENTER dial to set the time, then press the MENU SEL/ENTER dial.

9 Turn the MENU SEL/ENTER dial to select Date Type, then press the MENU SEL/ENTER dial.

10 Turn the MENU SEL/ENTER dial to select the date format, then press the MENU SEL/ENTER dial.

You can select one of the following display formats.

Setting	Example display (18th December, 2013)
M/D/Y	12/18/2013
M/D	12/18

11 When finished, press the VF MENU button to exit menu operation.

Basic Adjustments and Settings

Chapter 3

3-1 Basic Operation of the Camera

The camera operates in two modes: Cine mode and Custom mode. In Cine mode, the camera acquires main line video information, without processing, for color grading in post-production while applying basic grading to the VF and SDI outputs. In Custom mode, images are created on location by adjusting the black/white level and gain of the main line signal.

Cine mode

- Shoots images with a fixed camera gain, and sensitivity specified using a light meter (EI mode).
- Sensitivity can be selected from 200EI, 250EI, 320EI, 400EI, 500EI, 640EI, 800EI, 1000EI, 1250EI, 1600EI, 2000EI, 2500EI, and 3200EI.
- In post-production, the gain can be set to the sensitivity selected during shooting.
- In intensified sensitivity shooting (e.g. 1600EI), the gain is automatically adjusted in response to the selected sensitivity for the VF/SDI/HD-Y outputs, even though the master video output darkens, to maintain appropriate monitoring levels.
- In HD mode, the video gamma can be set to S-Log2, 709 (800%), or selected from user gammas. However, when S-Gamut3 or S-Gamut3.Cine is selected for the color space of the main line, the video gamma will be fixed at S-Log3.
- Video adjustment using ASC CDL is supported for the SDI1 output. The adjustments are recorded as metadata together with the video for each frame. The video adjustments made during shooting can be recreated in post production by applying the metadata values to the video.
- The full latitude does not change when the sensitivity setting is changed, but the dynamic range and noise floor changes in post-production with suitable processing. When the sensitivity is set high, the dynamic range increases on one hand, while the noise in dark areas also increases. Conversely, when the sensitivity is set low, the dynamic range decreases but the noise in the dark areas also decreases.
- The following operations can be controlled from a remote control unit.
  —Shutter Speed
  —Filter Select
  —Rec Start/Stop
  —Rec Review
  —Bars/Test Signal
  —12p Iris Control
  —Lens Extender Control
  —Fan Mode

Custom mode

This mode allows camera gain to be adjusted and black/white level to be adjusted from the camera menu or optional remote control unit (RM) while shooting.

- Camera gain is adjustable in the range –6 dB to +12 dB in 3 dB increments (EI adjustment not supported).
- Black/white level is adjustable.
- Black/White, Gain, and following operations can be controlled from a remote control unit.
  —Shutter Speed
  —Filter Select
  —Rec Start/Stop
  —Rec Review
  —Bars/Test Signal
  —12p Iris Control
  —Lens Extender Control
  —Fan Mode

The white balance can be set to 3200K (tungsten), 4300K (tungsten), or 5500K (daylight).

Note

The SY_PLD of the F65 must be V2.200-01 or later to use the custom mode of the camera or the remote control unit.

The camera supports HD mode recording, where images are down-converted to HD internally and recorded on the SR-R4. The recording format can be selected between HD mode and F65RAW mode.

Functions supported after upgrading the F65 using the CBK-65EL (F65 UPGRADE KIT)

DVF-EL100 digital viewfinder connection and control

Supports cable connection to the DVF-EL100 digital viewfinder. Control from the viewfinder also supported using buttons on the DVF-EL100.

Note

To reduce OLED burn-in, use the DVF-EL100 switch to turn VF DISPLAY (viewfinder display function) On/Off.

Independent, SDI1/SDI2 2-system signal operation

Supports selection of separate tone, color, and character text overlay for output. SDI1 is intended primarily for the director, and SDI2 is intended primarily for the camera operator.

Functions during system connections with the CA4000/BPU4000 via the SKC-4065

Most of the system's functions are controlled from the CA4000 or the CCU (HDCU2000/2500). Therefore, control of the GENLOCK IN connector, the REMOTE connector, a Web browser, and iPads will not be available. However, outputs for SDI2 and VF can be changed.

3-2 Camera Settings

The camera can be configured from the following devices.

Subdisplay

You perform the basic setup configuration using the subdisplay on the side of the camera head.
The basic settings (settings page) is displayed on the subdisplay when power is applied to the camera. Press and hold the SETTING button for 1 second or longer to switch to Settings Change mode. The MENU SEL/ENTER dial, SETTING button and BACK button are used for Settings Change mode operation.

For details about settings on the subdisplay, see "3-3 Basic Settings using the Subdisplay" (page 30). For details about the subdisplay menu list, see "4-1 Subdisplay Menu List" (page 50).

Viewfinder or monitor

Detailed settings can be performed by displaying the menu (VF menu) in the viewfinder or on a monitor connected to an SDI OUT connector.
Press the VF MENU button on the side of the camera to display the VF menu in the viewfinder or on a monitor. The VF MENU button, MENU SEL/ENTER dial, and BACK button are used for VF menu operation.

For details about VF menu operations, see "3-4 VF Menu Basic Operation" (page 39). For details about the VF menu list, see "4-2 VF Menu List" (page 53).

Web browser

If the camera is connected to a network, the menus can be displayed in a web browser on a computer. The settings displayed are almost identical to the display in the viewfinder or on a monitor.

For details about web browser operations, see "Menu Operation using a Web Browser" (page 85).

Tablet device

If the camera is used with the optional Wi-Fi adapter (CBK-WA01), the menus can be displayed on a tablet device, such as an iPad, via a wireless LAN. The settings displayed are almost identical to the display in the viewfinder or on a monitor.

For details about tablet device operations, see "Operation using a Tablet Device" (page 85).

Note

When operating a system that includes an SKC-4065, the changing of certain settings in the F65's subdisplay and VF menu will be restricted.

Configuration from a web browser or tablet device will also be disabled.
For details, refer to the operating instructions for the SKC-4065.

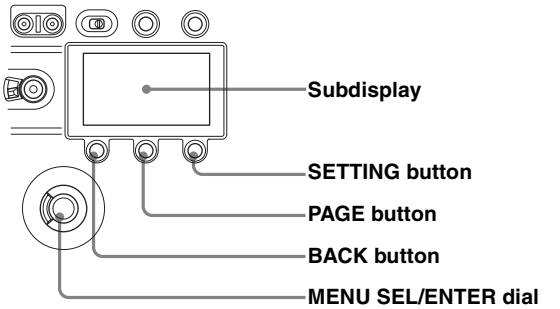
3-3 Basic Settings using the Subdisplay

Basic settings of the camera can be easily performed using the subdisplay. The items set on the subdisplay can also be set using the VF menu.

3-3-1 Basic Operation of the Subdisplay

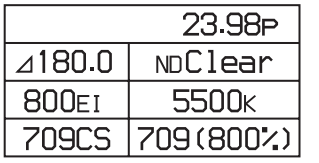
The buttons and dial shown below are used for operation of the subdisplay.

Side panel of the camera head



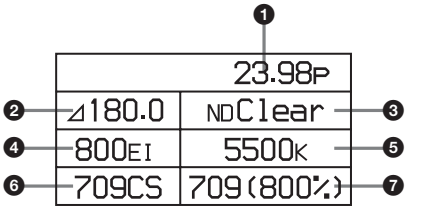
To display the settings pages

After the camera is turned on, the startup screen is displayed on the subdisplay for several seconds, after which the settings page is displayed.



Pressing the PAGE button advances to the next page.
The following items can be set or checked on each settings page.

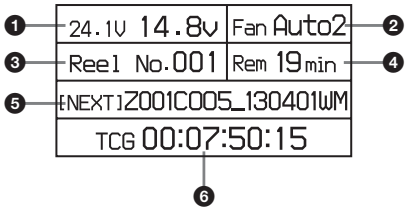
Settings page 1



❶ Video format
❷ Shutter value
❸ ND filter
❹ Sensitivity (EI value)[1)]
❺ Color temperature
❻ Color space (SDI2)
❼ LUT (SDI2)

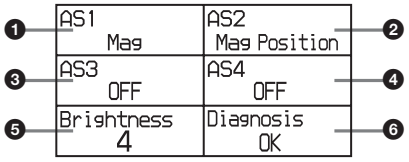
1) Displayed in dB units during Custom mode or SKC-4065 use.

Settings page 2



❶ Voltages
❷ Fan operating mode
❸ Reel number
❹ Media remaining
❺ File name
❻ Time code

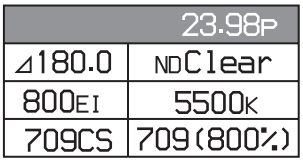
Settings page 3



❶ ASSIGN button 1
❷ ASSIGN button 2
❸ ASSIGN button 3
❹ ASSIGN button 4
❺ Subdisplay brightness
❻ Self diagnostics

To change a setting

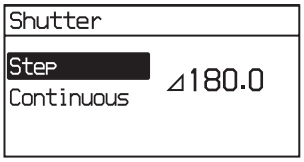
Press and hold the SETTING button for 1 second or longer. The screen changes to Settings Change mode, and the selected item is displayed in inverse text.



In this mode, the item you want to set is selected by turning the MENU SEL/ENTER dial. When the item you want to set is shown in inverse text, press the MENU SEL/ENTER dial.

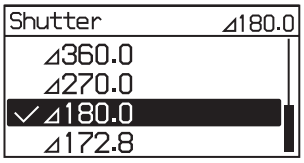
Where there are multiple configuration items, the select screen is displayed.

Select screen (e.g. shutter value)



On this screen, turn the MENU SEL/ENTER dial to select an item. Press the MENU SEL/ENTER dial to display the change screen for the item.

Change screen (e.g. shutter value)



The current value of the setting is displayed at the top right of the screen. Turn the MENU SEL/ENTER dial to select the value, then press the MENU SEL/ENTER dial.
The value for the selected item is entered.

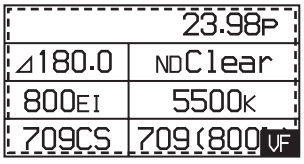
To cancel a changed setting

Press the BACK button before confirming the changed setting.
The setting is restored to the original value, and the display returns to the previous page.

Note

Pressing the VF MENU button enables menu operation in the viewfinder or on a monitor, and disables operation using the subdisplay.

Subdisplay when VF MENU button is pressed



3-3-2 Setting the Video Format

The camera supports the following video format settings.
F65RAW mode:
23.98p, 24p, 29.97p, 25p, 50p, 59.94p, S47.95 (23.98p), S48 (24p), S59.94p (23.98p), S59.94p (29.97p), S60p (24p), S60p (25p)
HD mode (4:4:4 RGB):
23.98p, 29.97p, 24p, 25p, S59.94p (23.98p), S59.94p (29.97p), S60p (24p), S60p (25p)

HD mode (4:2:2 YCbCr):
23.98p, 29.97p, 24p, 25p, 50p, 59.94p, S59.94p (23.98p), S59.94p (29.97p), S60p (24p), S60p (25p)

F65RAW-HFR mode:
23.98pForPB, 29.97pForPB, 24pForPB, 25pForPB, S119.88p (23.98p), S119.88p (29.97p), S120p (24p), S120p (25p)

The mode can be switched between F65RAW mode, HD mode, and F65RAW-HFR mode on the <System Format> page in the VF menu.

For details, see "3-5 Setting the Shooting Mode" (page 41).

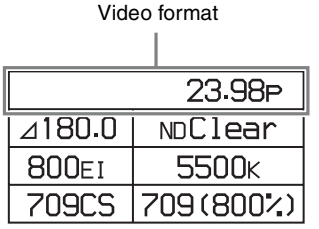
Note

It is recommended that the power be turned off and back on again after changing the video format.

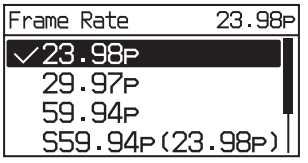
Changing the video format

1 Select the video format on settings page 1, then press the MENU SEL/ENTER dial.

Settings page 1



2 Turn the MENU SEL/ENTER dial to select the video format, and press the MENU SEL/ENTER dial.



To set using the VF menu

Set on the <System Format> page in the Camera menu *(page 54)*.

VF and SDI OUT connectors output format

Setting the camera main video format automatically determines the signal format that is output on the VF and SDI OUT connectors.

Camera image	VF connector output	SDI OUT connector output
23.98p	23.98PsF	23.98PsF
29.97p	29.97PsF	29.97PsF
24p	24PsF	24PsF
25p	25PsF	25PsF
50p	50i[a)]	50i[a)]
59.94p	59.94i[a)]	59.94i[a)]
S47.95p	23.98PsF[a)]	23.98PsF[a)]
S48	24PsF[a)]	24PsF[a)]
S59.94p	59.94i[a)]	59.94i[a)]
S60p	60i[a)]	60i[a)]
S119.88p	59.94i[a)]	59.94i[a)]
S120p	60i[a)]	60i[a)]
100P[b)]	50i[a)]	50i[a)]
119.88P[b)]	59.94i[a)]	59.94i[a)]

a The output image scan type can be set to Interlace or Frame Drop.
b) Only for systems with an SKC-4065 connected.

3-3-3 Setting the Shutter Value

The shutter of the camera can be viewed and adjusted, with settings displayed as shutter angles, just as for a film camera. Two operation methods are available for the adjustment: stepwise and continuous.

Step mode

Frequently-used shutter angle values can be selected, enabling step selection of the shutter values.

Step No.	Shutter angle
1	360.0[a)]
2	270.0[a)]
3	180.0
4	172.8
5	150.0
6	144.0
7	90.0
8	45.0
9	22.5
10	11.2

a) Selectable for the electronic shutter only.

The corresponding shutter speeds vary according to the frame frequency and frame rate of the selected video format.

Continuous mode

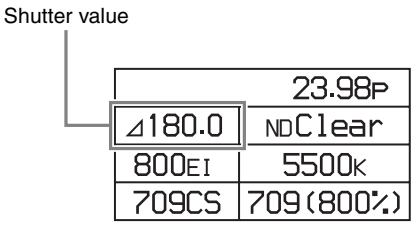
The shutter value can be changed smoothly in continuous mode in the range 4.2° to 360.0° (electronic shutter) or 11.2° to 180.0° (mechanical rotary shutter).
To obtain your desired shutter value quickly, select a value nearest your desired one in Step mode, then switch to Continuous mode and adjust the shutter value.

Changing the shutter value in Step mode

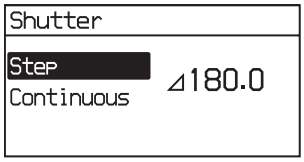
In Step mode, one of the registered shutter values can be selected.

1 Select the shutter value on settings page 1, then press the MENU SEL/ENTER dial.

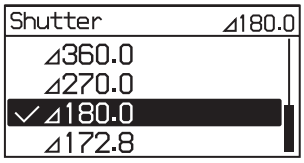
Settings page 1



2 Select [Step], then press the MENU SEL/ENTER dial.



3 Turn the MENU SEL/ENTER dial to select the shutter value.



Pressing the MENU SEL/ENTER dial confirms the setting, and reflects the changed value on the camera. Pressing the BACK button cancels the shutter setting, and restores the previous value.

To set using the VF menu

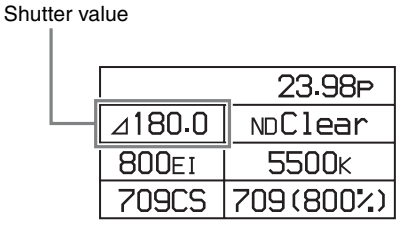
Set on the <Shutter/FPS> page in the Camera menu *(page 54)*.

Selecting an arbitrary shutter value

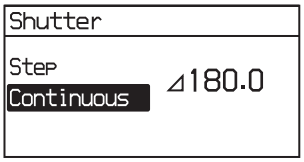
In Continuous mode, an arbitrary shutter value can be set.

1 Select the shutter value on settings page 1, then press the MENU SEL/ENTER dial.

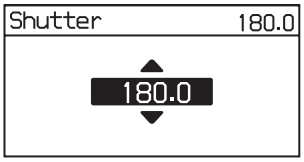
Settings page 1



2 Select [Continuous], then press the MENU SEL/ENTER dial.



3 Turn the MENU SEL/ENTER dial to select the shutter value.



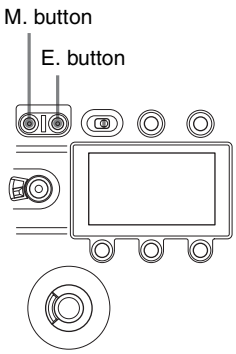
You do not need to press the MENU SEL/ENTER dial to set a value. The shutter value changes are reflected on the camera as the MENU SEL/ENTER dial is turned. Pressing the BACK button cancels the shutter setting, and restores the previous value.

To set using the VF menu

Set on the <Shutter/FPS> page in the Camera menu *(page 54)*.

When not using the shutter

Press the E. button or M. button, whichever is lit, on the SHUTTER button for one second or longer. The shutter switches off and the light on both SHUTTER buttons go out.



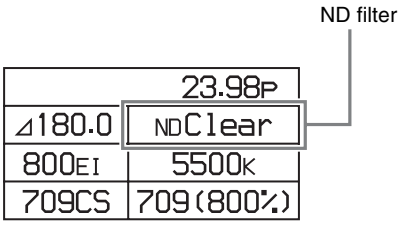
3-3-4 Selecting an ND Filter

The camera has built-in optical ND filters that can be used to match the illumination and natural lighting conditions. The following filters can be selected in F65RAW mode or HD mode. In F65RAW-HFR mode, only [Clear] or [Close] can be selected for the ND filter.

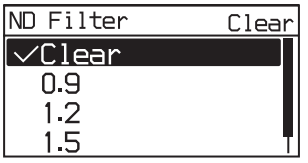
Filter density	Description
Clear	No filter is used.
0.9	1/8 optical transmittance
1.2	1/16 optical transmittance
1.5	1/32 optical transmittance
1.8	1/64 optical transmittance
Close	Closes the filter.

1 Select the ND filter on settings page 1, and press the MENU SEL/ENTER dial.

Settings page 1



2 Turn the MENU SEL/ENTER dial to select the ND filter, then press the MENU SEL/ENTER dial.



To set using the VF menu

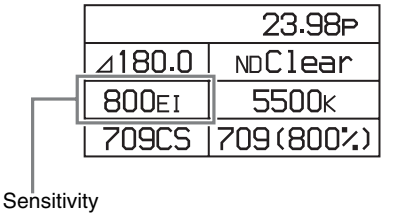
Set the ND Filter on the <Base Setting> page in the Camera menu *(page 54)*.

