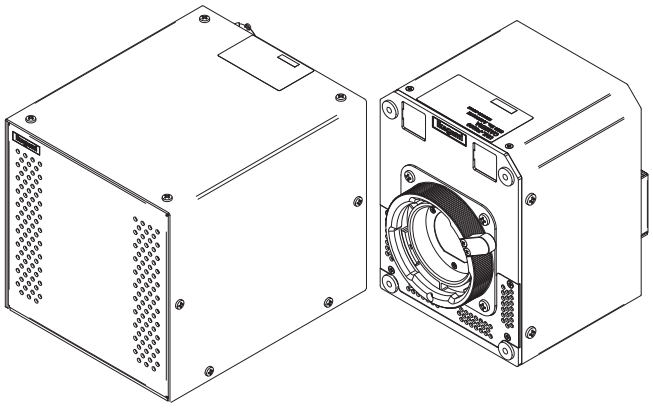
RoHS-compliant Product



UHL-F4000

4K/HD Multi Purpose Camera

OPERATION MANUAL

Ikegami

UHL-F4000

4K/HD Multi Purpose Camera

OPERATION MANUAL

202005 1stEdition (E)

Ikegami

English

Instructions for Disposal of Electric and Electronic Equipment in Private Household

Disposal of used Electric and Electronic Equipment
(Applicable in the European Union and other European countries with separate collection systems)

This symbol on the product, or in the related documents in the package, indicates that this product shall not be treated as normal household waste. Instead, it should be taken to a proper applicable collection point or depot for the recycling of electric and electronic equipment.

By ensuring this product is disposed of correctly, you will help prevent possible negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources.
For more detailed information about recycling of this product, please contact your local city authority, your household waste disposal service or the place where you purchased the product.

Deutsch

Vorschriften für die Entsorgung von elektrischen und elektronischen Geräten in Privathaushalten

Entsorgung von gebrauchten elektrischen und elektronischen Geräten
(In der Europäischen Union und anderen europäischen Ländern mit separaten Sammelsystemen anwendbar.)

Das auf dem Produkt angebrachte Symbol, bzw. die Symbole in den in der Packung beiliegenden Dokumenten, weisen darauf hin, dass dieses Produkt nicht als normaler Haushaltsmüll behandelt werden darf. Es muss deshalb an einer dafür vorgesehenen Sammelstelle abgeliefert werden, in der das Recycling von elektrischen und elektronischen Geräten durchgeführt wird.

Durch die ordnungsgemäße Entsorgung dieses Produkts tragen Sie dazu bei, dass unsere Umwelt und unsere Gesundheit nicht durch unsachgemäße Entsorgung negativ beeinflusst wird. Mit dem Recycling von Materialien tragen wir zur Bewahrung der natürlichen Ressourcen bei.
Für nähere Informationen hinsichtlich des Recyclings für dieses Produkt sprechen Sie bitte mit Ihrer zuständigen Behörde, Ihrer Hausmüll-Entsorgungsstelle oder dem Geschäft, wo Sie das Produkt gekauft haben.

Français

Consignes de mise au rebut des appareils électriques et électroniques dans les foyers privés

Mise au rebut des appareils électriques et électroniques
(Applicable dans l'Union Européenne et autres pays d'Europe ayant un système de récupération séparé)

Ce symbole apposé sur le produit ou dans les documents liés se trouvant dans l'emballage indique que ce produit ne doit pas être traité comme un déchet ménager normal. Il doit être porté à un point de récupération correct ou à un dépôt pour le recyclage des appareils électriques et électroniques.

En vous assurant que ce produit est correctement mis au rebut, vous aiderez à empêcher les conséquences possibles pouvant affecter l'environnement et la santé humaine, pouvant être causées par une mauvaise manipulation des déchets de ce produit. Le recyclage des matériaux favorise la conservation des ressources naturelles.
Pour des informations plus détaillées concernant le recyclage de ce produit, veuillez contacter les autorités locales, votre service de mise au rebut des déchets ménagers ou le lieu d'achat de votre produit.

Español

Instrucciones para eliminar equipos eléctricos y electrónicos de una casa privada

Eliminación de equipos eléctricos y electrónicos usados
(Normas aplicables en la Unión Europea y en otros países europeos con diferentes sistemas de recogida)

Este símbolo en el producto, o en los documentos relacionados, indica que este producto no deberá ser tratado como un residuo doméstico normal. En cambio, deberá ser llevado a un punto o lugar donde los equipos eléctricos y electrónicos sean recogidos para ser reciclados.

Asegurándose de que este producto sea eliminado correctamente, usted ayudará a impedir las posibles consecuencias negativas sobre el medio ambiente y la salud humana que podrían ser causadas por el manejo inapropiado de este producto como residuo doméstico. El reciclado de los materiales ayudará a conservar los recursos naturales.
Para conocer una información más detallada acerca del reciclado de este producto, póngase en contacto con las autoridades de su localidad, con su servicio de recogida de residuos domésticos o con el comercio donde adquirió el producto.

RoHS-COMPLIANT PRODUCT

The following product described in this manual is in compliance with the RoHS Directive.

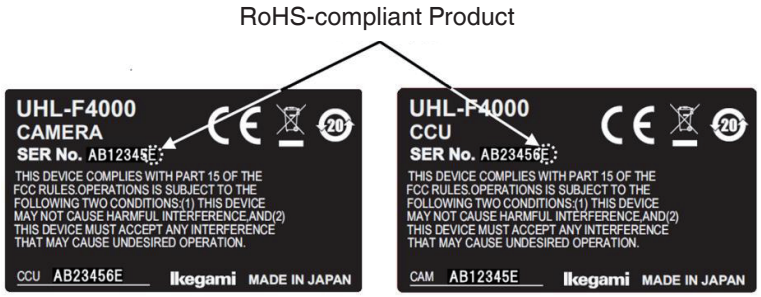
・ UHL-F4000 4K/HD Multi Purpose Camera

MAINTENANCE OF RoHS-COMPLIANT PRODUCTS

Pay attention to the following during maintenance of RoHS-compliant products.

1. Identification

・ For products that comply with the RoHS Directive, the letter “E” is appended at the end of the serial number on the label. If the letter “E” cannot be appended to the serial number, it will be indicated at a distinguishable position on the label. An example of its indication on a main label is shown below.



Camera Head Label **CCU Label**

・ One of the following marks can be found on the silkscreen printing or label of the printed-circuit board of RoHS-compliant products.

Phase 3A

Phase 3

2. Soldering

Since the melting point of lead-free solder used for RoHS-compliant products is 20 to 45 degrees Celsius higher than that of conventional lead solder (Sn-Pb eutectic solder), the soldering iron needs to be set to a high temperature. Taking into consideration the upper temperature limit of the parts and to ensure stable work, use a soldering iron with excellent thermal recovery characteristics.

・ Recommended solder composition is “Sn/3.0Ag/0.5Cu” or equivalent.
・ Use a separate soldering iron exclusively for RoHS products that is different from the existing soldering iron.
・ Set the temperature of the soldering bit to 350 to 370 degrees Celsius.
The temperature may need to be adjusted according to the size of the copper foil land on the printed-circuit board and the tip width of the soldering bit.
・ The finishing of lead-free solder may appear whitish or duller in color compared to that of existing lead solders.
・ If the wiring of the main unit or the circuit board is polluted with lead solder by the user, repair of the product will not be covered under the warranty as it is impossible to remove the polluted solder.

3. Parts

Be sure to use parts that comply with the RoHS Directive.

INFORMATION TO USERS

1. 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.
   Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

   This device complies with Part 15 of the FCC rules.
   Operation is subject to the following two conditions:
   (1) This device may out cause harmful interference, and
   (2) This device must accept any interference received, including interference that may cause undesired operation.

   Supplier's Declaration of Conformity
   47 CFR § 2.1077 Compliance Information
   Product Name : 4K/HD Multi Purpose Camera
   Model Name : UHL-F4000
   Responsible Party : Contact Information
   Ikegami Electronics (U. S. A.) Inc
   300 Route 17 South, Mahwah, NJ 07430, USA
   Tel : 201-368-9171

2. Declaration of conformity
   The CE mark means that the following products will meet and the Standards EN55032, EN-55035.
   For European customer.

People's Republic of China Electronic Industry Standard (SJ/T11364—2006)

Marking Styles for Names and Contents of Toxic or hazardous Substances and Elements

Part Name	Toxic or hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr/(VI))	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
UHL-F4000	×	○	○	○	○	○

○ : Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.

× : Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.

Safety Precautions

This manual describes the precautions using various pictorial symbols for safe use of the product.
Please read through these precautions carefully before use.

The following hazard alert symbols are used to indicate the level of impact on the body or property if you do not follow the precautions.

⚠ ***WARNING***	Indicates that mishandling of the product due to ignorance of this label may lead to dangers resulting in a serious injury or death.
⚠ ***CAUTION***	Indicates that mishandling of the product due to ignorance of this label may lead to dangers resulting in an injury or property damage.

The following symbols are used to indicate the expected injuries or hazards if you do not follow the precautions.

	Indicates general precautions on matters such as safe work, procedure, and installation location. Mishandling may not directly lead to death, injury, or property damage.
	Indicates that mishandling may cause an electric shock.
	Indicates that mishandling may cause a fire.
	Indicates that mishandling may cause injuries.

The following symbol is used to indicate other precautions to prevent damage or hazard from occurring:

	Indicates a prohibited action.

■ Handling Precautions

⚠ WARNING

Related to the Product	
	Do not disassemble or modify the product if the procedures are not described in this manual. Doing so may cause fire, electric shock, or injury.

⚠ CAUTION

Related to the Product	
	Do not lift this product by holding it at the protruded parts. The camera body may fall off if you lift and carry the camera by holding it at the lens. Also, doing so applies excessive force on the joint between the camera body and lens, and may result in damage of the product. Secure the camera body in place before attaching the accessories and connecting the cables. Secure the camera body on a table or a tripod before attaching accessories such as a lens. Otherwise, it may be difficult to attach the accessory, and may even cause it to fall off if the camera body moves.
	Avoid use or storage in the following conditions: ・ Places that are extremely hot or cold ・ Places subject to high temperature, such as under direct sunlight for a long time or near a heater ・ Highly humid or dusty environment ・ Places that are exposed to water or other liquids ・ Places subject to strong vibration or impact shock ・ Places subject to strong magnetic field or radio waves ・ Places likely to be exposed to lightning strikes ・ Capturing the sun directly or places where the lens is subject to laser irradiation ・ In the rain without a rain cover

Related to the Product	
	Be sure to hold the plug and pull when you disconnect the cable. Failure to do so may cause damage to the cable and result in fire or electric shock.
	Avoid moving the product suddenly from an extremely cold place to a warm place. Doing so may cause the product to malfunction due to condensation on the exterior or interior.
	Do not drop or insert metal objects such as pins or foreign objects into the product.
	Do not pour or spill water or other liquid over the product.
	Do not subject the product to strong impact shock or vibration. Doing so may cause damage to or malfunction of the product.
	Laser beams may damage the sensors. If you shoot a scene that includes a laser beam, be careful not to let a laser beam become directed into the lens of the camera.
	Before connecting an accessories, make sure that the camera and product to be connected are powered off. Also, be sure to use dedicated cables.

Related to the Power and Lithium Battery	
	Use the product while ensuring compliance with the rating of the fuses in the camera and CCU. Failure to do so may cause the product to malfunction.
	Do not use batteries that are not specified for use with the product. Wrong usage of batteries may cause liquid leakage, explosion or overheating, and may result in injury or fire. When changing or discarding a battery, please contact our sales and service center.