3-3-5 Setting the Sensitivity (EI Value) (Cine Mode)

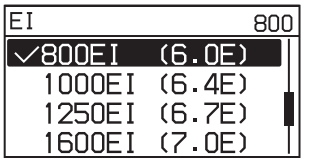
The sensitivity is determined by the EI value (Exposure Index). The viewfinder and monitor image brightness changes to match the EI value. But it has no affect on the recorded image.
The camera supports the following sensitivity settings: 200EI, 250EI, 320EI, 400EI, 500EI, 640EI, 800EI, 1000EI, 1250EI, 1600EI, 2000EI, 2500EI, and 3200EI.

1 Select the sensitivity on settings page 1, then press the MENU SEL/ENTER dial.

Settings page 1



2 Turn the MENU SEL/ENTER dial to select the EI value, then press the MENU SEL/ENTER dial.



To set using the VF menu

Set the Exposure Index on the <Base Setting> page in the Camera menu *(page 54)*.

Latitude values

The latitude is automatically assigned one of the following values, depending on the sensitivity setting.

Sensitivity (EI value)	Latitude
200EI	4.0E
250EI	4.4E
320EI	4.7E
400EI	5.0E
500EI	5.4E
640EI	5.7E
800EI	6.0E
1000EI	6.4E
1250EI	6.7E
1600EI	7.0E
2000EI	7.4E
2500EI	7.7E
3200EI	8.0E

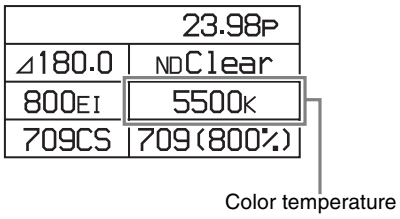
The value is displayed in “xxEI” format and represents the highlight latitude displayed as a lens aperture value (f-stop) for key light from a gray chart with 18% reflectivity.

3-3-6 Setting the Color Temperature

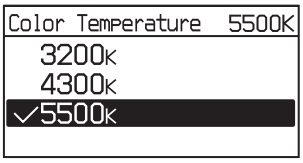
The color temperature can be set to 3200K (tungsten), 4300K (tungsten), or 5500K (daylight) to match the shooting environment.

1 Select the color temperature on settings page 1, then press the MENU SEL/ENTER dial.

Settings page 1



2 Turn the MENU SEL/ENTER dial to select the color temperature, then press the MENU SEL/ENTER dial.



To set using the VF menu

Set the Color Temperature on the <Base Setting> page in the Camera menu *(page 54)*.

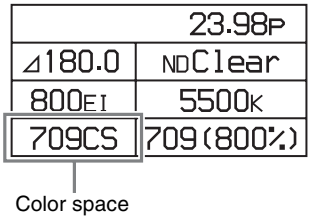
3-3-7 Setting the SDI OUT2 Output Color Space

The color space for the image output from the SDI OUT2 connector can be specified.

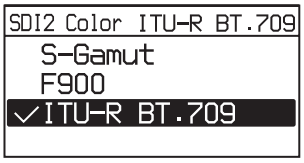
Setting	Description
S-Gamut	Wide color space comparable to film cameras
F900	Color space equivalent to existing models
ITU-R BT.709	Color space equivalent to ITU-R BT.709

1 Select the color space on settings page 1, then press the MENU SEL/ENTER dial.

Settings page 1



2 Turn the MENU SEL/ENTER dial to select the color space, then press the MENU SEL/ENTER dial.



To set using the VF menu

Set the Color on the <SDI2 Look> page in the VF/SDI menu *(page 58)*.

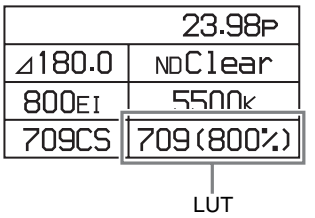
3-3-8 Setting the SDI OUT2 Output LUT

The image output from the SDI OUT2 connectors is configured using a Look-up table (LUT). The images shot with the camera are intended for processing in post-production, and are not suitable for checking the results of shooting as-is on the scene. Setting a LUT changes the tone of the image displayed on a monitor connected to the SDI OUT2 connector, without affecting the main RAW image output, for ease of monitoring.

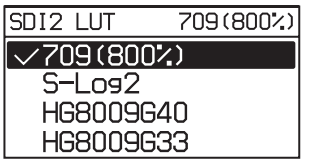
Setting	Description
709(800%) (default)	Outputs a signal that extends the dynamic range by up to 800% in video terms based on ITU-R709 with conventional monitor gamma.
S-Log2	Outputs a non-adjustable signal that uses S-Log gamma. Up to 1300% input light level can be reproduced.
HG8009G40	Outputs a signal using hypergamma with 800% dynamic range, 109% white limit, and 40% video output for 18% gray card reflection.
HG8009G33	Outputs a signal using hypergamma with 800% dynamic range, 109% white limit, and 33% video output for 18% gray card reflection.
[User1] to [User100]	You can select an imported LUT (up to 100).

1 Select the monitor look-up table on settings page 1, then press the MENU SEL/ENTER dial.

Settings page 1



2 Turn the MENU SEL/ENTER dial to select the look-up table to apply, then press the MENU SEL/ENTER dial.



To set using the VF menu

Set the LUT on the <SDI2 Look> page in the VF/SDI menu *(page 58)*.

3-3-9 Selecting the Fan Operating Mode

You can set the operating mode of the camera's built-in fans. The mode can be set to silence the fan speed noise or to provided maximum cooling to suit the shooting environment. You can select one of the following operating modes.

Setting	Fan operation
Auto1	The fans are automatically controlled according to the internal temperature, regardless of whether recording or not.
Auto2 (default)	The fans are automatically controlled according to the internal temperature. When recording, the fans are controlled to maintain quiet operation.[a)]
Min	In this mode, quiet fan operation is maintained regardless of whether recording or not. This is the best mode if recording for more than 30 minutes in a quiet environment, such as a concert hall. Use this mode in environments with ambient temperature of less than 30°C (86°F).
Max	Fan rotation set at the maximum speed to lower the internal temperature.

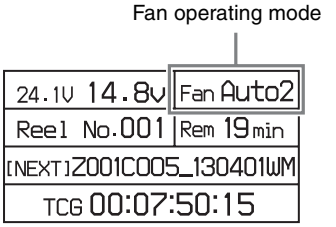
a) The coupling of the fan control with recording is available only when an SR-R4 is docked on the camera.

Note

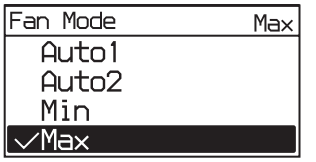
Even when Min mode is selected, the speed of the fans automatically increases if the internal temperature rises.

1 Select the fan operating mode on settings page 2, then press the MENU SEL/ENTER dial.

Settings page 2



2 Turn the MENU SEL/ENTER dial to select the operating mode, then press the MENU SEL/ENTER dial.



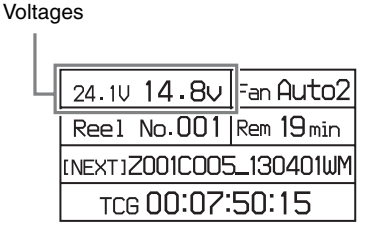
To set using the VF menu

Set on the <Fan Mode> page in the Config menu *(page 64)*.

3-3-10 Checking the Voltages

The voltage of the power supplies connected to the camera can be checked on settings page 2 on the subdisplay.

Settings page 2



The voltage of the 24 V supply is displayed on the left, and the voltage of the 12 V supply on the right. If power is not supplied, "- -" is displayed.
If the voltage falls to the Near End level, the voltage indicator starts flashing. If the voltage falls to the End level, the indicator starts flashing rapidly.

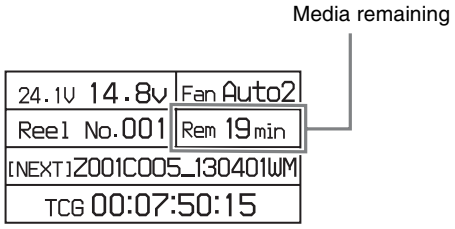
The voltage Near End and End levels can be set on the <Battery Alarm> page in the Config menu *(page 64)*.

For details, see "3-7-3 Setting the Voltage Warning Values" (page 46).

3-3-11 Checking the Remaining Media

When the SR-R4 recorder is docked with the camera, an estimate of the remaining recording time (recording units: minutes) on the memory card can be checked on settings page 2 on the subdisplay.

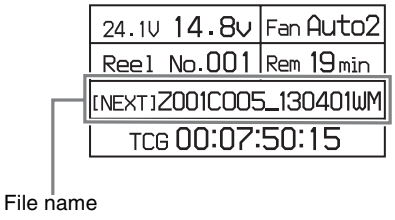
Settings page 2



3-3-12 Checking the File Name

When the SR-R4 recorder is docked with the camera, the file name can be checked on Settings page 2 on the subdisplay.
The [NEXT] display shows the name of the file to be created next when stopped (STOP) or paused (REC_Pause).

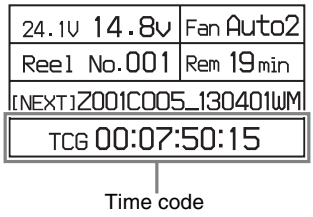
Settings page 2



3-3-13 Checking the Time Code

When the SR-R4 recorder is docked with the camera, the SR-R4 time code can be checked on settings page 2 on the subdisplay.

Settings page 2



Time code display types

Indication	Meaning
TCG 00:00:00:00	Time code generator's time code data. DF or NDF is displayed, depending on the time code type.
TCR 00:00:00:00	LTC or VITC reader time code data. LTC or VITC is displayed on the right. Also, DF or NDF is displayed, depending on the time code type.
UBG 00 00 00 00	Time code generator's user bit data.
UBR 00 00 00 00	LTC or VITC reader user bit data. LTC or VITC is displayed on the right.
TM1 00:00:00:00	Timer1 timer value.
TM2 00:00:00:00	Timer2 timer value.

3-3-14 Assigning Functions to the ASSIGN Buttons

Separate functions can be assigned to each of the ASSIGN buttons 1 to 4 on the side of the camera body.
The following functions are assigned to the buttons by factory default.

Button	Function
ASSIGN 1	Mag
ASSIGN 2	Mag Position
ASSIGN 3	Hi/Lo Key
ASSIGN 4	Rec Review

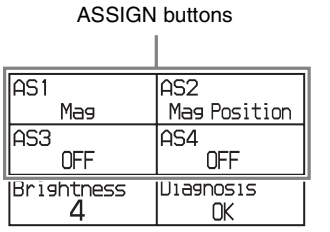
Functions that can be allocated to the ASSIGN buttons

Menu indication	Function
OFF	No function is allocated.
Mag	Displays a magnified image in the viewfinder and on the SDI OUT2 connector. a) Each time the button is pressed, the magnification changes between 2-times, 4-times, and Off. When the magnification is 2-times or 4-times, the ASSIGN button allocated with the Mag function is lit. The display returns to normal after about 30 seconds.
Mag Position	Selects the position of the image that is magnified by the Mag function. There are nine points on the screen that can act as the center point of the magnified image. This function sets the position of the magnified image as an area centered on one of these points. Each time the button is pressed, the area moves one position from top left to bottom right. When the display is magnified, the ASSIGN button allocated with the Mag Position function is lit.
Hi/Lo Key	Temporarily changes the LUT set for the SDI OUT2 connector to check the high-luminance highlights and low-luminance clipped blacks of the image in the viewfinder and from the SDI OUT2 connector. a) The button toggles between high-luminance check (gain reduction), low-luminance check (gain amplification), and normal. The display returns to normal after about 30 seconds.
Fan Mode	Switches the fan operating mode. *For details on the fan operating mode, see "3-3-9 Selecting the Fan Operating Mode" (page 36).*
Rec Review	Plays the video just recorded. The playback interval (all or the last five seconds) follows the setting in the SR-R4 menu. Pressing the ASSIGN button during playback pauses playback.
Highlight Clip Ind.	Indicates the blown-out areas of the image output in the viewfinder and on the SDI OUT2 connector in red. a)
SRMemory Eject	Closes the file and unmounts the SRMemory card inserted in the SR-R4, then unlocks the lid of the SR-R4.
Bars	Outputs color bars. Can be assigned to ASSIGN 4 only.

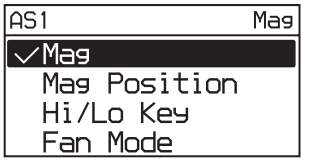
a) The signal output in the viewfinder is active only when SDI OUT2 is selected as the signal source.

1 Select AS1 to AS4 for the button you wish to assign on settings page 3, then press the MENU SEL/ENTER dial.

Settings page 3



2 Turn the MENU SEL/ENTER dial to select the function to assign, then press the MENU SEL/ENTER dial.



To set using the VF menu

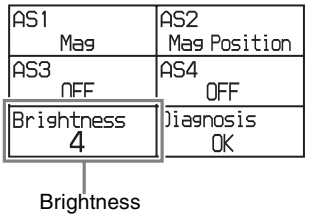
Set on the <Switch Assign> page in the Config menu *(page 64)*.

3-3-15 Adjusting the Subdisplay Brightness

The brightness of the subdisplay can be adjusted to one of four levels.

1 Select Brightness on settings page 3, then press the MENU SEL/ENTER dial.

Settings page 3



2 Turn the MENU SEL/ENTER dial to adjust the brightness, then press the MENU SEL/ENTER dial.

The higher the value, the brighter the subdisplay.

3-3-16 Checking the Self-Diagnostic Results

The results of self-diagnostics can be checked on settings page 3. If an internal error occurs, a warning or error message is displayed.

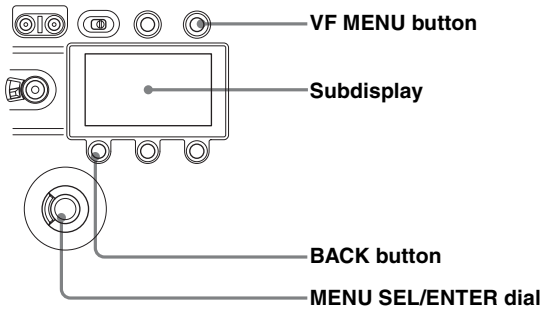
For details about messages, see "Warning/Error Messages" (page 74).

AS1 Mag	AS2 Mag Position
AS3 OFF	AS4 OFF
Brightness 4	Diagnosis OK

3-4 VF Menu Basic Operation

Detailed settings that cannot be configured on the subdisplay are set in the VF menu displayed in the viewfinder or on a monitor.
The VF MENU button, MENU SEL/ENTER dial, and BACK button on the side panel of the camera head are used to operate the VF menus.
The MENU SEL/ENTER dial has a knob that you turn to select items (MENU SEL) and a button you press to confirm values for items (ENTER).

Side panel of the camera head



While the subdisplay is in Change mode, menu operations in the viewfinder or on a monitor cannot be performed.

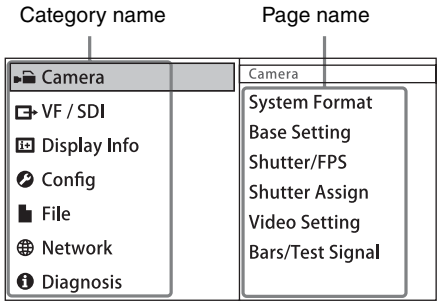
For more information about settings on the subdisplay, see "3-3 Basic Settings using the Subdisplay" (page 30).

To display the settings screen

1 Press the VF MENU button.

The top menu screen appears. Categories are displayed on the left, and pages contained within that category are displayed on the right.

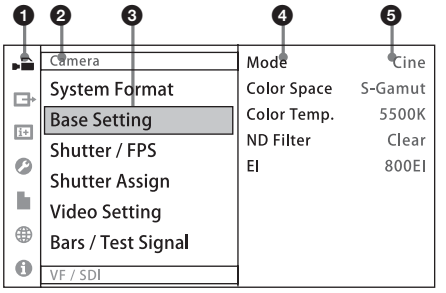
Top menu screen



2 Turn the MENU SEL/ENTER dial to select a category, then press the MENU SEL/ENTER dial.

The page select screen appears. Items within the selected page and the current values of those items are displayed. You can check the items and their values on each page by turning the MENU SEL/ENTER dial. Pressing the BACK button returns to the top menu screen.

Page select screen

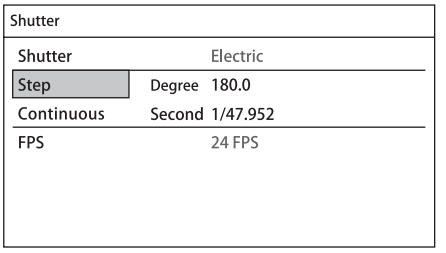


❶ Category icon
❷ Category name
❸ Page name
❹ Configuration item
❺ Current value

3 Turn the MENU SEL/ENTER dial to select a page, then press the MENU SEL/ENTER dial.

The settings screen appears. Pressing the BACK button returns to the Page select screen.

Settings screen



To display the digital viewfinder settings menu

With the DVF-EL100 connected, press the VF MENU button for two seconds or longer.
The Digital VF Picture page settings screen of the VF menu appears.

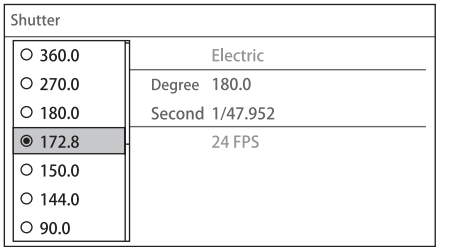
To change a setting

1 Turn the MENU SEL/ENTER dial to move to the desired item.

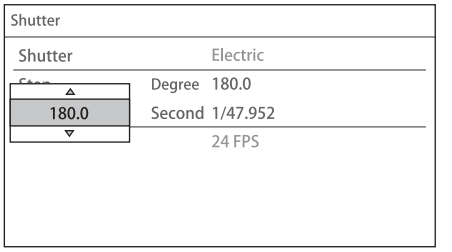
2 Press the MENU SEL/ENTER dial.

The list or spin box corresponding to the selected item is displayed.

Screen Example (List)



Screen Example (Spin box)



3 Turn the MENU SEL/ENTER dial to select a value for the item.

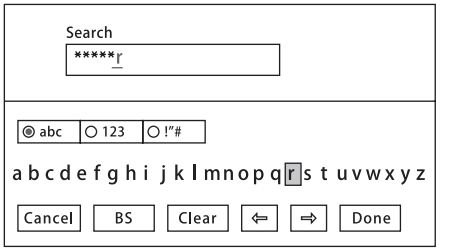
To cancel a setting

Pressing the BACK button while the operating screen is displayed cancels the operation and restores the current value.

4 Press the MENU SEL/ENTER dial to confirm the setting.

To enter a character string

You use a keyboard displayed on the screen to enter file names, passwords, and other text.



The string is displayed in the upper text box as you enter each character.
Turn the MENU SEL/ENTER dial to select the Done button, then press the MENU SEL/ENTER dial to confirm the entered character string.