■ Precautions on Environment of Use

Related to the Product	
	For continued use of the product on rainy days or during winter or summer, make use of objects such as a rain cover, cold-proof cover or sunshade cover.
	For long-term storage of the product in a dusty location, protect it by using objects such as a dust cover.
	Flicker may occur during video recording under light sources such as fluorescent and LED light.
	Due to the operating principle of the image sensor, cosmic rays may sometimes cause tiny white spots to appear on the screen. These white spots may become more noticeable under the following circumstances. ・ When the gain level is increased ・ When the temperature of the camera body frame rises
	During video recording at places that are subject to extremely high levels of magnetism or radio waves, such as airports, military bases and transmitting stations, shield the camera completely using an aluminum foil or other protections.

■ Maintenance

Related to the Product	
	Before performing maintenance of the product, be sure to turn off the power to ensure safety and protect the unit against malfunction.
	Wipe off dirt on the product using a dry and soft cloth.
	If the product is very dirty, wipe it with a cloth that is wet with water or neutral detergent and wrung dry. If neutral detergent is used, wipe again with a cloth that is wet with water and wrung dry.
	A flicker-like phenomenon may occur during recording under light sources such as fluorescent light and LED.
	Fine white spots may sometimes appear on the screen. This is caused by the influence of cosmic rays on the image sensor, and is due to the principles of the sensor. White spots may become more noticeable under the following circumstances. ・ When the gain level is increased ・ When the temperature of the camera body has gone up

■ Requests Concerning Use of the Product

・ Make sure to use a carrying case when transporting or storing the product.
・ Before the start of important shoots, perform a round of test shoot to ensure that images can be captured properly.
・ Make sure to turn off the power of the product after use.

■ Regular Maintenance Recommended

This product makes use of consumable parts that have a limited life even when they are properly used or stored. Regular maintenance is recommended to ensure that the product can be made use of safely for a prolonged period of time.
For more information on regular maintenance and repair, please consult our sales office.

How to Read the Operation Manual

This section explains the points to note when you are reading through the UHL-F4000 Operation Manual as well as the symbols and notations used.

■ Notes on the Manual

- The manual provides explanations for users who are equipped with the basic knowledge in areas such as handling of broadcast cameras.
- The contents of this manual may be subject to change without prior notice.

■ Symbols

The symbols used in this manual are as follows:

Caution	Points requiring attention during operation. Be sure to read through the information.
Note	Supplementary or reference information
Reference	Sections where the relevant information can be found

■ Notations

The following notations are used in this manual.

“This product” or “camera”	Refers to the entire UHL-F4000 unit (optical system (camera head) + image processor (CCU)).
“Optical unit” or “camera head”	Refers to the unit that is mounted into the anti-vibration device. (Body frame for attaching the lens)
“Image processing unit” or “CCU”	Refers to the unit for connecting the output of outgoing signals or the remote control panel. (Unit to be mounted to the helicopter camera head)
“ ”, “ ”, “ ”	Indicates the sequence for selecting and confirming the items in double quotation marks (“ ”).
4K	Refers to video output with an active image area of 3840 x 2160 or 4096 x 2160. In this manual, 3840 x 2160 output is indicated as “4K”.
HD (SDI)	Signals conforming to SMPTE 292 1.5Gb/s Signal/Data Serial Interface 1280 x 720 or 1920 x 1080 are indicated as “HD (SDI)”.
3G (SDI)	Signals conforming to SMPTE 424/425 3Gb/s Signal/Data Serial Interface 1920 x 1080 (Level- A/B) are indicated as “3G (SDI)”.
12G (SDI)	Signals conforming to SMPTE ST-2082 12Gb/s Signal/Data Serial Interface 3840 x 2160 are indicated as “12G (SDI)”.

■ Illustrations and Screens

Illustrations and screens used in the manual are intended for the purpose of explanation and may be slightly different from the actual product or image.

■ Related Manuals

Refer to the operation manuals and maintenance manuals that come with the peripheral equipment to be used.

■ Structure of the Operation Manual

This manual is intended for the safe and smooth operation of the UHL-F4000
There are seven chapters in total. Reading through them in sequence helps to facilitate the process from installation of the shooting equipment to operation.

Chapter 1

Outline

Provides descriptions on the features and main operating modes of this product.
If you are not familiar with this product, please start from this chapter.

Chapter 2

Names and Functions

Provides descriptions on the name and functions of each part on this product.

Chapter 3

Setting up and Connection

Provides descriptions on the method for attaching items such as lenses to this product.
Also provides descriptions on the method for connecting peripheral equipment to this product.

Chapter 4

Operating the Unit

Provides descriptions on the setup process before the shoot.
If you are using this product for the first time after its purchase, please read through this chapter and check whether it is functioning properly.

Chapter 5

Camera Settings and Adjustments

This product offers menu screens that allow for detailed setting to support a wide range of operations and diverse array of video expression.
This chapter provides descriptions on the settings in the menu screens.

Chapter 6

Troubleshooting

Read through this chapter to identify the defect when the alarm lamp lights up during operation of this product. It also provides descriptions on the routine maintenance procedures.

Chapter 7

Specifications

Provides descriptions on the specifications of this product.

Changing Information

This manual is written based on the standard specifications. Information on customized specifications and revisions is described here. Read through this chapter while referring to the main text of the operation manual. (Updates on “Changing Information” may be sent to you later on.).

UHL-F4000

4K/HD Multi Purpose Camera
OPERATION MANUAL

Chapter 1 Outline

1.1 Outline

The UHL-F4000 is a 4K/HD 3CMOS Multi-Purpose separate optics 2-piece camera, featuring a compact, lightweight, and low power consuming camera head, which makes the camera especially well suited for helicopter camera applications.
As the succeeding model of the HDL-F3000, the F4000 is newly equipped with Global Shutter CMOS sensors.
The F4000 is also newly capable of outputting 4K and Cutout HD images, but its significant low light capability has been passed down from its former model.
Additional improvements in its image processing functions such as Variable Contrast Control (Dehaze), Image Sharpening Function(Sharpness), and Digital Zoom Function (from 1.01x to 10.0x) will broaden the F4000's usage.
Three high-performance CMOS image sensors are used to achieve a high sensitivity and high picture quality of F12, S/N62dB. The image sensor comes with a Global Shutter feature that helps to capture the subject accurately by producing video images with no flash band effect and no rolling shutter distortion.
Applying the latest FPGA image processing and digital processing LSI (ASIC) that is packed with digital image processing techniques for broadcast to the video image projected on the image sensor helps to broaden the range of expression from natural and detailed video images to those that make good use of state-of-the-art image effects, thereby enabling a diverse variety of videos to be created according to the intention of the producer.
Also, with a body frame that is specially designed for use as a helicopter camera, separating the camera head from the camera control unit (CCU) makes it possible to fit the camera into a small gimbal. Meanwhile, a new image processing circuit (digital zoom, image sharpening, image dehazing, DNR) has also been employed to support different purposes of shooting.

1.2 Features

■ Compact Size

A compact and power saving camera head has been achieved in order to suit its application as a helicopter camera system. The 1.5kg camera head fits in small sized gimbals for example.

■ Optical fiber connection

An Optical Fiber connection is employed between the camera head and CCU, allowing them to be separated by a distance up to 10km.
This allows different configuration for a range of applications, such as weather cameras, surveillance cameras, as well as studio roboticcamera systems. * The camera head needs a connection for power in addition to the fiber connection.

Caution

Power needs to be supplied separately to the camera head in addition to the optical fiber.

■ Digital zoom

The digital zoom feature allows smooth zooming in 0.1 increments from 1.1x to 10.0x. When shooting a distant subject, combining the optical and digital zoom helps to capture the subject precisely in the recorded video.

Caution

Increasing the digital zoom ratio will result in a lower image resolution.

■ Built-in filter servo

The filter servo is built into the camera head. It enables remote control of the filter position from the different camera control panels.

■ HD Cutout

By cutting out a HD video from the 4K video, it is possible to output two types of video images with different viewing angles. In addition, the cutout video is equivalent to a 2.0x zoom of the 4K video, and it can be used to create an added close-up effect on the subject.

■ Variable Image Dehazing (Dehaze)

The Image Dehazing feature helps to produce clear video images even under situations where the surroundings are foggy or hazy.

■ Image Sharpening Function (Sharpness)

Using the Image Sharpening feature helps to sharpen the edge components if the resolution level of the edges is poor when the video image is enlarged. This is a useful function for capturing objects such as car license plates.

■ Variable Noise Reduction (DNR)

The remote control panel includes a variable control so the operator can adapt the camera in real time for optimum noise reduction when shooting at night with high gain.

■ Focus Assist

The Focus Assist feature is made possible by superimposing edge components extracted through 4K video processing onto the HD monitor output. It allows the feature to facilitate critical focus adjustment of 4K videos on a HD monitor.

■ Flip Up/Down

This product is equipped with a feature for flipping the video output by 180 degrees. This feature allows the camera to be mounted upside down according to the intended use. It allows video to be output in the correct orientation even in situations where it is necessary to mount the camera upside down.

■ Ethernet Trunk line

An Ethernet Trunk line is available between the camera head and the CCU. This line enables tripod head control signals from the CCU installed at a remote location to be transmitted to the optical unit.

■ Auto Video-level Control (AVC)

AVC adjusts the video level automatically using ND filter, Iris control, Gain and shutter speed control.

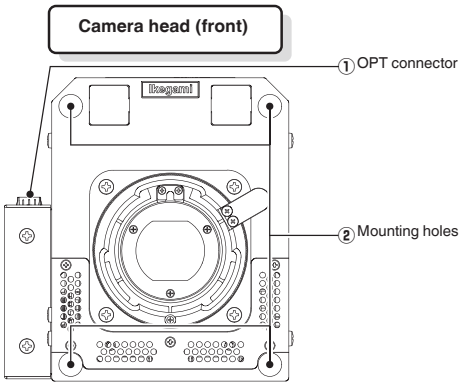
■ Auto Tracking White balance (ATW)

ATW adjusts the white balance automatically according to the color temperature of the lighting that illuminates the object.

Chapter 2 Names and Functions

This section provides descriptions on the name and functions of each part.

2.1 Camera Head

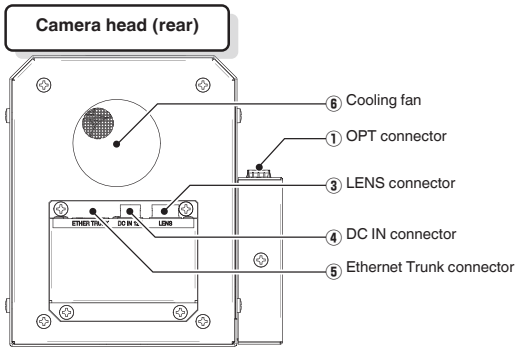


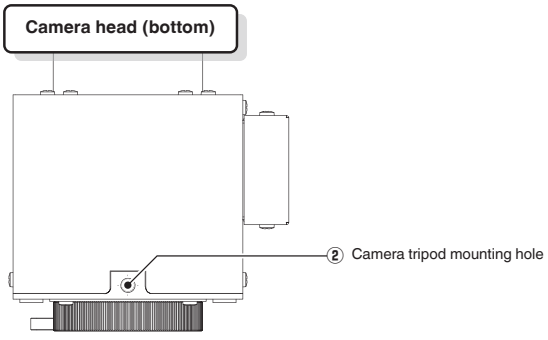
① OPT connector

For connecting to the camera control unit using an optical cable.

② Mounting holes

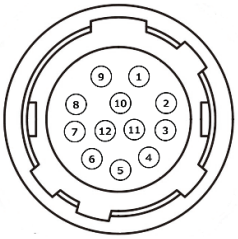
Mounting holes for different purposes can be found on the front and bottom surfaces of the camera head. The mounting holes on the front of the camera head are used for securing the camera head inside the gimbal. (Screw hole: M4; length: 6 mm) The mounting hole at the bottom is for mounting the camera to a tripod. (Screw hole: 1/4-20UNC; length: 10 mm)





③ LENS connector

12-pin connector for lens.