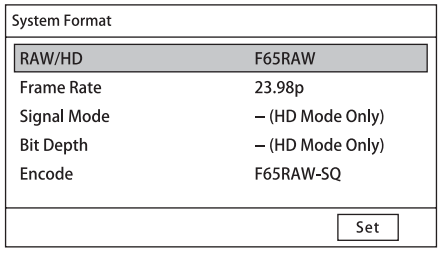
To exit the menu

Press the VF MENU button.

3-5 Setting the Shooting Mode

The shooting mode can be set to RAW mode or HD mode. You select the mode on the <System Format> page of the Camera menu *(page 54)*. You can also set the frame rate and the encoding on the <System Format> page.

<System Format> page



RAW/HD

Selects the shooting mode.

F65RAW: Records 16-bit linear RAW data.

HD: Develops RAW data to HD internally, and records HD data.

F65RAW-HFR: 16-bit linear RAW data recorded at 120 fps (max.).

Notes

Observe the following points when using the unit with an SR-R4 mounted.

- If a frame rate setting with "ForPB" is set for Frame Rate, a gray screen is displayed when the camera is powered-on and the camera switches to video when you start playback.
- The viewfinder display cannot be magnified when playing back in F65RAW-HFR mode.

Frame Rate

Selects the frame rate. The frame rates that can be selected vary depending on the RAW/HD mode selection. For details about the frame rates that can be selected, see *"3-3-2 Setting the Video Format" (page 31)*.

Signal Mode

Selects the signal format in HD mode. 4:4:4 RGB or 4:2:2 YCbCr can be selected.
Configurable in HD mode only.

Bit Depth

In HD mode, displays the number of recording bits. "10bit" or "12bit" is automatically displayed according to the Encode setting.

When Encode is set to Lite or SQ, 10-bit recording is selected. When set to HQ, 12-bit recording is selected.

Encode

Selects the recording mode.
In F65RAW mode, "F65RAW-SQ" or "F65RAW-Lite" can be selected.
In HD mode, "SR-HQ" or "SR-SQ" can be selected when Signal Mode is set to 4:4:4 RGB, and "SR-SQ" or "SR-Lite" can be selected when Signal Mode is set to 4:2:2 YcbCr.
Not configurable in F65RAW-HFR mode.

To enable a setting

1 Select each parameter on the <System Format> page, select Set, and then press the MENU SEL/ENTER dial.

2 After confirming the setting in the confirmation dialog, select Execute, then press the MENU SEL/ENTER dial.

The settings are reflected on the camera.

3-6 Setting the Output Signal

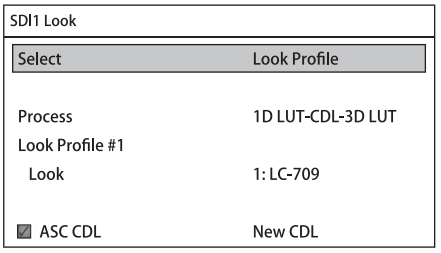
3-6-1 Adjusting the Output Signal Image

The “look” (tone and color) of the image output on SDI OUT1 connector and SDI OUT2 connector can be specified.
This function allows you to adjust the output image on the SDI OUT1 connector and SDI OUT2 connector, without affecting the main RAW image output.

Adjusting the SDI OUT1 output signal

You adjust the image on the <SDI1 Look> page of the VF/SDI menu.

<SDI1 Look> page



Select

Sets the look of the output image on the SDI OUT1 connector.

ACES-Proxy10: 10-bit approximation of a log curve specified by ACES (Academy Color Encoding Specification).

Graded ACES: Outputs ACES-Proxy10 images with RRT and ODT (Gamma 2.4) applied.

Look Profile: Selects the look, using a look number, for the output of images suitable as the starting point for color grading or images close to print film.

S-Log3/S-Gamut3: Outputs images in S-Log3 or S-Gamut3. This settings allows video output using a new color gamut with improved color reproduction and a log curve that is close to Cineon.

S-Log3/S-Gamut3.Cine: Outputs images in S-Log3 or S-Gamut3.Cine. This setting allows video output using a color gamut expanded from DCI P3 and a log curve that is close to Cineon.

S-Log2/S-Gamut: Outputs images in S-Log2 or S-Gamut. This setting is suitable for monitoring the full range of the image, from dark areas to high-intensity areas.

Color/1D LUT: Outputs images with the specified Color and 1D LUT.

3D LUT: Allows you to specify a 3D LUT file.

L3D File: Allows you to specify a L3D file.

EI Applied

Specifies whether to enable or disable the exposure index function on the video output of the SDI OUT1 connector. The exposure index function can only be disabled when ACES-Proxy10, S-Log2/S-Gamut, S-Log3/S-Gamut3, or S-Log3/S-Gamut3.Cine is selected for Select.

Process

Allows you to switch the position in which ASC CDL is applied to the video output of the SDI OUT1 connector to in front of the 3D LUT or behind.
This is enabled only when Look Profile, 3D LUT, or L3D File is selected for Select.

When Color/1D LUT is selected for Select

Color

S-Gamut: Wide color space comparable to film cameras

F900: Color space equivalent to conventional cameras

ITU-R BT.709: Color space equivalent to ITU-R BT.709

1D LUT: Selects the tone of the output image.

For the supported values, see “3-3-8 Setting the SDI OUT2 Output LUT” (page 35).

Note

When a User LUT is used, the signal level that is output on the SDI OUT1 connector is scaled to 100% level.

When 3D LUT is selected for Select

3D LUT: Select an imported 3D LUT file.
You can import cube files generated from color grading tools such as RAW Viewer.
The conditions for cube files that can be imported are as follows.

- The file format must be Resolve.
- The number of lattice points is 33. However, the handles this as 17 lattice points.
- The 1D LUT and Color input conditions will be fixed at S-Log3 and S-Gamut3.Cine, respectively.

When “Through” is selected, a 3D LUT is not used, and 1D LUT is fixed at S-Log3 and Color is fixed at S-Gamut3.Cine.

When L3D File is selected for Select

L3D File: Select an imported L3D file.

When “Through” is selected, a L3D file is not used, and 1D LUT is fixed at S-Log3 and Color is fixed at S-Gamut3.Cine.

The following can also be specified, independent of the selected look.

ASC CDL: Sets whether to apply ASC CDL in the check box. Selects an imported CCC file or CDL file.

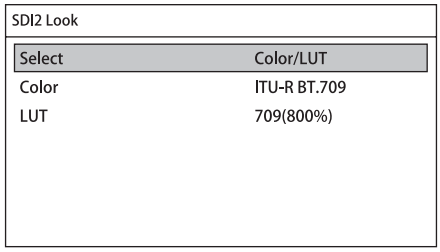
Note

The SDI1 system supports “Graded ACES,” “Look Profile,” “3D LUT,” and “L3D File” settings that perform color conversion using a built-in 3D LUT. The F65 employs a 3D LUT with 17×17×17 lattice to obtain a contour line signal for areas of smoothly varying luminous intensity.
The recording signal is not affected, allowing the processing to be improved using a color grading tool that performs color conversion employing a higher-degree 3D lattice grid.

Adjusting the SDI OUT2 output signal

You adjust the image on the <SDI2 Look> page of the VF/SDI menu.

<SDI2 Look> page



Select

Sets the look of the output image on the SDI OUT2 connector.
The default setting is Color/LUT.

S-Log2/S-Gamut: Outputs images in S-Log2 or S-Gamut. This setting is suitable for monitoring the full range of the image, from dark areas to high-intensity areas.

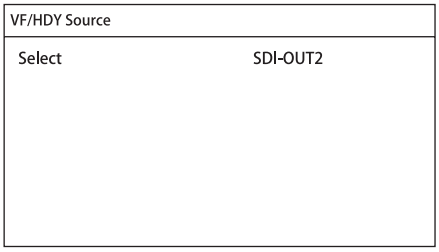
Color/1D LUT: Outputs images with the specified Color and 1D LUT.

For details, see “When Color/1D LUT is selected for Select” (page 42) for SDI OUT1.

3-6-2 Selecting the Viewfinder Output Signal

This selects the video signals for output on the VF and HD-Y connectors.

<VF/HD-Y Source> page



Select

Selects the image for output.
The default setting is SDI-OUT2.

SDI-OUT1: Selects the image that is output on the SDI OUT1 connector.

SDI-OUT2: Selects the image that is output on the SDI OUT2 connector.

3-7 Viewing and Setting the Viewfinder Display

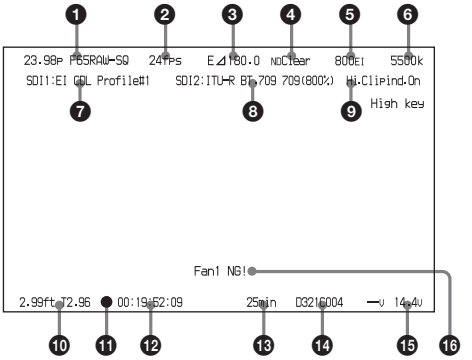
Besides the video image, the viewfinder can display text and messages showing the camera settings and operation status.
The same information can be displayed on a monitor connected to the SDI OUT connector.

Switching the image displayed in the viewfinder

The image in the viewfinder can be set to the output on the SDI OUT1 connector or SDI OUT2 connector using the <VF/HD-Y Source> page in the VF/SDI menu. See *"3-6-2 Selecting the Viewfinder Output Signal" (page 43)*.
The default setting is the image that is output on the SDI OUT2 connector.

3-7-1 Viewing the Basic Status Display

The following status information is displayed in the viewfinder when you press the VF DISPLAY button.
The display status can be specified on the <Status> page in the Display Info menu *(page 62)*.



❶ System format
Displays the current signal format of the camera.

❷ FPS
Displays the number of frames shot per second.

❸ Shutter angle
Displays the shutter value as a shutter angle.
When using an electronic shutter, "E" is displayed before the angle. When using a mechanical rotary shutter, "R" is displayed.

❹ ND filter
Displays the type of ND filter currently selected.

❺ Sensitivity
Displays the currently set sensitivity as an EI value.

❻ Color temperature
Indicates the state of the color temperature.

❼ SDI1 look
Displays the SDI1 look settings for the output image on the SDI OUT1 connector.

❽ SDI2 look
Displays the SDI2 look settings for the output image on the SDI OUT2 connector and in the viewfinder.

❾ Highlight clip indicator
Displays the highlight clip indicator status (On/Off). Displayed only for the output image on the SDI OUT2 connector and in the viewfinder. [1)]

1) The signal output in the viewfinder is active only when SDI OUT2 is selected as the signal source.

❿ Lens
Displays the focus, iris, and zoom positions of the attached lens.

⓫ Recording status indicator
Displays "●" when the SR-R4 docked on the camera is recording.

⓬ Time code
Displays the time code.

⓭ Media remaining
Displays the approximate number of minutes remaining for the recording media in the SR-R4 docked on the camera.

⓮ File name
Displays the file name.

⓯ Power supply voltages
Displays the state of the output voltages. The output from DC 24 V OUT is displayed on the left, and DC 12 V OUT on the right.
The voltage readout begins to flash if the corresponding input voltage falls to the Near End value specified on the <Battery Alarm> page in the Config menu. The indicator flashes more rapidly if the voltage falls to the End value.

⓰ Message area
Displays a warning/error message if an error occurs. The error details are also displayed in the self diagnostics field in settings page 3 on the subdisplay.

For details about messages, see "Warning/Error Messages" (page 74).

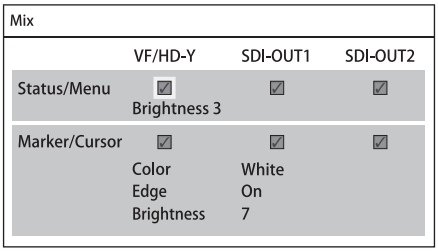
3-7-2 Setting the Marker Display

Various markers can be displayed in the viewfinder and on the monitor.

Turning status/marker display On/Off for each output

You can set whether to display status information and markers in the signal output from the VF and SDI OUT connectors on the <Mix> page in the Display Info menu *(page 62)*.

<Mix> page



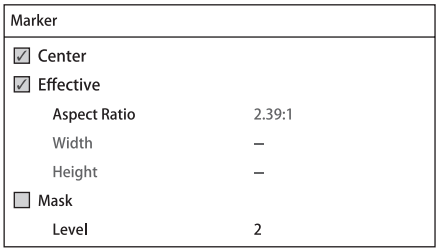
The default setting is to display status information and markers in the signals from the VF and SDI OUT connectors.

Item		Setting
[Status/Menu]	VF/HD-Y	Sets whether to display status information in the VF connector signal.
	SDI OUT1 SDI OUT2	Sets whether to display status information in the SDI OUT connector signal.
	Brightness	Sets the brightness of the status information and menu displays within a range from 1 to 4 (maximum brightness is 4).
[Marker/ Cursor]	VF/HD-Y	Sets whether to display markers in the VF connector signal.
	SDI OUT1 SDI OUT2	Sets whether to display markers in the SDI OUT connector signal.
	Color	Sets the display color of markers.
	Edge	Sets whether to display the edges of the markers.
	Brightness	Sets the marker display brightness in the range 1 to 10 (maximum brightness is 10).

Specifying the markers and cursors to display

When the marker display is turned On on the <Mix> page, you select the markers and cursors for display on the <Marker> page and <Cursor> page in the Display Info menu.

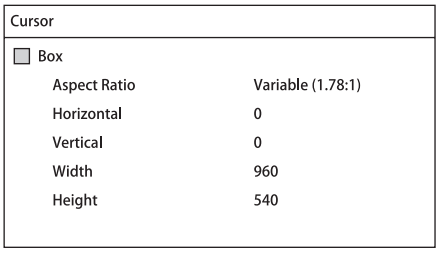
<Marker> page



The default setting for all markers is “Off.”

Item	Setting
Center	Sets whether to display the center marker.
Effective	Sets whether to display the effective pixel area.
Aspect Ratio	Selects the aspect ratio when Effective is set to On. The following options are available. 2.39:1, 2.35:1, 1.90:1, 1.85:1, 1.78:1, 1.66:1, 1.33:1, Variable* a)When Variable is selected, the displayed aspect ratio is determined by the Width and Height settings. Example: Variable (1.78:1).
Width	Specifies the width of the effective pixel area (960 to 1920 pixels) when Aspect Ratio is set to Variable.
Height	Specifies the height of the effective pixel area (540 to 1080 pixels) when Aspect Ratio is set to Variable.
Mask	Selects whether to enable/disable darkening of the image outside the selected Aspect Marker. When selected, the outer area color is displayed in B&W.
Level	Sets the darkness level (0 to 4) of the image outside the selected Aspect Marker.

<Cursor> page



The default setting for cursor display is “Off.”

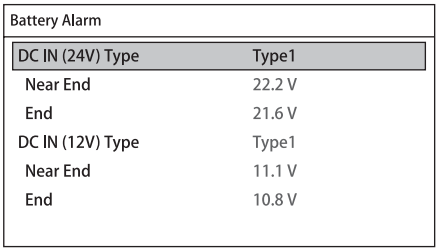
Item	Setting
Box	Sets whether to display the box cursor.
Aspect Ratio	Displays the aspect ratio based on the specified Width and Height when Box is set to On. Example: Variable (1.78:1)

Item	Setting
Horizontal	Specifies the horizontal position in relation to the center position (-958 to 958).
Vertical	Specifies the vertical position in relation to the center position (-538 to 538).
Width	Specifies the width (320 to 1920) of the box cursor.
Height	Specifies the height (180 to 1080) of the box cursor.

3-7-3 Setting the Voltage Warning Values

The Near End and End values used to issue battery voltage warnings when the supply voltage drops are set on the <Battery Alarm> page in the Config menu.
Two Near End and End values can be saved, and you can switch between them as required.

<Battery Alarm> page



Item	Setting
DC IN (24V) Type	Selects the 24 V system supply settings. You can set Near End and End threshold values for both Type1 and Type2.
Near End	Sets the 24 V power supply Near End value (20.5 V to 30.0 V). The default is 22.2 V.
End	Sets the 24 V power supply End value (20.0 V to 24.0 V). The default is 21.6 V.
DC IN (12V) Type	Selects the 12 V system supply settings. You can set Near End and End threshold values for both Type1 and Type2.
Near End	Sets the 12 V power supply Near End value (11.0 V to 17.0 V). The default is 11.1 V.
End	Sets the 12 V power supply End value (10.5 V to 14.0 V). The default is 10.8 V.

3-7-4 Magnifying the Image Display

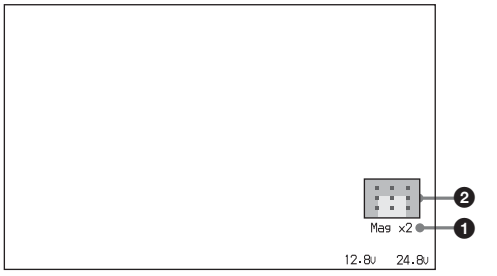
The image output on the SDI OUT2 connector and in the viewfinder can be magnified by assigning the Mag function to an ASSIGN button.[1)] Depending on the "Mag Type" setting on the <Mag> page of the Config menu, the magnification changes between 2-times, 4-times, and Off each time the ASSIGN button is pressed.
The position of the magnified image can be adjusted by assigning the Mag Position function to another ASSIGN button. The position of the magnified image moves one step from top left to bottom right each time the ASSIGN button is pressed.

1) The signal output in the viewfinder is active only when SDI OUT2 is selected as the signal source.

Notes

- The Mag function can only be used for the image output from the SDI OUT2 connector.
- The Mag function cannot be used during Rec Review in HD mode or when Frame Rate is set to a "ForPB" setting in F65RAW-HFR mode.
- When "Auto Off Timer" on the <Mag> page of the Config menu is set to On, the magnified display returns to normal 30 seconds after pressing the ASSIGN button. Also, the display returns to normal when power is applied and when recording starts.

When the image is magnified, the following information is displayed in the viewfinder.



❶ Magnification
When the image is magnified by 2, "Mag x 2" is displayed; when magnified by 4, "Mag x 4" is displayed.

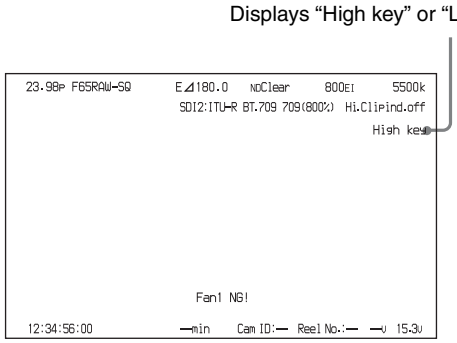
❷ Magnification position
Displays the position of the magnified image.

3-7-5 Monitoring High Key Blown-out Highlights and Low Key Clipped Blacks

Blown-out highlights and clipped blacks in the output image on the SDI OUT2 connector can be monitored using an ASSIGN button assigned with the Hi/Lo Key function.

The image switches between high-key monitoring (reduced gain), low-key monitoring (increased gain), and normal settings each time the ASSIGN button is pressed.

When the image is set for high-key monitoring or low-key monitoring, the following indicator appears in the viewfinder.



3-8 Manual RPN Correction Settings

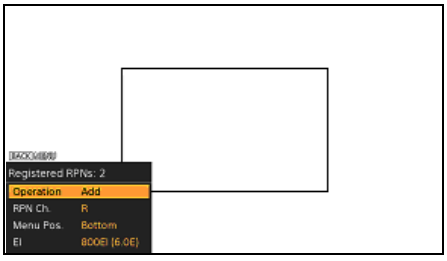
In system version V4.0 and later, you can manually specify and register RPN (Residual Point Noise) pixel coordinates for compensation.

Notes

- This function is only available in F65RAW mode.
- Operations for this function must be performed on the monitor on which SDI OUT2 is displayed. The information will not be displayed properly on SDI OUT1.

3-8-1 Registering RPNs

Select Registration in the <RPN> page of the VF menu, and press the MENU SEL/ENTER dial to go to the <Manual RPN> settings screen.
Correction functions will be assigned to the ASSIGN 1 to 4 buttons and the subdisplay will be dedicated to the correction function while the <Manual RPN> settings screen is displayed. These will return to normal after you return to the <RPN> page.



Registered RPNs: Displays the number of registered RPNs.

Operation: Switches between registering and deleting pixel coordinates for correction. Select “Add” to register coordinates, and “Delete” to delete registered coordinates.

RPN Ch.: Select the channel (R, G, B) to which the RPN you want to register belongs.

Menu Pos.: Select “Bottom” or “Top” as the VF menu’s display position to prevent overlap with RPN.

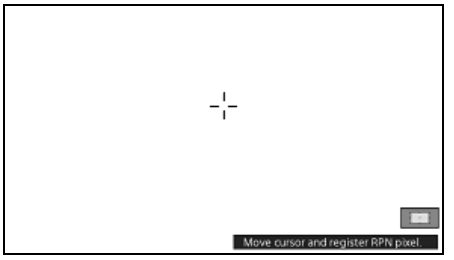
EI: Allows you to change the EI (exposure index) value setting. The monitor output’s gain will change when you change the EI value. Specify a suitable gain if necessary.

The following functions will be assigned to the ASSIGN buttons in this mode. The configuration status of each function will be displayed in the subdisplay.

Button	Function	Setting
ASSIGN 1	Mag	Sets whether to magnify the display.
ASSIGN 2	Mag Pos.	Moves the magnified display position.The rectangular marker that appears on the screen when magnified display is Off indicates the position of the magnified display.
ASSIGN 3	Cursor	Sets whether to display the cross cursor used for registration.
ASSIGN 4	-	N/A

Registering pixel coordinates for correction while displaying a magnified image

To register the pixel coordinates for which correction will be performed, press the ASSIGN 1 button to switch to magnified display, and switch to the registration screen. An icon that indicates the position of the magnified display appears at the bottom right.



The following functions will be assigned to the ASSIGN 1 to 4 buttons in this mode.

Button	Function	Setting
ASSIGN 1	Mag	Sets whether to magnify the display.
ASSIGN 2	Mag Pos.	Moves the magnified display position.
ASSIGN 3	Cursor	Sets whether to display the cross cursor used for registration.
ASSIGN 4	Add	Executes registration of the correction pixel coordinates.

1 Rotate the MENU SEL/ENTER dial to move the cross cursor so that the pixel you want to register is centered.

Switch between up, down, left, and right movements by pressing the MENU SEL/ENTER dial.

2 After moving to the pixel you want to correct, press the ASSIGN 4 button to register the pixel coordinates.

A confirmation dialog box appears.

3 Select OK, and press the MENU SEL/ENTER dial.

4 When you are finished registering, use the BACK button or ASSIGN 1 button to return to the <Manual RPN> settings screen.

Notes

- The pixel that appears in the center of the cross cursor will appear with correction applied in real time while the cursor is displayed. This occurs only while the cursor is displayed, and the pixel will not be stored as a correction pixel unless registration is performed.
- Before performing registration, press the ASSIGN 3 button to switch the cursor display On and Off, and verify that the pixel you want to register is positioned properly in the center of the cursor. Similarly, switch the cursor display On and Off after performing registration to verify that registration was performed properly.

3-8-2 Deleting Registered RPNs

When Operation is set to Delete in the <Manual RPN> settings screen, the registration deletion screen appears. All ASSIGN buttons are disabled in this mode, and operations can only be performed from the VF menu.

1 Select the Jump button, press the MENU SEL/ENTER dial, and move the cursor position to the registered pixel.

Press the MENU SEL/ENTER dial repeatedly until the cursor is on the target pixel.

2 Select the Delete button, and press the MENU SEL/ENTER dial.

A confirmation dialog box appears.

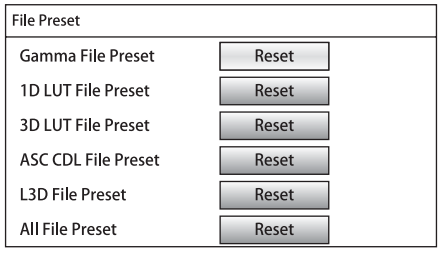
3 Select the OK button, and press the MENU SEL/ENTER dial.

The pixel coordinates are deleted and removed as targets for correction.

3-9 Restoring the Factory Default Settings

Settings can be restored to their factory default values by executing the Gamma File Preset, 1D LUT File Preset, 3D LUT File Preset, ASC CDL File Preset, L3D File Preset, and All File Preset commands on the <File Preset> page in the File menu *(page 66)*, and the All Reset command on the <Network Reset> page in the Network menu *(page 68)*. Execute the All File Preset command after upgrading software or replacing boards.

<File Preset> page



Menu Configuration and Detailed Settings

Chapter 4

4-1 Subdisplay Menu List

This section describes the menu list displayed on the subdisplay.

Item		Default	Set or display value	Remarks
Settings page 1				
Video format	FPS	N/A	S47.95p, S48p: 1 to 48 S59.98p, S60p: 1 to 60 S119.88p, S120p: 1 to 120	When using the mechanical rotary shutter, the minimum value is 8.
	Frame rate	23.98p	F65RAW mode: 23.98p, 24p, 29.97p, 25p, 50p, 59.94p, S47.95 (23.98p), S48 (24p), S59.94p (23.98p), S59.94p (29.97p), S60p (24p), S60p (25p) HD mode (4:4:4 RGB): 23.98p, 29.97p, 24p, 25p, S59.94p (23.98p), S59.94p (29.97p), S60p (24p), S60p (25p) HD mode (4:2:2 YcbCr): 23.98p, 29.97p, 24p, 25p, 50p, 59.94p, S59.94p (23.98p), S59.94p (29.97p), S60p (24p), S60p (25p) F65RAW-HFR mode: 23.98pForPB, 29.97pForPB, 24pForPB, 25pForPB, S119.88p (23.98p), S119.88p (29.97p), S120p (24p), S120p (25p)	
Electronic shutter		180.0	Step: 11.2, 22.5, 45.0, 90.0, 144.0, 150.0, 172.8, 180.0, 270.0, 360.0 Continuous: 4.2 to 360.0	
Mechanical rotary shutter		180.0	Step: 11.2, 22.5, 45.0, 90.0, 144.0, 150.0, 172.8, 180.0 Continuous: 11.2 to 180.0	Cannot be used in F65RAW-HFR mode.

Item	Default	Set or display value	Remarks
ND filter	Clear	F65RAW mode, HD mode: Clear, 0.9, 1.2, 1.5, 1.8, Close, Mainte F65RAW-HFR mode: Clear(HFR), Close, Mainte	Close: Filter closed Mainte: Maintenance mode, with no filter deployed (display only). Switched using the VF menu.
Sensitivity (Cine mode: EI value, Custom mode: dB value)	Cine mode: 800EI Custom mode: 0dB	Cine mode: 200EI, 250EI, 320EI, 400EI, 500EI, 640EI, 800EI, 1000EI, 1250EI, 1600EI, 2000EI, 2500EI, 3200EI Custom mode: –6dB, –3dB, 0dB, 3dB, 6dB, 9dB, 12dB	
Color temperature	5500K	3200K, 4300K, 5500K	
SDI2 Color		When Base Setting/Color Space is set to S-Gamut or Video Setting/Gamma Category is set to Special: Display value: S-Gamut, F900, 709CS Set value: S-Gamut, F900, ITU-R BT.709 All other cases: Off (display only)	Sets the color space for the image output from the SDI OUT2 connector.
SDI2 LUT		When Base Setting/Color Space is set to S-Gamut or Video Setting/Gamma Category is set to Special: 709(800%), S-Log2, HG8009G40, HG8009G33, [User1], [User2], [User3], [User4], [User5] to [User100] All other cases: Off (display only)	[User1] to [User100]: Name (max. 12 characters) of user MLUT read from external memory. Sets the LUT (look-up table) for the image output from the SDI OUT2 connector.
Settings page 2			
Reel number	N/A	001 to 999, --	Displays the reel number of the SRMemory card.
Fan operating mode	Auto2	Auto1, Auto2, Min, Max	Switches the operating mode of the fan. For details on the fan operating mode, see *"3-3-9 Selecting the Fan Operating Mode" (page 36)*.
Voltage (display only)	N/A	0.1 V increments	Displays the voltages of the 12 V and 24 V system power supplies.
Media remaining (display only)	N/A	0 to 999min, --min, FULL, 16h to 999h	Displays the remaining recording time for SR-R4 media.
File name		17 alphanumeric characters. (Next): Displayed when not recording or playing back.	Displays the name of the next file on the SRMemory card that is to be recorded (when not playing or recording) or the name of the file that is currently being played/recorded.
Time code (display only)	N/A	TCG, TCR, UBG, UBR, TM1, TM2	Displays the SR-R4 time code.
Settings page 3			
ASSIGN button 1	Mag	Off, Mag, Mag Position, Hi/Lo Key, Fan Mode, Rec Review, Highlight Clip Ind., SRMemory Eject	For details of each function, see *"3-3-14 Assigning Functions to the ASSIGN Buttons" (page 37)*.
ASSIGN button 2	Mag Position		
ASSIGN button 3	Hi/Lo Key		
ASSIGN button 4	Rec Review	Off, Mag, Mag Position, Hi/Lo Key, Fan Mode, Rec Review, Highlight Clip Ind., SRMemory Eject, Bars	

Item	Default	Set or display value	Remarks
Subdisplay brightness	4	1 to 4	
Self diagnostics (display only)	N/A	OK, Warning/error message	Displays self-diagnostics results. A message is displayed if an error occurs. *For details, see "Warning/Error Messages" (page 74).*

4-2 VF Menu List

This section describes the VF menu items displayed in the viewfinder or on a monitor.

Note

The items displayed in a web browser or on a tablet device are basically the same as the VF menu, with one exception. The item not displayed on these devices is noted in the following table.

The VF menu has the following structure.

Menu	Setting
Camera	Sets the camera's basic functions and image recording settings.
VF/SDI	Sets the monitor signal settings for output on the VF and SDI OUT connectors.
Display Info	Sets the display of status information and marker display in the viewfinder and on a monitor.
Config	Sets the ASSIGN buttons, warning voltage values, and cameras settings not related to output image signals.
File	Restores the menu settings to their factory default values.
Network	Sets wired/wireless LAN networks settings for connecting a camera. Not displayed in web browsers or on tablet devices.
Diagnosis	Displays self-diagnostics information.

4-2-1 Camera Menu

Page	Configuration item	Default	Settings	Remarks
<System Format> Signal format settings	RAW/HD	F65RAW	F65RAW, HD, F65RAW-HFR	Sets the recording mode.
	Frame Rate	23.98p	F65RAW mode: 23.98p, 24p, 29.97p, 25p, 50p, 59.94p, S47.95 (23.98p), S48 (24p), S59.94p (23.98p), S59.94p (29.97p), S60p (24p), S60p (25p) HD mode (4:4:4 RGB): 23.98p, 29.97p, 24p, 25p, S59.94p (23.98p), S59.94p (29.97p), S60p (24p), S60p (25p) HD mode (4:2:2 YcbCr): 23.98p, 29.97p, 24p, 25p, 50p, 59.94p, S59.94p (23.98p), S59.94p (29.97p), S60p (24p), S60p (25p) F65RAW-HFR mode: 23.98pForPB, 29.97pForPB, 24pForPB, 25pForPB, S119.88p (23.98p), S119.88p (29.97p), S120p (24p), S120p (25p)	Sets the frame rate.
	Signal Mode	4:4:4 RGB	4:4:4 RGB, 4:2:2 YCbCr	Selects the recording signal format in HD mode.
	Bit Depth	10bit	10bit, 12bit	In HD mode, displays the number of recording bits (Display only).
	Encode	F65RAW-SQ	F65RAW mode: F65RAW-SQ, F65RAW-Lite HD mode (4:4:4 RGB): SR-SQ, SR-HQ HD mode (4:2:2 YcbCr): SR-SQ, SR-Lite F65RAW-HFR mode: F65RAW-HFR (display only)	Selects the recording mode.
	Set	--	Execute by Enter.	

Page	Configuration item	Default	Settings	Remarks
<Base Setting> Basic settings	Shoot Mode	Cine	Cine, Custom	Cine: This mode is used to adjust and check the LUT and Color for the VF/ SDI output signals without processing the main image signal (color grading is performed in post-production). Custom: This mode adjusts the main image signal on-location.
	Color Space	S-Gamut	S-Gamut, S-Gamut3 (S-Log3), S-Gamut3.Cine (S-Log3), F900	Selects the colors reproducibility. It is fixed to S-Gamut* in F65RAW mode. S-Gamut: This mode enables recording with wide color space comparable to film cameras. S-Gamut3 (S-Log3): This mode greatly improves color reproduction by correcting image distortion with the same color gamut as S-Gamut. The Gamma of the Video Setting is fixed at 4:S-Log3. S-Gamut3.Cine(S-Log3): This mode enables recording with a color gamut generated by converting the color gamut from S-Gamut3. The Gamma of the Video Setting is fixed at 4:S-Log3. F900: This mode enables color reproduction equivalent to conventional cameras.
	Color Temperature	5500K	3200K, 4300K, 5500K	3200K, 4300K: Tungsten 5500K: Daylight
	ND Filter	Clear	F65RAW mode/HD mode: Clear, 0.9, 1.2, 1.5, 1.8, Close, Maintenance F65RAW-HFR mode: Clear(HFR), Maintenance	Clear: No filter is used. 0.9: 1/8 optical transmittance 1.2: 1/16 optical transmittance 1.5: 1/32 optical transmittance 1.8: 1/64 optical transmittance Close: Filter closed Maintenance: Maintenance mode, with no filter deployed.
	Exposure Index	800EI (6.0E)	200EI (4.0E), 250EI (4.4E), 320EI (4.7E), 400EI (5.0E), 500EI (5.4E), 640EI (5.7E), 800EI (6.0E), 1000EI (6.4E), 1250EI (6.7E), 1600EI (7.0E), 2000EI (7.4E), 2500EI (7.7E), 3200EI (8.0E)	Sets the sensitivity as an EI value (Cine mode only).
<Shutter/FPS> Shutter settings	Shutter	Electronic	Electronic, M-Rotary, Off	Displays the currently selected shutter.
	Degree	180.0	--	Displays the shutter angle (4.2 to 360.0). (Display only)
	Second	1/47.952	--	Displays the aperture time (Display only).
	Step	180.0	360.0, 270.0, 180.0, 172.8, 150.0, 144.0, 90.0, 45.0, 22.5, 11.2	Changes the shutter value in step mode. 360.0 and 270.0 are available for electronic shutter only.
	Continuous	180.0	4.2 to 360.0 (Electronic) 11.2 to 180.0 (M. Rotary)	Changes the shutter value in continuous variable mode.
	FPS	--	1 to 120 (Electronic) 8 to 60 (M. Rotary)	Sets the number of frames shot per second when Select FPS format is selected.

Page	Configuration item	Default	Settings	Remarks
<Shutter Assign> Shutter step settings	Step 1	360.0	4.2 to 360.0	Registers the shutter angles for each step.
	Step 2	270.0		
	Step 3	180.0		
	Step 4	172.8		
	Step 5	150.0		
	Step 6	144.0		
	Step 7	90.0		
	Step 8	45.0		
	Step 9	22.5		
	Step 10	11.2		
	Add	--	Execute by Enter.	Adds a shutter step value.
	Delete	--	Execute by Enter.	Deletes a shutter step value.
	Preset	--	Execute by Enter.	Restores the shutter step values to factory default values.

Page	Configuration item	Default	Settings	Remarks
<Video Setting> Video settings	Master Gain	0dB	When Gamma is set to S-Log2 in F65RAW, F65RAW-HFR, or HD mode: –6dB (5.0E), –3dB (5.5E), 0dB (6.0E), +3dB (6.0E), +6dB (6.0E), +9dB (6.0E), +12dB (6.0E) When Gamma is set to HG8009G40 or HG8009G33 in HD mode: –6dB (5.0E), –3dB (5.3E), 0dB (5.3E), +3dB (5.3E), +6dB (5.3E), +9dB (5.3E), +12dB (5.3E) When Gamma is set to User1 to User5 in HD mode: –6dB, –3dB, 0dB, +3dB, +6dB, +9dB, +12dB	Sets the sensitivity using dB values (Custom mode only).
	Gamma Category	Special	Hyper, Special, User	Selects the gamma category (HD mode only).
	Hyper	7:HG8009G40	7:HG8009G40 8:HG8009G33	Specifies the specific table for the selected gamma category (HD mode only). Hyper category is available in Custom mode only. For User category, imported, F65 gamma can be selected. The “1:709(800%)” table is overwritten if a user-defined table is imported. When S-Gamut3 or S-Gamut3.Cine is selected for Color Space in Base Setting, this is fixed at 4:S-Log3.
	Special	3:S-Log2	3:S-Log2, 4:S-Log3	
	User	1:709(800%)	1:709(800%)	
	White	--	--	Adjusts the gain of the main line signal (Custom mode only).
	R	0	–256 to 255	
	G	0	–256 to 255	
	B	0	–256 to 255	
	Black	--	--	Adjusts the black level of the main line signal (Custom mode only).
	Master	0	–256 to 255	
	R	0	–256 to 255	
	G	0	–256 to 255	
	B	0	–256 to 255	
<Bars/Test Signal> Color bar and test signal settings	Color Bar	Off	On, Off	Turns the output of color bars On/Off.
	Test Signal	Off	Off, Saw, Step	Sets the test waveform output.