Insertion Side

HR10A-10R-12SC (Cable side: HR10A-10P-12PC)

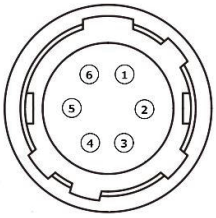
Pin No.	Name	Function	Direction
①	RET IN	RETURN VIDEO ON/OFF signal RETURN ON : 0.5 V or lower Zout = 1.5 kΩ or lower RETURN OFF : OPEN Zout = 10 MΩ or higher Zin = 100 kΩ ± 5% (10 kΩ or higher) Momentary operation	IN
②	VTR TRIG	VTR START/STOP signal VTR START : 0.5 V or lower Zout = 1.5 kΩ or lower VTR STOP : OPEN Zout = 10 MΩ or higher Zin = 100 kΩ ± 5% (10 kΩ or higher) Momentary operation	IN
③	GND	Grounding for LENS	-
④	IRIS SERVO	Iris servo forced on/off SERVO ON : +5.0 V ± 0.5 V Zout = 10 kΩ or lower SERVO OFF : 0.5 V or lower Zout = 1.5 kΩ or lower Or 100 kΩ or higher	OUT
⑤	IRIS CONT	Lens iris control output F2.8: 6.2 V ± 0.1 V F16: 3.4 V ± 0.1 V CLOSE: 2.1 V to 2.9 V Zout = 1 kΩ or lower	OUT

Pin No.	Name	Function	Direction
⑥	+12V LENS	DC +12 V for lens Normal operating range: DC +10 V to +17 V	OUT
⑦	IRIS FOLLOW	Answer signal of lens iris position F2.8: 6.2 V ± 0.1 V F16: 3.4 V ± 0.1 V CLOSE : 1.5 V to 2.9 V Zin = 20 kΩ or higher	IN
⑧	IRIS REM/AUTO	IRIS REMOTE/AUTO selection REMOTE : +5.0 V ± 0.5 V Zout = 10 kΩ or lower AUTO : 0.5 V or lower Zout = 1.5 kΩ or lower Or 100 kΩ or higher Zin = 100 kΩ or higher	OUT
⑨	EXT ANS	Answer signal of lens extender position ON : +0.5 V or lower Zout = 1.5 kΩ or lower OFF : OPEN Zout = 10 MΩ or higher Zin = 10 kΩ or higher	IN
⑩	ZOOM FOLLOW	Answer signal of lens zoom position WIDE : 2.0 V ± 0.2 V TELE : 7.0 V ± 0.2 V Zin = 20 kΩ or higher	IN
⑪	SERIAL: LENS→CAMERA/ FOCUS FOLLOW	Serial data reception (LENS→CAMERA) VCC 5.0 V ± 0.25 V or Answer of lens focus position Minimum object distance: 2.0 V ± 0.2 V Infinity: 7.0 V ± 0.2 V Zin = 20 kΩ or higher	IN
⑫	SERIAL: CAMERA→LENS	Serial data transmission (CAMERA→LENS) VCC 5.0 V ± 0.25 V	OUT

IN: Camera ← Lens; OUT: Camera → Lens

④ DC IN connector

DC +12 V input connector for supplying power to the camera head.



Insertion Side

HR10A-7R-6PC(73) (Cable side: HR10A-7P-6SC(73))

Pin No.	Name
①	DC+12V
②	DC+12V
③	DC+12V
④	DC+12V_RET(GND)
⑤	DC+12V_RET(GND)
⑥	DC+12V_RET(GND)

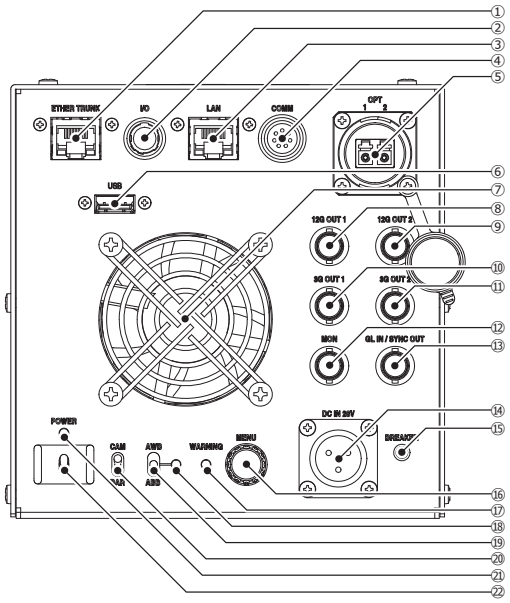
⑤ Ethernet Trunk connector

Ethernet Trunk line connector for communication between the camera control unit and camera head. This line allows for operation that is independent of the camera videos and controls.

⑥ Cooling fan

Cooling fan for the camera head. Ensure that the vents of the fan are not blocked due to dust or other reasons. The fan is a consumable part. Replace it when performing the periodic overhauls.

2.2 Camera Control Unit (CCU)



① ETHER TRUNK connector
② I/O connector
③ LAN connector
④ COMMAND connector
⑤ OPT connector
⑥ USB connector
⑦ Cooling fan
⑧ 12G OUT1 connector
⑨ 12G OUT2 connector
⑩ 3G OUT1 connector
⑪ 3G OUT2 connector
⑫ MON OUT connector
⑬ GL IN/SYNC OUT connector
⑭ DC IN connector
⑮ Breaker
⑯ MENU Rotary Encoder (MENU RE)
⑰ WARNING indicator
⑱ ABB/AWB indicator
⑲ ABB/AWB switch
⑳ CAM/BAR switch
㉑ POWER indicator
㉒ POWER switch

① ETHER TRUNK connector

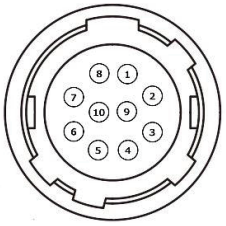
Ethernet Trunk line connector for communication between the camera control unit and camera head. This line allows for operation that is independent of the camera videos and controls.

② I/O connector

RS422 communication connector for external control.

Caution

RS422 communication is reserved for factory use.



Insertion Side

HR10A-10R-10SC(71)
(Cable side: HR10A-10P-10PC(73))

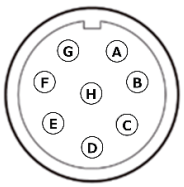
Pin No.	Name	Function
①	TXD_P	RS422 communication output (Camera → External source)
②	TXD_N	RS422 communication output (Camera → External source)
③	RXD_P	RS422 communication input (External source → Camera)
④	RXD_N	RS422 communication input (External source → Camera)
⑤	GND	
⑥	DC+12V_OUT	DC+12V 1000mA MAX
⑦		
⑧		
⑨		
⑩		

③ LAN connector

For connecting a network-compatible remote controller via a hub that supports PoE+. For more details, please refer to [3.5 Connecting to Remote Control Panel].

④ COMMAND connector

For connecting devices such as a remote control panel that is compatible with ICCP (Ikegami Camera Control Protocol)/ISCP (Ikegami Simple Control Protocol) (not network-compatible).



Insertion Side

EPRC05-R8F (Cable side: EPRC05-P8M)

Pin No.	Name	Function	Direction
A	HED (+)	Digital data output from camera to remote controller (+)	OUT
B	HED (-)	Digital data output from camera to remote controller (-)	OUT
C	HEC (+)	Digital data output from remote controller to camera (+)	IN
D	HEC (-)	Digital data output from remote controller to camera (-)	IN
E	DC+12V_OUT	DC +12 V power supply (max.: 2.0 A)	OUT
F	DGND	Ground terminal for DC +12 V power source	OUT
G	RESERVE		
H	RESERVE		

⑤ OPT connector

For connecting to the camera head using an optical cable.

⑥ USB connector

For reading and writing files used by this product.

⑦ Cooling fan

Cooling fan for the camera control unit. Ensure that the vents of the fan are not blocked due to dust or other reasons. The fan is a consumable part. Replace it when performing the periodic overhauls.

⑧ 12G OUT1 connector

Outputs SDI signals including those for the 4K format. Setting is possible on the “SYSTEM” page of the camera menu [SYSTEM] in [5 Camera Settings and Adjustments], which offers a wide variety of format settings. For more details on the configurable formats, please refer to the table in [7.5 Supported Formats]. The same signal will also be output to 12G OUT2 in ⑨.

⑨ 12G OUT2 connector

Outputs the same signal as 12G OUT1 in ⑧.
It is not possible to assign different settings to 12G OUT1 and 12G OUT2.

⑩ 3G OUT1 connector

Output SDI signal which down converted from 4K format.
Output signals can be configured in the MENU. Please refer to [SYSTEM] in the camera menu. The same signal will be output to 12G OUT2.

⑪ 3G OUT2 connector

Outputs the same signal as 3G OUT1 in ⑩. It is not possible to assign different settings to 3G OUT1 and 3G OUT2.

⑫ MON OUT connector

For connecting a picture monitor (PM).
Characters such as the menu are superimposed on the MON OUT screen. Characters to be superimposed can be configured in the menu. The format of the output signals can be configured in [SYSTEM] of the camera menu in [5 Camera Settings and Adjustments], but the configurable formats vary according to the setting of 12G OUT.

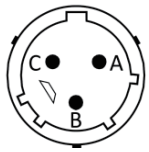
⑬ GL IN/SYNC OUT connector

Connector for input of synchronization signal (HDTV tri-level SYNC or SDTV VBS/BBS) to synchronize the camera.
Synchronization signal (Tri-level sync) can be output by configuring the settings in the MENU.

⑭ DC IN connector

Input connector for supplying power to the camera control unit.

[DC +28 V]



Insertion Side

PT02E-12-3P(025) (Cable side: PT06E-12-3S(470))

Pin No.	Name
A	DC+28V
B	DC+28V_RET(GND)
C	NC

⑮ Breaker
Breaker for DC power line to the camera control unit. It adopts the “push-to-reset” mechanism.

⑯ MENU Rotary Encoder (MENU RE)
Pressing MENU RE displays the USER MENU screen. Turn the MENU RE to select the operation you want to use from the menu items displayed on the screen, and press the MENU RE to confirm the selection. For more details on the menu and method of configuration, please refer to [5 Camera Settings and Adjustments].

⑰ WARNING indicator
Lights up in red when an error has occurred in the camera, when the cooling fan of this product has stopped running, or when the input voltage is low. You can view the details of the error in [WARNING] under [INFORMATION].

⑱ ABB/AWB indicator
Lights up in green when the camera is in the AWB (Auto White Balance) mode, and in orange when in the ABB (Auto Black Balance) mode. The light will turn off upon exiting the AWB or ABB mode.
When AWB or ABB cannot be performed successfully, the indicator will appear flashing. When this occurs, operate the AWB/ABB switch again to cancel the operation. Eliminate the cause that prevents AWB/ABB adjustment from being performed successfully and repeat the procedure.

⑲ ABB/AWB switch
Executes AWB or ABB. This is a press-and-release switch that returns to the midpoint when you release your finger from it. Unlike the CAM/BAR switch in ⑳ below, operation of this switch is possible even when a remote controller is connected to the REMOTE connector.

⑳ CAM/BAR switch
Switches between the camera signal and the color bar signal.

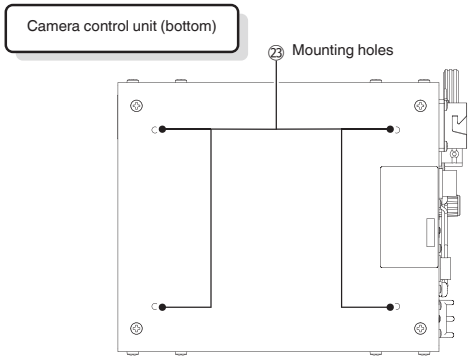
CAM : Camera signal
BAR : Color bar

When a remote controller is connected, this switch is disabled.

㉑ POWER indicator
Lights up in green when the main power of the camera control unit is “ON”.

㉒ POWER switch
Switch for turning on/off the main power of the camera control unit.