4-2-2 VF/SDI Menu

Page	Configuration item	Default	Settings	Remarks
<SDI1 Look> SDI1 look settings	Select	Look Profile	ACES-Proxy10, Graded ACES, Look Profile, S-Log2/S-Gamut, S-Log3/ S-Gamut3, S-Log3/ S-Gamut3.Cine, Color/1D LUT, 3D LUT, L3D File	Sets the look type of the video output image on the SDI OUT1 connector. ACES-Proxy10: Outputs an image with applied 10-bit approximation of a log curve specified by ACES (Academy Color Encoding Specification). Graded ACES: Outputs ACES-Proxy10 images with RRT and ODT (Gamma 2.4) applied. Look Profile: Selects the look, using a look number, for the output of images suitable as the starting point for color grading or images close to print film. S-Log2/S-Gamut: Outputs images in S-Log2 or S-Gamut. S-Log3/S-Gamut3: Outputs images in S-Log3 or S-Gamut3. S-Log3/S-Gamut3.Cine: Outputs images in S-Log3 or Sgamut3.Cine. Color/1D LUT: Outputs images with customized Color and 1D LUT settings. 3D LUT: Outputs images with 3D LUT applied. L3D File: Outputs images with F65 L3D File applied.
	EI Applied	On	On, Off	Enables or disables the exposure index function when Select is set to ACES-Proxy10, S-Log2/S-Gamut, S-Log3/ S-Gamut3, or S-Log3/S-Gamut3.Cine.
	Process	1D LUT-3D LUT-CDL	1D LUT-CDL-3D LUT, 1D LUT-3D LUT-CDL	Specifies the ACS-CDL processing sequence when Select is set to Look Profile, 3D LUT, or L3D File.
	Look Profile #	1	1 to 4	Displays the selected look profile number.
	Look	1: LC-709	1: LC-709, 2: LC-709TypeA, 3: SLog2-709, 4: Cine+709	Refer to the “Look Profile White Paper” issued separately (pending).
	Color	S-Gamut	S-Gamut, F900, ITU-R BT.709	Sets the color reproduction of the video output image on the SDI OUT1 connector. S-Gamut: Wide color space comparable to film cameras. F900: Color space equivalent to conventional cameras. ITU-R BT.709: Color space equivalent to ITU-R BT.709.

Page	Configuration item	Default	Settings	Remarks
<SDI1 Look> SDI1 look settings	1D LUT	S-Log2	709(800%), S-Log2, HG8009G40, HG8009G33, [User1], [User2], [User3], [User4], [User5] to [User100]	Selects the 1D LUT for the video output on the SDI OUT1 connector. 709(800%): Signal extending the dynamic range up to 800% based on ITU-R709. S-Log2: Non-adjustable signal for required post-production processing. Up to 1300% input light level can be reproduced. HG8009G40: Signal using hypergamma with 800% dynamic range, 109% white limit, and 40% video output for 18% gray card. HG8009G33: Signal using hypergamma with 800% dynamic range, 109% white limit, and 33% video output for 18% gray card. [User1] to [User100]: Imported, user-defined LUT signals. a)
	3D LUT	Through	Through, [User1], [User2], [User3], [User4], [User5] to [User10]	Selects the 3D LUT for the SDI OUT1 connector's video signal. When using 3D LUT, Color is fixed at S-Gamut3.Cine and 1D LUT is fixed at S-Log3.
	L3D File	Through	Through, [User1], [User2], [User3], [User4], [User5] to [User10]	Selects the L3D file for the SDI OUT1 connector's video signal. When Through is selected, Color is fixed at S-Gamut3.Cine and 1D LUT is fixed at S-Log3. When a L3D File is selected, the specified Process, Color, 1D LUT, and 3D LUT will be configured.
	ASC CDL	Off	On, Off	Sets whether to apply an ASC CDL.
	CDL	New CDL	New CDL, [User1], [User2], [User3], [User4], [User5] to [User100], Edit Mode	[User1] to [User100] is displayed only when there are imported CCC/CDL files. Edit Mode is displayed only when editing ASC CDL values. The ASC CDL can be modified from a web browser or tablet device.

Page	Configuration item	Default	Settings	Remarks
<SDI1 ASC CDL> SDI1 ASC CDL settings	InputDescription	--	--	Display only. Displays the character string defined in the InputDescription tag of the CDL/CCC file. “Undefined” is displayed if the InputDescription tag is not present.
	Slope			Adjusts the individual R, G, B values of the ASC CDL slope function. Display only. Settings can be modified from a tablet device.
	R	1.000	0.000 to 3.999	
	G	1.000	0.000 to 3.999	
	B	1.000	0.000 to 3.999	
	Offset	--	--	Adjusts the individual R, G, B values of the ASC CDL offset function. Display only. Settings can be modified from a tablet device.
	R	0.000	–1.000 to 0.999	
	G	0.000	–1.000 to 0.999	
	B	0.000	–1.000 to 0.999	
	Power	--	--	Adjusts the individual R, G, B values of the ASC CDL power function. Display only. Settings can be modified from a tablet device.
	R	1.000	0.400 to 1.600	
	G	1.000	0.400 to 1.600	
	B	1.000	0.400 to 1.600	
	Saturation	1.000	0.000 to 2.000	Adjusts the value of the ASC CDL saturation function. Display only. Settings can be modified from a tablet device.
<SDI1 Look Memory> SDI1 look memory settings	1	S-Log2/S-Gamut, ASC CDL Off	--	Saves SDI1 look settings and displays the set values. You can save up to 16 items on one page.
	2	#1, ASC CDL Off		
	3	#2, ASC CDL Off		
	4	#3, ASC CDL Off		
	5	#4, ASC CDL Off		
	Add	--	Execute by Enter.	Saves the current SDI1 look settings.
	Delete	--	Execute by Enter.	Deletes the selected saved settings.
	Preset	--	Execute by Enter.	Deletes all settings.

Page	Configuration item	Default	Settings	Remarks
<SDI2 Look> SDI2 look settings	Select	Color/1D LUT	S-Log2/S-Gamut, Color/ 1D LUT	Sets the look type of the video output image on the SDI OUT2 connector. S-Log2/S-Gamut: Outputs images in S-Log2 or S-Gamut. Color/1D LUT: Outputs images with the specified Color and 1D LUT settings.
	Color	ITU-R BT.709	S-Gamut, F900, ITU-R BT.709	Sets the color reproduction of the video output image on the SDI OUT2 connector. S-Gamut: Wide color space comparable to film cameras. F900: Color space equivalent to conventional cameras. ITU-R BT.709: Color space equivalent to ITU-R BT.709.
	1D LUT	709(800%)	709(800%), S-Log2, HG8009G40, HG8009G33, [User1], [User2], [User3], [User4], [User5] to [User100]	Selects the 1D LUT for the video output on the SDI OUT2 connector. 709(800%): Signal extending the dynamic range up to 800% based on ITU-R709. S-Log2: Non-adjustable signal for required post-production processing. Up to 1300% input light level can be reproduced. HG8009G40: Signal using hypergamma with 800% dynamic range, 109% white limit, and 40% video output for 18% gray card. HG8009G33: Signal using hypergamma with 800% dynamic range, 109% white limit, and 33% video output for 18% gray card. [User1] to [User100]: Imported, user-defined LUT signals.
<VF/HD-Y Source>	Select	SDI-OUT2	SDI-OUT1, SDI-OUT2	Switches the output source for the video signals output on the VF and HD-Y connectors.
<VF/SDI Signal> Output signal settings	Effective Area	4096:2160	4096:2160, 3840:2160, Anamorphic Unsqueeze x2	Selects the video for output (F65RAW, F65RAW-HFR only).
	Color	Color	Color, R, G, B	Selects the output RGB channels.
	Scan Type (Over 30p)	Interlace	Interlace, Frame Drop	Selects whether to output video with reduced distortion of fast-moving subjects when Frame Rate is set to 50p or higher.
	Image Invert Select	Off	Off, Vertical, Horizontal, Vertical & Horizontal	Selects the type of image inversion. Off: No image inversion Vertical: Top to bottom Horizontal: Left to right Vertical & Horizontal: Top to bottom and left to right

Page	Configuration item	Default	Settings	Remarks
<Digital VF Picture> Output signal settings for DVF-EL100	Color	0	–99 to 0 to +99	Adjusts the color saturation of the image.
	Contrast	0	–99 to 0 to +99	Adjusts the contrast of the image.
	Brightness	0	–99 to 0 to +99	Adjusts the brightness of the image.
	Peaking	On	On, Off	Enables/disables the peaking function.
	Frequency	High	Normal, High	Selects whether to use the standard or high peaking frequency.
	Level	50	0 to 99	Sets the peaking level.
	Spare Assign	Hi/Lo Key	Off, Hi/Lo Key, Peaking, Mag Position, Highlight Clip Ind.	Assigns camera functions to the Spare button.

a) When a User LUT is used, the signal level that is output on the SDI OUT1 connector is scaled to 100% level.

4-2-3 Display Info Menu

Page	Configuration item	Default	Settings	Remarks
<Exposure Assist> Exposure assistant function settings	Highlight Clip Indicator(SDI2)	On	On, Off	Applies false colors to areas of specific brightness.
<Mix> Status, marker display settings	[Status/Menu] VF/HD-Y	On	On, Off	Displays the status/menu in the viewfinder.
	SDI-OUT1	On	On, Off	Displays the status/menu on the image output on the SDI OUT1 connector.
	SDI-OUT2	On	On, Off	Displays the status/menu on the image output on the SDI OUT2 connector.
	Brightness	3	1 to 4	Sets the brightness of the status information and menu displays.
	[Marker] VF/HD-Y	On	On, Off	Displays markers in the viewfinder.
	SDI-OUT1	On	On, Off	Displays markers on the image output on the SDI OUT1 connector.
	SDI-OUT2	On	On, Off	Displays markers on the image output on the SDI OUT2 connector.
	Color	White	White, Yellow, Cyan, Green, Magenta, Red, Blue	Sets the display color of markers.
	Edge	On	On, Off	Sets the edge display of markers.
	Brightness	7	1 to 10	Adjusts the brightness of the marker display.

Page	Configuration item	Default	Settings	Remarks
<Status> Status indicator display item settings	System Format	Off	On, Off	Turns the signal format indicator On/Off.
	FPS	Off	On, Off	Turns the FPS value indicator On/Off.
	ND Filter	Off	On, Off	Turns the ND filter indicator On/Off.
	Color Temperature	Off	On, Off	Turns the color temperature indicator On/Off.
	EI/Master Gain	Off	On, Off	Turns the EI value indicator On/Off.
	Shutter	Off	On, Off	Turns the shutter operation status indicator On/Off.
	SDI1 Look	Off	On, Off	Turns the SDI1 Look setting indicator On/Off.
	SDI2 Look	Off	On, Off	Turns the SDI2 Look setting indicator On/Off.
	Battery DC IN 12V	Off	On, Off	Turns the 12 V supply voltage indicator On/Off.
	Battery DC IN 24V	Off	On, Off	Turns the 24V supply voltage indicator On/Off.
	Media Remain/File Name	Off	On, Off	Turns the media remaining and file name indicator On/Off.
	Time Code	Off	On, Off	Turns the time code indicator On/Off.
	Message	On	On, Off	Turns the message indicator On/Off.
	Highlight Clip Indicator	On	On, Off	Turns the Highlight Clip Indicator function On/Off.
	Rec	On	On, Off	Turns the recording indicator On/Off.
	Lens	Off	On, Off	Turns the focus, iris, and zoom position indicators for the attached lens On/Off.
<Marker> Marker indicator display item settings	Center	Off	On, Off	Turns the center marker On/Off.
	Effective	Off	On, Off	Turns the effective pixel area marker indicator On/Off.
	Aspect Ratio	2.39:1	2.39:1, 2.35:1, 1.90:1, 1.85:1, 1.78:1, 1.66:1, 1.33:1, Variable	Sets the aspect ratio when Effective is set to On. Displays “Variable (Width/Height:1)” ratio when Aspect Ratio is set to Variable.
	Width	960	960 to 1920	Specifies the width of the effective pixel area when Aspect Ratio is set to Variable.
	Height	540	540 to 1080	Specifies the height of the effective pixel area when Aspect Ratio is set to Variable.
	Mask	Off	On, Off	Enables/disables darkening of image outside the selected Aspect Marker.
	Level	2	0 to 4	Sets the darkness level of the image outside the selected Aspect Marker.
<Cursor> Cursor indicator display item settings	Box	Off	On, Off	Turns the box cursor On/Off.
	Aspect Ratio	Variable (1.78:1)	--	Displays “width/height:1.”
	Horizontal	0	–958 to 958	Specifies the horizontal position from the center.
	Vertical	0	–538 to 538	Specifies the vertical position from the center.
	Width	960	320 to 1920	Specifies the width of the box cursor.
	Height	540	180 to 1080	Specifies the height of the box cursor.

4-2-4 Config Menu

Page	Configuration item	Default	Settings	Remarks
<Switch Assign> ASSIGN button function assignment	Assign 1	Mag	Off, Mag, Mag Position, Hi/Lo Key, Fan Mode, Rec Review, Highlight Clip Ind., SRMemory Eject	Off: No function is allocated. Mag: Displays a magnified image in the viewfinder and on the SDI OUT connectors. Each time the button is pressed, the magnification changes between 2-times, 4-times, and Off. When the magnification is 2-times or 4-times, the ASSIGN button allocated with the Mag function is lit. Mag Position: Selects the position of the image that is magnified by the Mag function. Each time the button is pressed, the position moves from top left to bottom right. When the display is magnified, the ASSIGN button allocated with the Mag Position function is lit. Hi/Lo Key: Temporarily changes LUT for checking the high-luminance brightness and low-luminance darkness of the image in the viewfinder and from the SDI OUT connectors. The button toggles between high-luminance check (gain reduction), low-luminance check (gain amplification), and normal. Fan Mode: Switches the fan operating mode. For details on the fan operating mode, see *"3-3-9 Selecting the Fan Operating Mode" (page 36)*. Rec Review: Plays the video just recorded. Highlight Clip Ind.: Indicates the blown-out areas of the image output on the SDI OUT2 connector or in the viewfinder in red. SRMemory Eject: Closes the file and unmounts the SRMemory card inserted in the SR-R4, then unlocks the lid of the SR-R4. Bars: Outputs color bars.
	Assign 2	Mag Position		
	Assign 3	Hi/Lo Key		
	Assign 4	Rec Review	Off, Mag, Mag Position, Hi/Lo Key, Fan Mode, Rec Review, Highlight Clip Ind., SRMemory Eject, Bars	

Page	Configuration item	Default	Settings	Remarks
<Slate Data> Slate information display	Reel*	--	001 to 999	Displays information specified on the “Slate” page of the F65Remote Look Plus (excluding Reel, Camera Index, Shot). * For Reel, Camera Index, Shot: Displays information specified on the SR-R4. The values for Reel and Camera Index only can be modified.
	Scene	--	--	
	Take	--	--	
	Camera Index*	--	A to Z	
	Cut	--	--	
	Shot*	--	--	
	Project	--	--	
	Production	--	--	
	Director Name	--	--	
	Director of Photography Name	--	--	
	Description	--	--	
	Next	--	Execute by ENTER.	Moves to next page.
	Back	--	Execute by ENTER.	Moves to previous page.
	Clear	--	Cancel/OK Execute by ENTER.	Clears the items (excluding Reel, Camera Index, Shot).
<Fan Mode> Fan operating mode select	Fan Mode	Auto2	Auto1, Auto2, Min, Max	Auto1: Automatic control, according to the internal temperature. Auto2: Automatic control, according to the internal temperature, and maintains quiet operation when recording. Min: Quiet mode, without synchronization with recording (can be used at ambient temperatures of less than 30°C (86°F)). Max: High-speed mode, fan rotates at maximum speed.
Mag	Mag Type	x2/x4	x2/x4, x2, x4	Specifies the magnification level that is used for the display when you press an ASSIGN button to which the Mag function is assigned.
	Auto Off Timer	On	On, Off	Enables/disables the function that returns the magnified display to normal after 30 seconds.
<Date/Hour Meter> Date/Time settings and accumulated ON time display	Date	--	mm/dd/yyyy	Sets the current date.
	Time	--	hh:mm	Sets the current time.
	Date Type	M/D/Y	M/D/Y, M/D	Selects the date display format.
	Hour Meter	--	0H to 99999H	Displays the accumulated powered-ON time since reset from the Service menu.
<Genlock Sync> Sync signal settings	Input Signal	HD-Y	HD-Y, HD-SDI	Selects the input connector for the external sync signal. The genlock signal must be reapplied after modifying this setting. HD-Y: HD 3-level sync HD-SDI: HD-SDI input
	Status	--	Locked, Not Locked, No Signal	Display only. Locked: Synchronized successfully. Not Locked: Not synchronized. No Signal: There is no input signal.

Page	Configuration item	Default	Settings	Remarks
<Battery Alarm> Supply voltage settings	DC IN (24V) Type	Type1	Type1, Type2	Selects the 24 V system supply settings.
	Near End	22.2 V	20.5 V to 30.0 V	Sets the power supply voltage drop warning level for the 24 V supply.
	End	21.6 V	20.0 V to 24.0 V	Sets the power supply exhausted warning level for the 24 V supply.
	DC IN (12V) Type	Type1	Type1, Type2	Selects the 12 V system supply settings.
	Near End	11.1 V	11.0 V to 17.0 V	Sets the power supply voltage drop warning level for the 12 V supply.
	End	10.8 V	10.5 V to 14.0 V	Sets the power supply exhausted warning level for the 12 V supply.

4-2-5 File Menu

Page	Configuration item	Default	Settings	Remarks
<Gamma File> Gamma file settings	1			Sets the imported F65 gamma file (.gmd file name extension). A preset value of 709(800%) gamma is stored in configuration item 1 as the default gamma value. A user gamma file can be imported, overwriting the preset value. This value is selected when Gamma File Preset is executed on the <File Preset> page. Importing a gamma file stores all gamma data within the camera and is user-selectable.
	Name	709(800%)	(Up to 12 characters), --	
	Comment	Preset entry		
	2			
	Name	--	(Up to 12 characters), --	
	Comment	--		
	3			
	Name	--	(Up to 12 characters), --	
	Comment	--		
	4			
	Name	--	(Up to 12 characters), --	
	Comment	--		
	5			
	Name	--	(Up to 12 characters), --	
	Comment	--		
	Import	--	Execute by Enter.	Imports an F65 gamma file with .gmd file name extension (up to five) from USB flash memory or SD memory card.
<1D/3D LUT File> 1D/3D LUT file display	Select	1D LUT	1D LUT, 3D LUT	Switches between 1D LUT file or 3D LUT file for the LUT file to be displayed.
	Data	--	(Up to 12 characters)	Displays the data name of the imported F65 1D LUT file (.ltd file name extension) or F65 3D LUT file (.cube file name extension).
	File	--		Displays the file name of the imported F65 1D LUT file (.ltd file name extension) or F65 3D LUT file (.cube file name extension).
	Import		Execute by Enter.	Imports an F65 1D LUT file with .ltd file name extension (up to 100) or an F65 3D LUT file with .cube file name extension (up to 10). When you overwrite an imported file, the information for the same file registered to the look directory will also be overwritten.
	Delete		Execute by Enter.	Deletes the selected file.

Page	Configuration item	Default	Settings	Remarks
<ASC CDL File> ASC CDL file display	Data	--	(Up to 17 characters)	Displays information in the ColorCorrection id tag of the imported ASC CDL/CCC file. Displays the file name instead if there is no ColorCorrection id tag in the ASC CDL/ CCC file.
	File	--		Displays the file name of the imported ASC CDL/CCC file.
	Import		Execute by Enter.	Up to 100 ASC CDL/CCC files can be imported. When you overwrite an imported file, the information for the same file registered to the look directory will also be overwritten.
	Delete		Execute by Enter.	Deletes the selected file.
<L3D File> L3D file settings	Data	--	(Up to 12 characters)	Displays the data name of the imported F65 L3D file (.l3d file name extension).
	File	--	(Up to 12 characters)	Displays the file name of the imported F65 L3D file (.l3d file name extension).
	Import	--	Execute by Enter.	Imports up to 10 F65 L3D files (.l3d file name extension). When you overwrite an imported file, the information for the same file registered to the look directory will also be overwritten.
	Delete	--	Execute by Enter.	Deletes the selected file.
<All File> Configuration file import/export	Import	--	Execute by Enter.	Imports the settings of all menu parameters (excluding the following) from a configuration file. • All Network menu items • <Date/Hour Meter> in the Config menu • Gamma File, 1D LUT File, 3D LUT File, ASC CDL File, and L3D File in the File menu
	Export	--	Execute by Enter.	Exports the settings of all menu parameters (excluding the following) to a configuration file. • All Network menu items • <Date/Hour Meter> in the Config menu • Gamma File, 1D LUT File, 3D LUT File, ASC CDL File, and L3D File in the File menu
<File Preset> Restore settings to factory default	Gamma File Preset	--	Execute by Enter.	Deletes all gamma files, and restores the factory default setting.
	1D LUT File Preset	--	Execute by Enter.	Deletes all 1D LUT files, and restores the factory default setting.
	3D LUT File Preset	--	Execute by Enter.	Deletes all 3D LUT files, and restores the factory default setting.
	ASC CDL File Preset	--	Execute by Enter.	Deletes all ASC CDL files and restores the factory default settings.
	L3D File Preset	--	Execute by Enter.	Deletes all L3D files, and restores the factory default setting.
	All File Preset	--	Execute by Enter.	Restores all settings (excluding the following) to the factory default values. • All Network menu items • <Date/Hour Meter> in the Config menu • Gamma File, 1D LUT File, 3D LUT File, ASC CDL File, and L3D File in the File menu

Page	Configuration item	Default	Settings	Remarks
<Media Format> Formatting media	M.S./SD Format	--	Execute by Enter.	Initializes the media and creates folders for the F65.
	SRMemory Format	--	Execute by Enter.	Initializes the SRMemory.

4-2-6 Network Menu

This menu is not displayed in web browsers or on tablet devices.

Page	Configuration item	Default	Settings	Remarks
<LAN Setting> IP address settings	DHCP	Disabled	Enabled, Disabled	Sets whether to automatically obtain an IP address from a DHCP server.
	IP Address	192.168.1.1	0.0.0.0 to 255.255.255.255	If DHCP is enabled, displays the IP address obtained from the DHCP server.
	Subnet Mask	255.255.255.0	0.0.0.0 to 255.255.255.255	
	Default Gateway	0.0.0.0	0.0.0.0 to 255.255.255.255	
	Set	--	Execute by Enter.	
<Wi-Fi Setting> Wi-Fi settings	Wi-Fi	Disabled	Enabled, Disabled	Enables/disables the Wi-Fi settings. Enable for connection.
	Wi-Fi Status	No connectivity	Excellent, Good, Weak, No connectivity	Displays the communication/connection status.
	SSID	(Blank)	(Blank), String of up to 32 characters	Displays the network name.
	Network Type	--	Infra, ad-hoc	Displays the network connection mode.
	IP Address	--	0.0.0.0 to 255.255.255.255	Displays the value obtained from the DHCP server.
	Subnet Mask	--	0.0.0.0 to 255.255.255.255	
	Default Gateway	--	0.0.0.0 to 255.255.255.255	
	Scan Network	--	Execute by Enter.	Scans the network access point.
	Connect Manually	--	Execute by Enter.	Used to enter the network access point.
	ad-hoc Setting	--	Execute by Enter.	Configures ad-hoc network mode. You can select whether to use an IP address that can be automatically detected by F65Remote Look Plus, for example, or whether to use an arbitrary IP address.
	SSID	(Blank)	(Blank), String of up to 32 characters	Sets the network name. Displayed only when Scan Network is executed.
	Network Type	Infra	Infra, ad-hoc	Displays the connection mode.
	Authentication	WPA2PSK	Infra: WPAPSK, WPA2PSK ad-hoc: OPEN, SHARED	Sets the network authentication method. Displayed only when Scan Network is executed.
	Encryption	AES	Infra: TKIP, AES ad-hoc: WEP	Sets the data encryption method. Displayed only when Scan Network is executed.
	WEP Key Index	1	1, 2, 3, 4	Selects the WEP key index number when using ad-hoc mode.

Page	Configuration item	Default	Settings	Remarks
<Wi-Fi Setting> Wi-Fi settings	Input Select	ASCII8-63	ASCII8-63, HEX64, ASCII5, ASCII13, HEX10, HEX26	Selects the network encryption key format. ASCII8-63: 63 characters in 8-bit ASCII format. HEX64: 64 digits in hexadecimal format. ASCII5: 5 characters in ASCII format. ASCII13: 13 characters in ASCII format. HEX10: 10 digits in hexadecimal format. HEX26: 26 digits in hexadecimal format. ASCII5, ASCII13, HEX10, and HEX26 are valid only in ad-hoc mode.
	Key	(Blank)	63-character ASCII or 64-digit hexadecimal	Sets the network encryption key.
	Set	--	Execute by Enter.	
<Remote Setting> Remote control settings	Access Password	Disabled	Enabled, Disabled	Sets access permissions for remote control over a network.
		sonyf65	(Blank), String of up to 32 characters	Sets the password for access via a network.
<Network Reset> Network settings reset	Network Settings	--	Execute by Enter.	Resets the network settings.

4-2-7 Diagnosis Menu

Page	Configuration item	Default	Settings	Remarks
<Version> Version information display	System	--	V X.xx	Displays the version of the system, ICs, and software.
	DIF1 PLD	--	V X.xxy-yy	
	DIF1 CPU	--	V X.xxy-yy	
	DIF2 PLD	--	V X.xxy-yy	
	DIF2 CPU	--	V X.xxy-yy	
	DIF3 PLD	--	V X.xxy-yy	
	DIF3 CPU	--	V X.xxy-yy	
	DIF_CONF	--	V X.xxy-yy	
	VDA_FRONT	--	V X.xxy-yy	
	VDA_REAR	--	V X.xxy-yy	
	VDA_CONF	--	V X.xxy-yy	
	SY PLD	--	V X.xxy-yy	
	SY CPU	--	V X.xxy-yy	
	AT PLD	--	V X.xxy-yy	
	AT CPU	--	V X.xxy-yy	
	Update	--	Execute by Enter.	Updates the system. Consult your local Sony representative if you need to update the system.
<RPN> Image sensor adjustment	APR (Auto Pixel Restoration)	--	Execute by Enter.	Automatically adjusts the image sensor.
	Manual RPN	--	Execute by Enter.	Allows manual image sensor adjustment.
<Maintenance> Maintenance tasks	VF Delay (Clock)	1	0, 1, 2, 3, 4	Sets the delay of the viewfinder and HD-Y signals relative to the SDI signal.

Appendix

Metadata

The camera and lens metadata is output on the master output, and is recorded on the SR-R4. The output metadata is comprised by metadata in format based on SMPTE RDD18 and non-realtime metadata in proprietary format. Slate information entered using the F65Remote Look Plus application on a tablet device is output in non-realtime metadata.

The following metadata items are output.

RDD 18 format metadata set

Lens unit metadata set

Item name	Data type	Length (bytes)	Local tag	Meaning
Lens Unit Metadata	Set Key (UL)	16	–	Lens Unit Metadata Set Key. 06.0E.2B.34.02.53.01.01.0C.02.01.01.01.01.00.00
Length	BER Length	4	–	Metadata set length.
Iris Ring Position	UInt16	2	80.09	Relative position of the iris ring (only for lenses that support ARRI LDS)
Focus Ring Position	UInt16	2	80.0A	Relative position of the focus ring (only for lenses that support ARRI LDS)
Zoom Ring Position	UInt16	2	80.0B	Relative position of the zoom ring (only for lenses that support ARRI LDS)
Lens Attributes	UTF8 String	Variable	80.07	Lens classification, excluding Cooke /i lens.

Camera unit metadata set

Item name	Data type	Length (bytes)	Local tag	Meaning
Camera Unit Metadata	Set Key (UL)	16	–	Camera Unit Metadata Set Key. 06.0E.2B.34.02.53.01.01.0C.02.01.01.02.01.00.00
Length	BER Length	4	–	Metadata set length.
Exposure Index of Photo Meter	UInt16	2	81.15	Setting of the photo meter in ISO exposure index. Exposure Index value specified in Cine mode. Example: 1600 (for an exposure index of EI1600)
Neutral Density Filter Wheel Setting	UInt16	2	81.03	Built-in ND filter transmittance given by the denominator when expressed as a fraction 1/n. Example: 8 (for ND 0.9 (1/8))

Item name	Data type	Length (bytes)	Local tag	Meaning
Capture Frame Rate	Rational	8	81.06	Number of captured frames per second expressed as a 32-bit signed integer ratio. Example: 20000:1.001 (for S59.94p 20fps)
Image Sensor Readout Mode	UInt8	1	81.07	Image sensor readout mode. Fixed 02h value: Progressive frame in F65.
Shutter Speed (Angle)	UInt32	4	81.08	Shutter angle expressed in minutes (1/60 of a degree).
ISO Sensitivity	UInt16	2	81.0B	ISO sensitivity of the camera.
White Balance	UInt16	2	81.0E	White Balance value defined by the temperature in Kelvin.
Capture Gamma Equation	Label	16	32.10	Gamma characteristic applied to the main video signal expressed by the label value registered in SMPTE RP 224.
Gamma for CDL	UInt8	1	81.16	Label value of gamma characteristic that applies ASC CDL. 04h: S-Log2 05h: R709 Video 06h: ACES Proxy 07h: S-Log3/S-Gamut3 08h: S-Log3/S-Gamut3.Cine FFh: Undefined
ASC CDL V1.2	Array of Float16	28	81.17	Ten parameters defined by ASC CDL (V1.2).
Camera Attributes	UTF8 String	Variable	81.14	Model name and serial number of the camera.

Sony F65 camera metadata set

Item name	Data type	Length (bytes)	Local tag	Meaning
User Defined Acquisition Metadata	Set Key (UL)	16	–	User Defined Acquisition Metadata Set Key. 06.0E.2B.34.02.53.01.01. 0C.02.01.01.7F.01.00.00
Length	BER Length	4	–	Sony F65 camera metadata set length.
UDAM Set Identifier	AUID	16	E0.00	Sony F65 metadata set identifier. 20500000-f0c0-1181-9669-08004678031c
Effective Marker Coverage	Rational	8	E1.01	Ratio of the number of pixels of the main signal area enclosed by the effective marker frame to the maximum number of pixels of the main signal in the horizontal direction. Example: 3840:4096 (for F65RAW with effective marker aspect ratio of 1.78:1)
Effective Marker Aspect Ratio	Rational	8	E1.02	Aspect ratio of the number of pixels of the main signal area enclosed by the effective marker frame. Example: 3840:2160 (for F65RAW with effective marker aspect ratio of 1.78:1)
Camera Process Discrimination Code	Uint16	2	E1.03	For F65 internal use only.
Rotary Shutter Mode	Boolean	1	E1.04	Mechanical rotary shutter usage. TRUE: Mechanical rotary shutter is on. FALSE: Electronic shutter is on or both shutters are off.
Raw Black Code Value	Uint16	2	E1.05	Code value of reference black level (shielded sensor) (F65RAW/F65RAW-HFR mode output only).
Raw Gray Code Value	Uint16	2	E1.06	Code value of light from 18% reflectance chart at suitable exposure (F65RAW/F65RAW-HFR mode output only).

Item name	Data type	Length (bytes)	Local tag	Meaning
Raw White Code Value	Uint16	2	E1.07	Code value of light from 90% reflectance chart at suitable exposure (F65RAW/F65RAW-HFR mode output only).
Monitoring Base Curve	Label	16	E1.0B	Label value, registered in SMPTE RP 224, indicating the base curve when ASC CDL adjustment is added for the monitor video on SDI-OUT1. However, for user defined characteristics, this indicates color gamuts based on the numbers as follows. User defined curve 6: S-Gamut User defined curve 7: S-Gamut3 User defined curve 8: S-Gamut3.Cine
Monitoring Descriptions	UTF8 String	12	E1.09	String indicating the combined SDI-OUT1 monitor characteristic. Example for each SDI1 Look Select setting: • ACES-Proxy10: “ACES-Proxy10” • Graded ACES: “Graded ACES” • Look Profile: “SonyProf1: LC_709” • S-Log3/S-Gamut3.Cine: “S-Log3/S-Gamut3.Cine” On this unit, “based” is appended to the combined characteristic string to indicate that video adjustment using the ASC CDL function is possible. Example: “SonyProf1: LC_709 based”

Cooke Protocol Lens metadata set

Item name	Data type	Length (bytes)	Local tag	Meaning
User Defined Acquisition Metadata	Set Key (UL)	16	–	User Defined Acquisition Metadata Key 06.0E.2B.34.02.53.01.01.0C.02.01.01.7F.01.00.00
Length	BER Length	4	–	Cooke Protocol Lens metadata set length.
UDAM Set Identifier	AUID	16	E0.00	Cooke Protocol Lens metadata set identifier.
Cooke Protocol Calibration Type	UInt8	1	E2.03	Lens data distance unit. 0: mm 1: 0.1 inch
Cooke Protocol Binary Metadata	Data Stream	Variable	E2.01	Lens position data in binary format defined by Cooke /i protocol.
Cooke Protocol User Metadata	Data Stream	Variable	E2.02	Cooke /i protocol user data.
Lens Attribute	UTF8 String	Variable	80.07	Lens serial number.

Non-realtime metadata

Item name	Data type	Length (bytes)	Local tag	Meaning
Slate1 Unit Metadata	Set Key (UL)	1	–	Local definition key (01) for the first packet.
Length	4-byte length	4	–	Data length of first packet, excluding the Key and Length attributes.
Description	UTF8 String	Variable (128 max.)	01.01	Comment area.
Project	UTF8 String	Variable (24 max.)	01.02	Name of project.
Director Name	UTF8 String	Variable (24 max.)	01.03	Name of director.

Item name	Data type	Length (bytes)	Local tag	Meaning
Director Of Photography Name	UTF8 String	Variable (24 max.)	01.04	Name of director of photography.
Production	UTF8 String	Variable (24 max.)	01.05	Name of production house.
Slate2 Unit Metadata	Set Key (UL)	1		Local definition key (02) for the second packet.
Length	4-byte length	4		Data length of second packet, excluding the Key and Length attributes.
Reel	UTF8 String	Variable (8 max.)	02.01	Reel number.
Scene	UTF8 String	Variable (8 max.)	02.02	Scene number.
Cut	UTF8 String	Variable (8 max.)	02.03	Cut number.
Take	UTF8 String	Variable (8 max.)	02.04	Take number.
Shot	UTF8 String	Variable (8 max.)	02.05	Shot number.
Camera Index	UTF8 String	Variable (8 max.)	02.06	Index used to indentify the camera used for shooting.

Warning/Error Messages

If the battery voltage drops or an error is detected when power is applied or during operation, the corresponding indicator lights up/flashes and a message appears on the subdisplay. The error details are displayed in the self-diagnostics on settings page 3 on the subdisplay and in the viewfinder.
Warnings and error messages occurring on the SR-R4 are also displayed in the self-diagnostics field.

For details about SR-R4 messages, refer to the operation manual of the SR-R4.

A message prompt is displayed in the viewfinder/monitor to execute the APR function if the fixed-interval image sensor auto adjustment (APR) is not executed. If prompted, execute Automatic Pixel Noise Reduction on the <Maintenance> page of the Diagnosis menu.
Note that the APR function may not execute if the camera is too cold or too hot.
In this case, a low temperature or high temperature indication message is displayed. This does not indicate a malfunction.

Indicator	Subdisplay	Self diagnostics field indication	Meaning
REC: Flashing red	12 V power supply voltage indicator flashing	12V Battery (Near End)	The voltage of the 12 V power supply has fallen to the Near End value setting.
REC: Flashing red rapidly	12 V power supply voltage indicator flashing rapidly	12V Battery (End)	The voltage of the 12 V power supply has fallen to the End value setting.
REC: Flashing red	24 V power supply voltage indicator flashing	24V Battery (Near End)	The voltage of the 24 V power supply has fallen to the Near End value setting.
REC: Flashing red rapidly	24 V power supply voltage indicator flashing rapidly	24V Battery (End)	The voltage of the 24 V power supply has fallen to the End value setting.
REC: Flashing when synced with SR-R4.	Media remaining indicator flashing	Media Remain (Near End)	The remaining media on the SR-R4 has reduced to the Near End value setting.
REC: Flashing when synced with SR-R4.	Media remaining indicator flashing rapidly	Media Remain (End)	The remaining media on the SR-R4 has reduced to the End value setting.
DIAGNOSIS: Flashing red	Displays same message as self diagnostics field in a dialog.	Temperature Care	The internal camera temperature is approaching the limit.
DIAGNOSIS: Flashing red rapidly	Displays same message as self diagnostics field in a dialog.	Temperature NG! Shutdown Camera	The internal camera temperature has reached its limit. Turn off the camera power supply. *Consult your local Sony representative.*
DIAGNOSIS: Flashing red rapidly	Warning	Fan1 NG!	Fan 1 near the top panel stopped. *Consult your local Sony representative.*
DIAGNOSIS: Flashing red rapidly	Warning	Fan2 NG!	Fan 2 near the top panel stopped. *Consult your local Sony representative.*
DIAGNOSIS: Flashing red	Warning	Sync Error	A sync error occurred. *If the error continues, consult your local Sony representative.*
DIAGNOSIS: Lit red DOCK: Lit yellow	Warning	Optical Level Care	The optical level of the Recorder connector has reduced to caution level. Clean the Recorder connector or replace the optical module.
DIAGNOSIS: Lit red DOCK: Lit red	Warning	Optical Level NG	A light reception error occurred with the Recorder connector. Immediately, clean the Recorder connector or replace the optical module.

Indicator	Subdisplay	Self diagnostics field indication	Meaning
DIAGNOSIS: Lit red DOCK: Not lit	Warning	Optical Level No Input	No signal is input on the Recorder connector.
DIAGNOSIS: Lit red	Warning	CRCC Error occurred	A Cyclic Redundancy Check Code (CRCC) error occurred with the Recorder connector. Clean the recorder connector. *If the error continues, even after cleaning, consult your local Sony representative.*
DIAGNOSIS: Lit red	Displays same message as self diagnostics field in a dialog.	SR-R4 version mismatch	SR-R4 version model does not match the camera. Connect an SR-R4 version model supported by the camera. For details, consult your local Sony representative.
DIAGNOSIS: Lit red	Warning	Digital VF Error	A problem has occurred with the DVF-EL100.
DIAGNOSIS: Lit red	Warning	Unsupported Digital VF	A digital viewfinder other than the DVF-EL100 was connected. Digital viewfinders other than the DVF-EL100 are not supported.
–	Displays same message as self diagnostics field in a dialog.	Unsupported device	Unsupported USB device is connected to the USB connector.
–	Displays same message as self diagnostics field in a dialog.	Hubs not supported	The camera does not support USB hubs.