㉓ Mounting holes
Mounting holes for securing the product can be found at the bottom surface of the camera control unit. (Screw hole: M4; length: 6 mm)



Chapter 3 Setting up and Connection

3.1 Preparation

■ Operating Environment

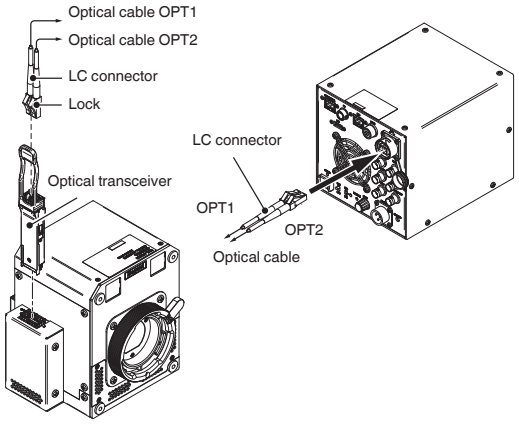
Please read through [Safety Precautions] at the beginning of this manual to take note of the necessary precautions when using this product.

■ Ensure that the power switch is set to “OFF”

Before connecting the peripheral equipment described in this chapter to the product, make sure that the power of this product and the equipment to be connected are set to “OFF”. There is no power switch on the camera head. Make sure that the power switch of the AC adapter is set to “OFF”.

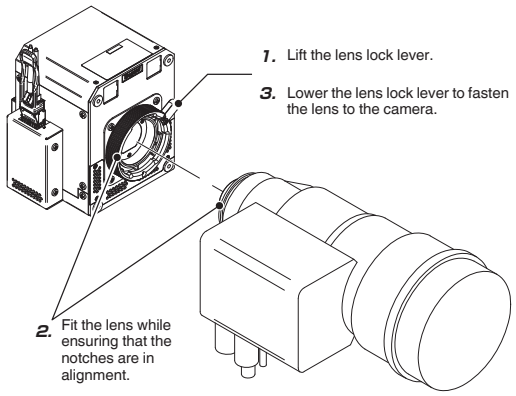
3.2 Connecting Camera Cables

Connect the camera head and camera control unit using an optical cable.
2 optical cables are needed for the connection. (LC connector (SM) type)
Connect the optical cables of the camera head and camera control unit with the corresponding OPT number indicated at the respective OPT connectors.
Pulling the blue grip on the optical transceiver of the camera head releases the lock and disengages it from the camera head.



3.3 Attaching a Lens

Below are the steps to attach a lens to the camera head.
When attaching a lens, place with the camera head on a tripod or placed on a level and stable surface. The lens mount supports the BTA mount.



1 **Lift the lens lock lever to remove the mount cap.**

2 **Align the pin of the lens with the notch on the lens mount and fit the lens horizontally.**

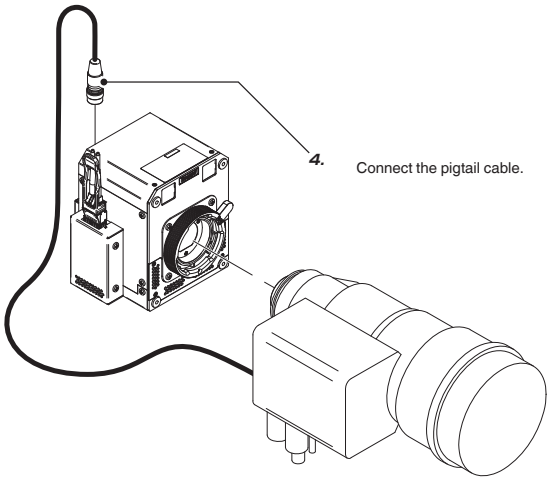
Support the lens to prevent it from falling off.

3 **Fasten the lens to the camera.**

Lower the lens lock lever to fasten the lens to the camera.

4 **Connect a pigtail cable to the lens connector.**

Align the pins while plugging in the connector and it will automatically lock into place.



5 **Check the wiring of the pigtail cable to prevent it from interfering with other cables.**

Depending on the environment for installation, secure the cables separately with a belt as needed.

Caution

Do not hold the lens to support the weight of the camera or to carry it. Applying excessive force to the lens mount can cause damage.

3.4 Connecting to Power Supply

The supply voltage to the camera head is DC +12 V.
The allowable range is DC 11 to 16 V.
The supply voltage to the camera control unit is DC +28 V.
The allowable range is DC 24 to 32 V.

Caution

Using a power supply beyond the allowable range may result in serious damage or malfunction of the product. Please make sure the supply voltage before use.

Caution

There is no power switch on the camera head. Before connecting the power supply, make sure that the power switch of the AC adapter is set to “OFF”.

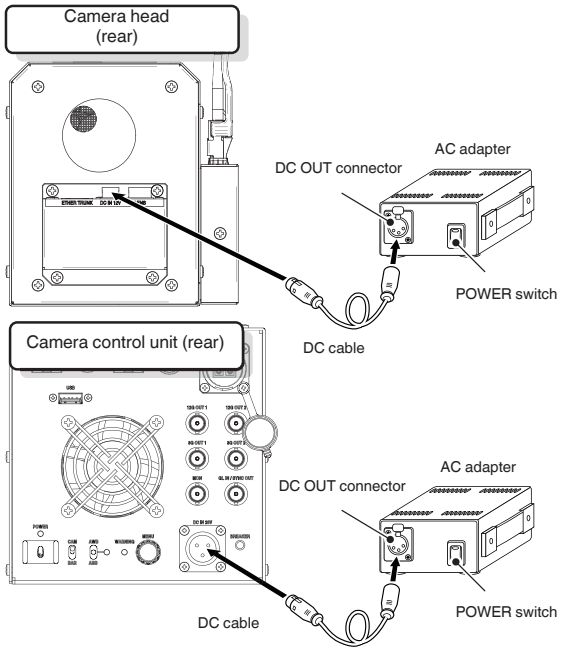
1 **Make sure that the POWER switch of the AC adapter is set to “OFF”.**

2 **Connect the DC cable to the DC OUT connector of the AC adapter.**

3 **Connect the DC cables to the respective DC IN connectors on the camera head and camera control units.**

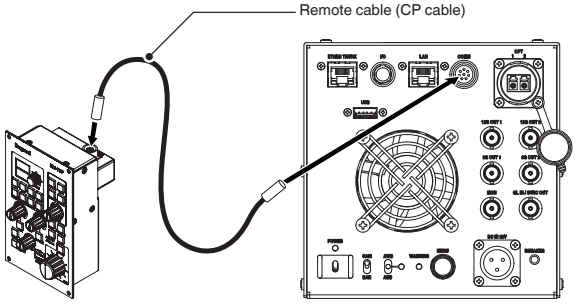
4 **Turn the power switch of the AC adapter to ON to supply power to the camera head and the camera control unit.**

(The camera head does not have a POWER switch and STATUS indicator. The cooling fan starts running once power is supplied.)