Precautions

Use and storage

Do not subject the unit to severe shocks

The internal mechanism may be damaged or the body warped.

Do not block the ventilation holes

If the ventilation holes are blocked, not only are the characteristics not guaranteed, but also extreme degradation of the internal parts will likely result, causing defects of the camera.

For the locations of the ventilation holes, see the figures in "1-3 Locations and Functions of Parts" (page 14).

After use

Always turn off the power.

Use and storage locations

Store in a level, ventilated place. Avoid using or storing the unit in the following places:

- Places subject to temperature extremes
- Very damp places
- Places subject to severe vibration
- Near strong magnetic fields
- In direct sunlight or close to heaters for extended periods

To prevent electromagnetic interference from portable communications devices

The use of portable telephones and other communications devices near this unit can result in malfunctions and interference with audio and video signals.
It is recommended that the portable communications devices near this unit be powered off.

Note on laser beams

Laser beams may damage the image sensor device. If you shoot a scene that includes a laser beam, be careful not to let the laser beam be directed into the lens of the camera.

Condensation

If the unit is suddenly taken from a cold to a warm location, or if ambient temperature suddenly rises, moisture may form on the outer surface of the unit and/or inside of the unit. This is known as condensation. If condensation occurs, turn off the unit and wait until the condensation clears before operating the unit. Operating the unit while condensation is present may damage the unit.

Image sensor phenomena

The following phenomena that may appear in images are specific to image sensors. They do not indicate malfunctions.

White flecks

Although the image sensors are produced with high-precision technologies, fine white flecks may be generated on the screen in rare cases, caused by cosmic rays.
This is related to the principle of image sensors and is not a malfunction.

The white flecks especially tend to be seen

- when operating at a high environmental temperature

Aliasing

When fine patterns, stripes, or lines are shot, they may appear jagged or flicker.

To forcibly open the shutter

Should the shutter to control incoming light to the image sensor not open, immediately consult your local Sony representative.
If you want to continue shooting urgently, you can use the shutter emergency open screw *(page 14)* to forcibly open the shutter to a position that ensures an optical light path.

For information about using the shutter emergency open screw, consult your local Sony representative.

When setting the video format

It is recommended that the power be turned off and back on again after changing the video format.

Cleaning the Recorder Connector

Note

Before cleaning the recorder connector, always check that the power supply is disconnected before proceeding.

If the recorder connector is dirty, there is increased risk of errors in the data transmission between the camera and the SR-R4. The recorder connector should be cleaned if any of the following conditions occurs.

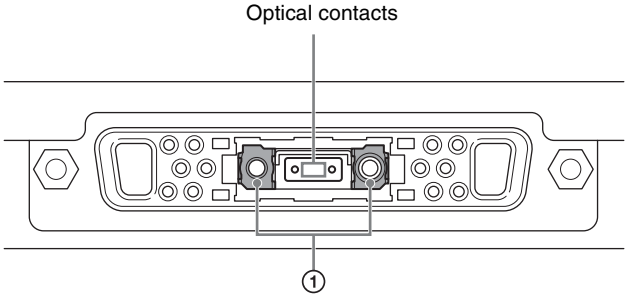
- DOCK indicator is lit yellow or red.
- DIAGNOSIS indicator is lit red and the "CRCC Error occurred" message is displayed.

You will need the following items in order to clean the recorder connector:

- Commercially available optical fiber cleaning swabs
- 99.5% (or higher) pure alcohol

1 Remove the SR-R4. If the SR-R4 was not connected, remove the connector cap from the recorder connector.

2 Press the recorder connector using your finger ①, and open the protective shutter to expose the optical contacts.



3 Dip an optical fiber cleaning swab in alcohol and gently wipe the whole optical contacts area about five times.

Notes

- Always use alcohol only in well-ventilated areas away from heat or flame.
- Wiping firmly may damage the optical fiber contacts.

4 Release the connector's protective shutter, and connect the SR-R4. If not connecting the SR-R4, reattach the connector cap.

About "Memory Stick Duo"

Supported types of "Memory Stick"

You can use "Memory Stick Duo" or "Memory Stick PRO Duo."
The camera operations have been checked using "Memory Stick" media up to 32 GB.
This camera is not compliant with high-speed data transfer with this type of "Memory Stick."

Operations checked with:

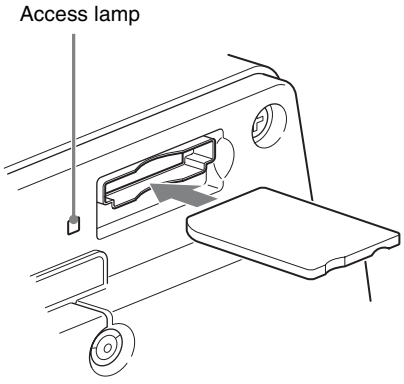
MSX-M2GN
MSX-M1GST
MSX-M2GST
MS-HX8
MS-HX32
MS-MT2G
MS-MT4G
MS-MT16G
MS-MT32G

Note on data read/write speed

Data read/write speed may vary depending on the combination of the "Memory Stick" and "Memory Stick" compliant product you use.

Inserting a "Memory Stick Duo"

Insert a "Memory Stick Duo" with the label side facing left into the "Memory Stick Duo" slot until it clicks and the access lamp lights in red. Check that the access lamp then goes off.



Note

If it does not fit into the slot properly or if there is some resistance when you insert it, the "Memory Stick Duo" may be turned around or upside-down. Do not force the "Memory Stick Duo" into the slot. Confirm the direction of the notch and arrow on the "Memory Stick Duo" before

inserting the “Memory Stick Duo,” and then try inserting it again.

To remove a “Memory Stick Duo”

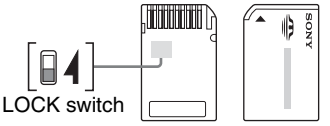
Confirm that the access lamp is not flashing red, then lightly push in the “Memory Stick Duo” to release the lock.

Note

If the access lamp is flashing red, data is being read from or written to the “Memory Stick Duo” At this time, do not shake the product or subject it to shock. Do not turn off the power to the product or remove the “Memory Stick Duo.” Doing so may damage the data.

Protecting saved data

To prevent accidental erasure of important setup data, use the LOCK switch on the “Memory Stick Duo.”
Slide the switch upward to the write protect position. This ensures that you cannot inadvertently overwrite data on the “Memory Stick Duo.”



Note

The “Memory Stick Duo” does not have a LOCK switch. When using “Memory Stick Duo” media, be careful not to inadvertently overwrite or erase your data.

Precautions

- Do not attach anything other than the supplied label to the “Memory Stick Duo” labeling position.
- Attach the label so that it does not stick out beyond the labeling position.
- Carry and store the “Memory Stick Duo” in its case.
- Do not touch the connector of the “Memory Stick Duo” with anything, including your finger or metallic objects.
- Do not strike, bend, or drop the “Memory Stick Duo.”
- Do not disassemble or modify the “Memory Stick Duo.”
- Do not allow the “Memory Stick Duo” to get wet.
- Do not use or store the “Memory Stick Duo” in a location that is:
  —Extremely hot, such as in a car parked in the sun
  —Under direct sunlight
  —Very humid or subject to corrosive substances
- To prevent data loss, make backups of data frequently. In no event will Sony be liable for any loss of data.
- Unauthorized recording may be contrary to the provisions of copyright law. When you use a “Memory Stick Duo” that has been pre-recorded, be sure that the material has been recorded in accordance with copyright and other applicable laws.

Specifications

General

Power requirements
10.5 V to 17 V DC
Power consumption
Approx. 69 W at 23.98 PsF (Mechanical rotary shutter operating. Not including lens, viewfinder)
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Storage temperature
–20 °C to +60 °C (–4 °F to +140 °F)

Imagers

Imagers	Super 35-mm CMOS image sensor
Method	Single sensor
Aspect ratio	17:9

Electrical characteristics

Latitude	14-stop
Registration	Within 0.02% (not including lens distortion)
Geometric distortion	Negligible (not including lens distortion)

Optical system specifications

Lens mount	PL Mount
Flange focal length	52.00 mm (–0.03 mm to +0.05 mm adjustable in 0.01 mm increments by shim replacement)

Input/output connectors

DC IN	LEMO 8-pin male (1), 10.5 V to 17 V DC, 24 V DC
DC OUT	12 V: 11-pin (1), 12 V DC, 4 A maximum 24 V: 3-pin (1), 24 V DC, 4 A maximum (The usable current may be limited depending on the load and input conditions.)
VF	20-pin (1)
VF (for DVF-EL100)	26-pin (1)
LENS	12-pin (1)
SDI OUT	4:2:2, BNC type (2), HD-SDI signal, BTA-S004A-compliant, 75 ohms, 0.8 Vp-p, 1.485 Gbps
HD-Y OUT	BNC type (1), 75 ohms, 1.0 Vp-p
GENLOCK IN	BNC type (1), 75 ohms, SMPTE 274M HD 3-level sync, 0.6 Vp-p Or HD-SDI signal, BTA-S004A-compliant
REMOTE	8-pin (1)
EXT I/O	LEMO 5-pin, female (1)
(network)	RJ-45 type (1), 10BASE-T, 100BASE-TX
Lens mount hot shoe	4-pin (2), conforming to ARRI LDS (Lens Data System) and Cooke /i Intelligent Electronic Lens System
USB	Type A, USB2.0 Hi-Speed (2)
“Memory Stick” (MS)/SD memory card	Combo-connector (1) Supports “Memory Stick Duo”, “Memory Stick PRO Duo” Supports SD memory cards, SDHC memory cards up to class 10

F65 accessories

+B3 × 5 screws (4)
Cable clamp belt (1)
Belt bracket (1)
Power cable connector (LEMO 8-pin) (1)
Filter mounting kit (holder, mounting tool, filter template) (1)
Operation guide (1)
Operation manual (CD-ROM) (1)

CBK-65EL accessories

Operation guide (1)
Installation guide (1)
Operation manual (CD-ROM) (1)

Optional accessories

SR-R4 Portable Memory Recorder
SKC-4065 F65 Adaptor
HDVF-C30WR HD Electronic Viewfinder (2.7-inch type, color)
DVF-EL100 OLED color viewfinder (0.7-inch type, color)
CBK-WA01 Wi-Fi Adapter
“Memory Stick Duo”

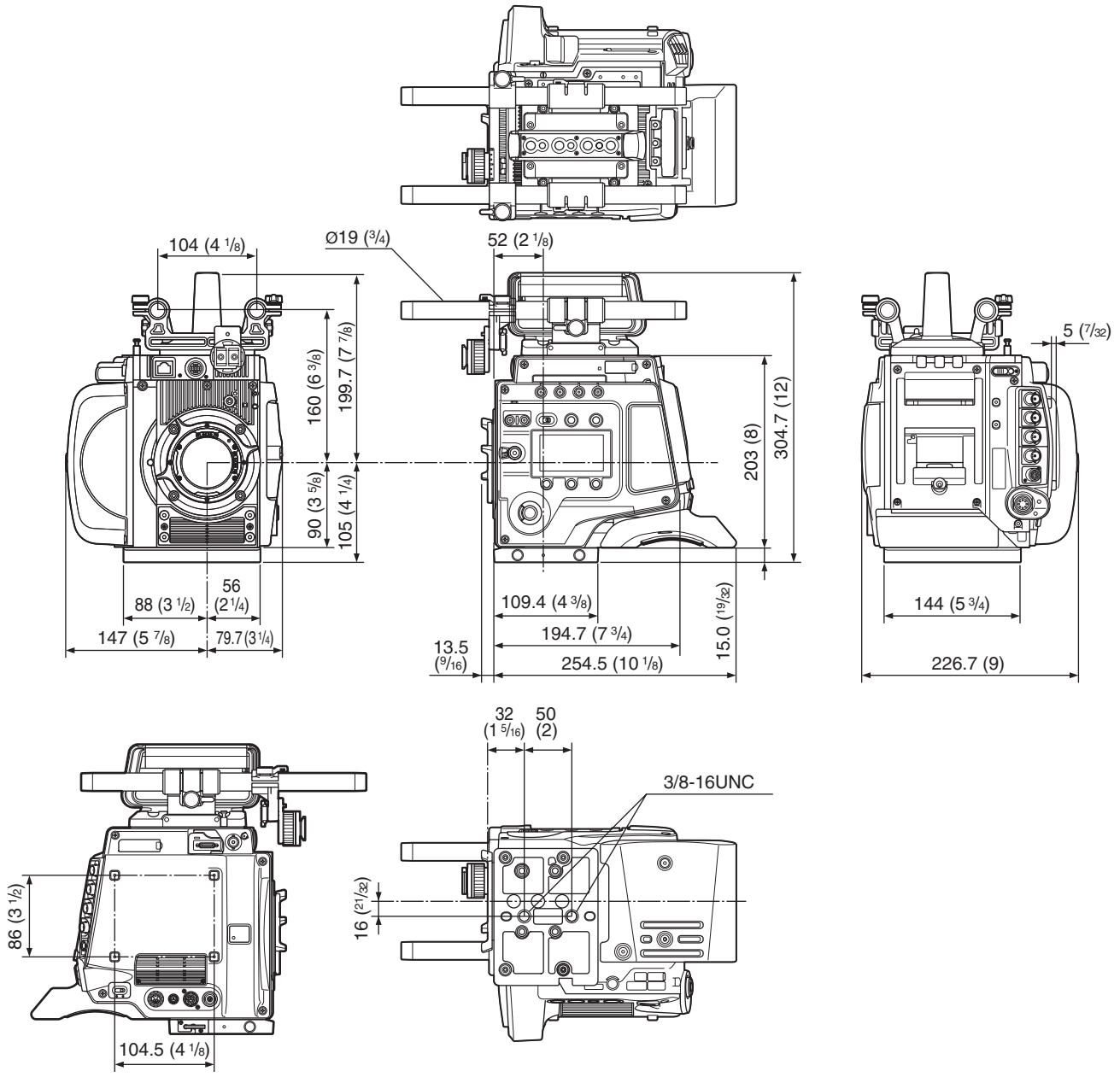
Design and specifications are subject to change without notice.

Notes

- Always verify that the unit is operating properly before use. SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF THE LOSS OF PRESENT OR PROSPECTIVE PROFITS DUE TO FAILURE OF THIS UNIT, EITHER DURING THE WARRANTY PERIOD OR AFTER EXPIRATION OF THE WARRANTY, OR FOR ANY OTHER REASON WHATSOEVER.
- SONY WILL NOT BE LIABLE FOR CLAIMS OF ANY KIND MADE BY USERS OF THIS UNIT OR MADE BY THIRD PARTIES.
- SONY WILL NOT BE LIABLE FOR THE TERMINATION OR DISCONTINUATION OF ANY SERVICES RELATED TO THIS UNIT THAT MAY RESULT DUE TO CIRCUMSTANCES OF ANY KIND.

Dimensions

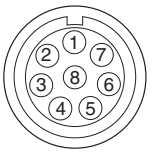
Unit: mm (inches)



Weight: Camera head 5 kg (11 lb)
With accessories 6.5 kg (14 lb 5 oz)

Connector Pin Assignments

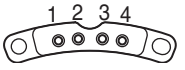
REMOTE (8-pin female)



(External View)

No.	Signal	I/O	Specifications
1	TX (+)	OUT	SERIAL Data out
2	TX (–)	OUT	
3	RX (+)	IN	SERIAL Data in
4	RX (–)	IN	
5	TX-GND	—	GND for TX
6	UNREG	OUT	+10.5 to +17 V dc, 200mA (max)
7	UNREG-GND	—	GND for UNREG
8	VIDEO	OUT	75Ω, 1.0 Vp-p
	CHASSIS GND	—	CHASSIS GND

Lens-mount hot shue (4-pin)



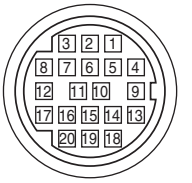
No.	Signal	I/O	Specifications
1	RX	IN	SERIAL DATA in
2	TX	OUT	SERIAL DATA out
3	GND		GND for +24 V
4	+24 V	OUT	+24 V, 200 mA (MAX)

LENS (12-pin female)

(External View)

No.	Signal	I/O	Specifications
1	RET VIDEO ENABLE	IN	Not used
2	VTR START/ STOP	IN	Not used
3	GND	—	GND for UNREG
4	—	—	Not used
5	IRIS CONT	OUT	+3.4 V (F16) to +6.2 V (F2.8)
6	UNREG	OUT	+10.5 V to +17 V 500 mA (MAX)
7	IRIS POSITION	IN	+3.4 V (F16) to +6.2 V (F2.8)
8	—	—	Not used
9	—	—	Not used
10	—	—	Not used
11	NC		No connection
12	NC		No connection

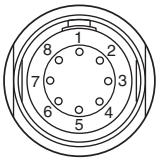
VF (20-pin female)



(External View)

No.	Signal	I/O	Specifications
1	S-DATA	IN/OUT	TTL level
2	NC		No connection
3	NC		No connection
4	SCK	OUT	TTL level
5	NC		No connection
6	NC		No connection
7	NC		No connection
8	G TALLY	OUT	ON: 5 V OFF: GND
9	NC		No connection
10	NC		No connection
11	NC		No connection
12	Y VIDEO	OUT	1.0 Vp-p, Zo=75Ω
13	VIDEO GND	—	GND for VIDEO
14	Pb VIDEO	OUT	±0.35 Vp-p, Zo=75Ω
15	Pr VIDEO	OUT	±0.35 Vp-p, Zo=75Ω
16	NC		No connection
17	R TALLY	OUT	ON: 5 V OFF: GND
18	NC		No connection
19	UNREG GND	—	GND for UNREG
20	UNREG	OUT	+10.5 V to +17 V

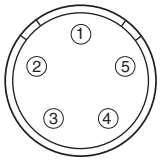
DC IN (8-pin male)



(External View)

No.	Signal	I/O	Specifications
1	UNREG_GND	—	GND for +12 V
2	UNREG_GND	—	GND for +12 V
3	UNREG_GND (24 V)	—	GND for +24 V
4	UNREG_24 V_IN	IN	+24 V
5	UNREG_12 V_IN	IN	+12 V
6	UNREG_12 V_IN	IN	+12 V
7	UNREG_12 V_IN	IN	+12 V
8	UNREG_GND	—	GND for +12 V

EXT I/O (5-pin female)

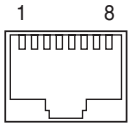


(External View)

No.	Signal	I/O	Specifications
1	EXT_CMD1_OUT	OUT	RS-232C
2	EXT_CMD0_OUT	OUT	
3	EXT_CMD1_IN	IN	
4	EXT_CMD0_IN	IN	
5	GND	—	

(Modular jack)

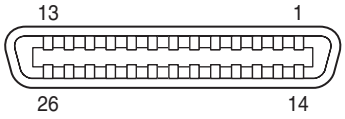
Conforming to IEEE 802.3u (100BASE-TX), IEEE802.3 (10BASE-T)



(External View)

No.	Signal	I/O	Specifications
1	TXD (+)	OUT	
2	TXD (–)	OUT	
3	RXD (+)	IN	
4	NC	—	
5	NC	—	
6	RXD (–)	IN	
7	NC	—	
8	NC	—	

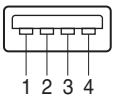
VF (for DVF-EL100) (26-pin)



(External View)

No.	Signal	I/O	Specifications
1	SHIELD GND	—	GND
2	LVDS 1–	OUT	LDVS (–) output
3	LVDS 2–	OUT	LDVS (–) output
4	LVDS 3–	OUT	LDVS (–) output
5	LVDS CLK–	OUT	LDVS clock (–) output
6	LVDS 4–	OUT	LDVS (–) output
7	LVDS 5–	OUT	LDVS (–) output
8	VF ON	IN	VF ON signal input
9	SDAT	I/O	Serial data signal input/ output
10	UNREG	OUT	UNREG output
11	UNREG	OUT	UNREG output
12	GND	—	GND
13	GND	—	GND
14	GND	—	GND
15	LVDS 1+	OUT	LDVS (+) output
16	LVDS 2+	OUT	LDVS (+) output
17	LVDS 3+	OUT	LDVS (+) output
18	LVDS CLK+	OUT	LDVS clock (+) output
19	LVDS 4+	OUT	LDVS (+) output
20	LVDS 5+	OUT	LDVS (+) output
21	SRX	OUT	SDI signal output
22	SCLK	OUT	Serial data clock signal output
23	UNREG	OUT	UNREG output
24	UNREG	OUT	UNREG output
25	GND	—	GND
26	SHIELD GND	—	GND

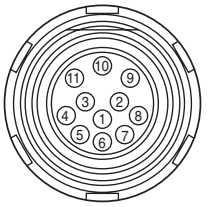
USB



(External View)

No.	Signal	I/O	Specifications
1	VBUS	OUT	5 V dc, 500 mA (max)
2	D-	IN/OUT	
3	D+	IN/OUT	
4	GND	—	

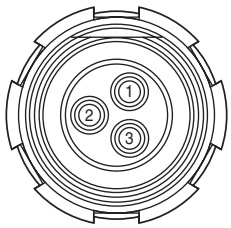
DC OUT 12 V (11-pin female)



(External View)

No.	Signal	I/O	Specifications
1	NC		
2	NC		
3	NC		
4	NC		
5	NC		
6	NC		
7	NC		
8	NC		
9	UNREG_GND	—	
10	NC		
11	UNREG_12 V_OUT	OUT	+12 V DC 4 A (MAX)

DC OUT 24 V (3-pin female)



(External View)

No.	Signal	I/O	Specifications
1	UNREG_GND (24 V)	—	
2	UNREG_24 V_OUT	OUT	+24 V DC 4 A (MAX)
3	REC trigger	IN	OPEN or +5 V: Normal GND: Active

Menu Operation using a Web Browser

The settings menus of this camera can be controlled from a computer using a Web browser.

Supported OS

Windows XP, Windows Vista, Windows 7
Mac OS X

Supported browsers

Firefox 25 or Later
Google Chrome 29 or Later
Safari 5 or later

To display the menu

1 Set the IP address in the IP Address field on the <LAN Setting> page in the Network menu.

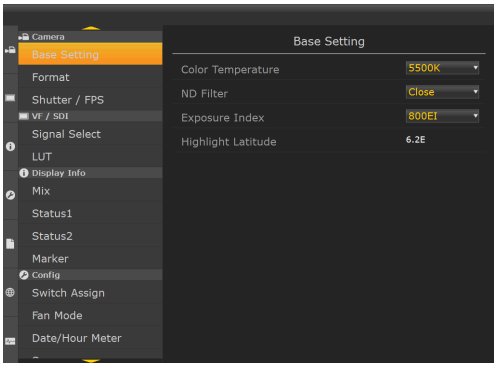
Example: 192.168.1.2

2 Connect a computer to the camera via a hub or directly using a cross cable.

3 Launch the web browser on the computer and enter http:// then the IP address you set on the <LAN Setting> page.

Example: http://192.168.1.2

The following menu screen appears.



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- Google Chrome is a trademark of Google Inc.

Operation using a Tablet Device

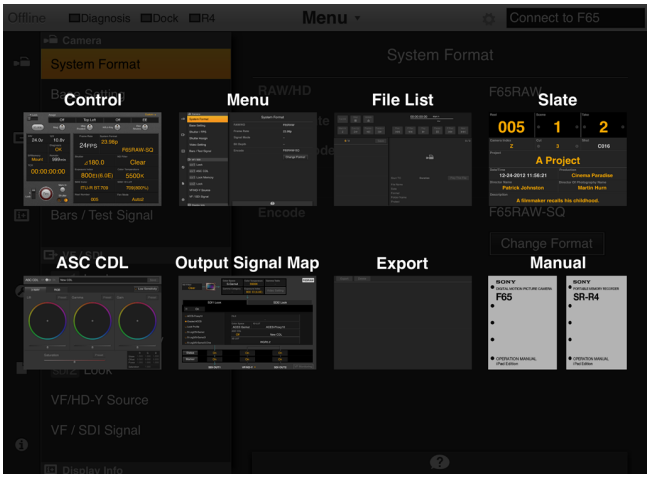
The camera can be operated wirelessly by installing the F65Remote Look Plus application for tablet devices. A CBK-WA01 Wi-Fi adapter (option) is required for wireless operation.

For details about mounting the CBK-WA01, see s.

Operations using F65Remote Look Plus

- Display and set frequently used menu settings in a list (Control screen)
- Display and change camera configuration settings (Menu screen)*
- Display list of files recorded in SRMemory (File List screen)
- Display slate information (Slate screen)
- Display and set ASC CDL settings (ASC CDL screen)
- Display menu setting status from video signal input to output (Output Signal Map screen)
- File list and ASC CDL file export (Export screen)
- Display Operation Manual (Manual screen)

* Some menus cannot be displayed.



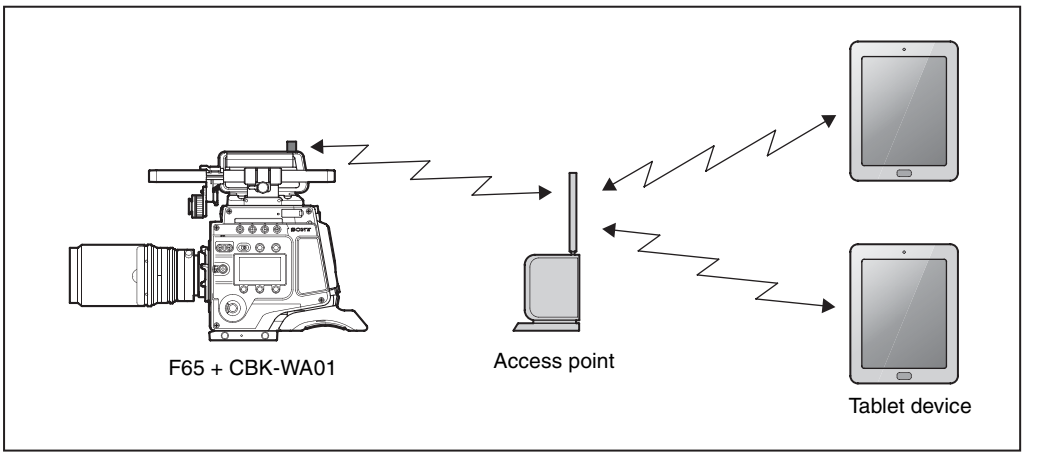
Supported devices

iPad2, iPad (third generation and later)
iOS 6.1 or later

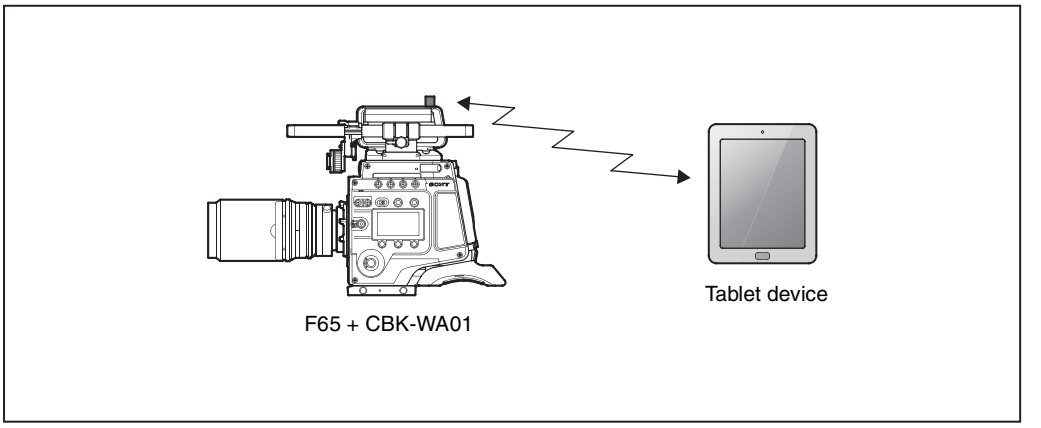
Camera and Tablet Device Connections

There are two modes supported for connecting devices.

Infrastructure mode



Ad-hoc mode



Infrastructure mode

Uses a Wi-Fi connection between the camera and table device via a wireless LAN access point.
In this mode, multiple devices can communicate with the camera wirelessly via the access point. Use this mode if you plan to connect with and control a camera from more than one tablet device.

Ad-hoc mode

Uses a direct Wi-Fi connection between the camera and table device.
In this mode, an access point is not required, and only a single device can communicate with the camera wirelessly. Use this mode if an access point cannot be set up due to difficulty guaranteeing the power supply or other reasons.

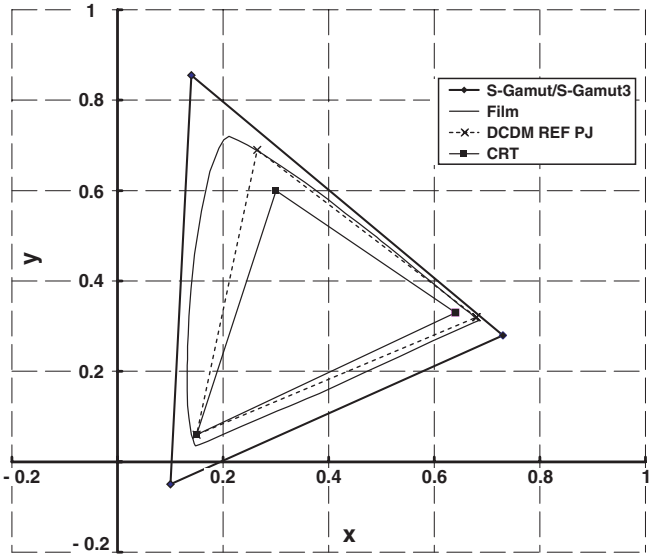
For details about the connection method, refer to the help for the tablet device.

Notes

- Connection using IEEE802.11n is not supported in ad-hoc mode. Data encryption method uses WEP only.
- Some tablet devices are not equipped with the necessary hardware for ad-hoc mode. For details, refer to the operating instructions for your tablet device.
- While multiple tablet devices can connect to the camera in infrastructure mode, only the device that is “Active” may modify the camera settings. Other connected devices may only monitor the settings.
- If the camera is connected using a network cable and the IP address settings on the <LAN Setting> page and the <Wi-Fi Setting> page in the Network menu are the same, then Wi-Fi is disabled. To use LAN and Wi-Fi simultaneously, set different values for the IP address settings on the <LAN Setting> page and the <Wi-Fi Setting> page. If the camera is not connected using a network cable, then Wi-Fi is enabled, even if the same IP address is set on both pages.
- If connection is difficult or unstable when using WEP as the data encryption method, use another encryption method or another device.

Color Space According to the COLOR SPACE Settings

Colorimetry



1. Virtual chromaticity points at S-Gamut/ S-Gamut3

The virtual color space at S-GAMUT is shown in the above chart. The virtual chromaticity points are as follows:

	x	y
R	0.73	0.28
G	0.14	0.855
B	0.1	–0.05

When converting the color space of a video source shot with this camera in S-Gamut/S-Gamut3 mode, use these virtual chromaticity points.
These chromaticity points are “virtual” because they do not represent the actual, accurate color space but are the calculated values for calculation of color space conversion. These virtual chromaticity points have been introduced because the actual color space cannot be represented as a triangle in this colorimetry.
The following equation provides a simple conversion from the color space for S-Gamut/S-Gamut3 to that for conventional cameras (HDC-F950, HDW-F900R, etc.):

$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} 1.306240 & -0.233075 & -0.073165 \\ -0.126851 & 1.178376 & -0.051526 \\ 0.000120 & -0.085649 & 1.085529 \end{bmatrix} \begin{bmatrix} R_w \\ G_w \\ B_w \end{bmatrix}$$

(Rw, Gw, Bw): RGB values for the original color space for S-Gamut/ S-Gamut3
(R, G, B): Values after being converted to the color space for conventional cameras

Use the following equations to convert from S-Gamut/ S-Gamut3 to another color gamut.

Converting to ITU-R.BT709/sRGB

$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} 1.8779151284 & -0.7941687613 & -0.0837463671 \\ -0.1768069813 & 1.3509996209 & -0.1741926396 \\ -0.0262011264 & -0.1484222623 & 1.1746233888 \end{bmatrix} \begin{bmatrix} R_w \\ G_w \\ B_w \end{bmatrix}$$

(Rw, Gw, Bw): RGB values for the original color space for S-Gamut/ S-Gamut3
(R, G, B): RGB values after conversion

Converting to ACES-GAMUT (Academy Color Encoding Specification) (when converting from S-Gamut to ACES-GAMUT)

- **Daylight: 5500K**

$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} 0.8764457030 & 0.0145411681 & 0.1090131290 \\ 0.0774075345 & 0.9529571767 & -0.0303647111 \\ 0.0573564351 & -0.1151066335 & 1.0577501984 \end{bmatrix} \begin{bmatrix} R_w \\ G_w \\ B_w \end{bmatrix}$$

- **Tungsten: 3200K or 4300K**

$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} 1.0110238740 & -0.1362526051 & 0.1252287310 \\ 0.1011994504 & 0.9562196265 & -0.0574190769 \\ 0.0600766530 & -0.1010185315 & 1.0409418785 \end{bmatrix} \begin{bmatrix} R_w \\ G_w \\ B_w \end{bmatrix}$$

(Rw, Gw, Bw): RGB values for the original color space for S-Gamut
(R, G, B): RGB values after conversion

(when converting from S-Gamut3 to ACES-GAMUT[1)])

$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} 0.7529825954 & 0.1433702162 & 0.1036471884 \\ 0.0217076974 & 1.0153188355 & -0.0370265329 \\ -0.0094160528 & 0.0033704179 & 1.0060456349 \end{bmatrix} \begin{bmatrix} R_w \\ G_w \\ B_w \end{bmatrix}$$

1) The light source coefficient does not need to be changed.
(Rw, Gw, Bw): RGB values for the original color space for S-Gamut3
(R, G, B): RGB values after conversion

Use the following equation to express the S-GAMUT as an XYZ color space.

$$\begin{bmatrix} X \\ Y \\ Z \end{bmatrix} = \begin{bmatrix} 0.7064827132 & 0.1288010498 & 0.1151721641 \\ 0.2709796708 & 0.7866064112 & -0.0575860820 \\ -0.0096778454 & 0.0046000375 & 1.0941355587 \end{bmatrix} \begin{bmatrix} R_w \\ G_w \\ B_w \end{bmatrix}$$

(Rw, Gw, Bw): RGB values for the original color space for S-Gamut/ S-Gamut3
(X, Y, Z): Values after conversion to XYZ color space

2. Color space for film

The color space for film shown in the above chart represents measurements from VISION Premier Film EK 2393.

3. Color space for S-Gamut3.Cine

Chromaticity points for S-Gamut3.Cine

	x	y
R	0.766	0.275
G	0.225	0.8
G	0.089	–0.087

Use the following equations to convert from S-Gamut3.Cine to another color gamut.

Converting to ITU-R BT.790/sRGB

$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} \begin{bmatrix} 1.6269474097 & -0.5401385389 & -0.0868088709 \\ -0.1785155271 & 1.4179409275 & -0.2394254003 \\ -0.0444361150 & -0.1959199662 & 1.2403560812 \end{bmatrix} \begin{bmatrix} R_w \\ G_w \\ B_w \end{bmatrix}$$

(Rw, Gw, Bw): RGB values for the original color space for S-Gamut/ S-Gamut3
(R, G, B): RGB values after conversion

Converting to ACES-GAMUT (Academy Color Encoding Specification) (when converting from S-Gamut3.Cine to ACES-GAMUT[1)])

$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} 0.6387886672 & 0.2723514337 & 0.0888598992 \\ -0.0039159061 & 1.0880732308 & -0.0841573249 \\ -0.0299072021 & -0.0264325799 & 1.0563397820 \end{bmatrix} \begin{bmatrix} R_w \\ G_w \\ B_w \end{bmatrix}$$

1) The light source coefficient does not need to be changed.
(Rw, Gw, Bw): RGB values for the original color space for S-Gamut
(R, G, B): RGB values after conversion

Use the following equation to express S-Gamut3.Cine as an XYZ color space.

$$\begin{bmatrix} X \\ Y \\ Z \end{bmatrix} = \begin{bmatrix} 0.5990839208 & 0.2489255161 & 0.1024464902 \\ 0.2150758201 & 0.8850685017 & -0.1001443219 \\ -0.0320658495 & -0.0276583907 & 1.1487819910 \end{bmatrix} \begin{bmatrix} R_w \\ G_w \\ B_w \end{bmatrix}$$

(Rw, Gw, Bw): RGB values for the original color space for S-Gamut/ S-Gamut3
(X, Y, Z): Values after conversion to XYZ color space

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lzo
blktrace
compcache
directfb
e2fsprogs
net-tools
gawk
gdisk
gpm
iputils
libtool
libcap
memstat
mkcramfs
ncurses
nfs-utils
procinfo
pump
time
util-linux-ng
vsftpd
wireless-tools
acl
bash
busybox
coreutils
diffutils
dosfstools
ethtool
findutils
fuse
glib
grep
ksymoops
less
libusb
minicom
oprofile
procps
setserial
tar
tofrodos
vim

which
xz
iptables
mtd-utils
glibc-libpthread_ptt
module-init-tools
linux-kernel
at
camif
logrotate
sysklogd
udhcp
glibc
rpm

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@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>
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