3.5 Connecting to Remote Control Panel

There are different types of remote control panels that can be used to operate the camera, such as RM-71F and OCP-300. For more information on how to operate them, please refer to the operation manual of the respective remote control panels.
In the following the RM-71F will be used to illustrate how it can be connected to the CCU.

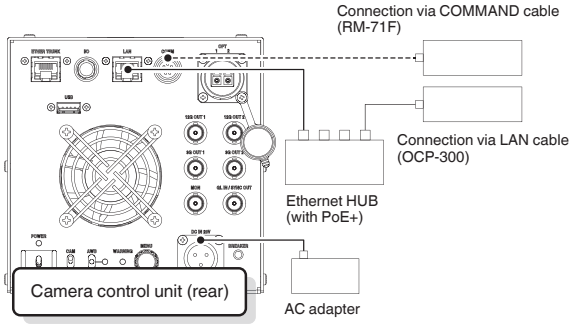


1 **Connect the remote controller to the camera control unit.**

Connect the COMMAND connector on the remote control panel (RM-71F) to the COMMAND connector on the rear of the camera control unit with a CP cable (max. length: 100 m). Insert the connector all the way until you hear a "click" sound.

Note

Connect the LAN connector at the camera rear side and the connector for LAN of the Remote control panel (OCP-300) which can be controlled by the network connection via the PoE+ (IEEE 802.3at)-supported network switch.



3.6 Connecting to a Monitor

Use a coaxial cable to connect a monitor equipped with HD-SDI input to the MON OUT connector of the camera control unit. The output signal may be selected in the menu. The default setting is 1080i59.94 format.

3.7 Flipping Video Output

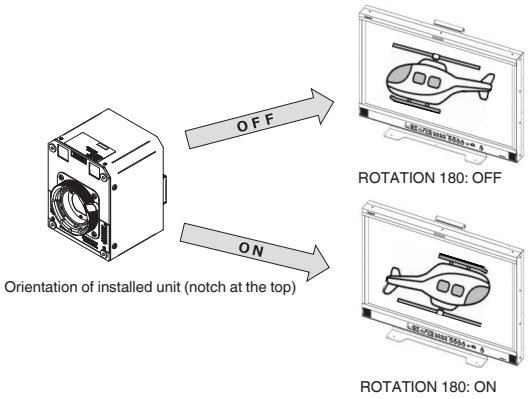
The camera output can be rotated by 180 degrees.
Follow the settings below when installing the camera upside down.

1 **Display the menu.**

For more details on menu operation, please refer to [5 Camera Settings and Adjustments].

2 **Configure the video settings in [ROTATION 180].**

Set [SYSTEM] - [ROTATION 180] to “ON” or “OFF”.



3 **Close the menu after setting is complete.**

Press and hold the MENU RE (for approx. 1 second) to exit the menu screen.

Reference

For more details, please refer to [5 Camera Settings and Adjustments] - [Menu Screen Operation] - [Exiting the Menu Screen].

3.8 External Sync Signal Connection

This section describes the sync signal input and output of the GENLOCK system on this product as well as examples of its connection.

■ Sync Signal Input

Genlocks the video signal output to the reference sync signal that is input to the GL IN/SYNC OUT connector on the rear of the camera. Configure the settings according to [5 Camera Settings and Adjustments] for GL IN/SYNC OUT connector input/output switch and phase adjustment between the video signal output and reference sync signal. This camera supports following 2 types of sync signal.

- HDTV PS/S (Tri-level sync)
- SDTV VBS/BBS (NTSC/PAL)

Reference

For a list of the the sync signal formats that are compatible with the output format, please refer to the table under [7.5 Supported Formats].

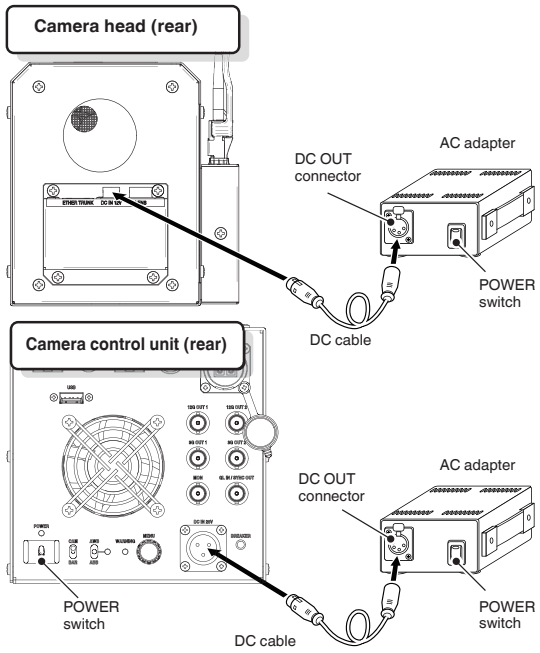
■ Sync Signal Output

Outputs the sync signal in the same format as that of the camera video output.

Chapter 4 Operating the Unit

4.1 Powering on

Connect the peripheral equipment to the camera and set the POWER switch of the AC adapter to “ON”. Upon completion, set the POWER switch of the camera control unit to “ON”. The camera head does not have a POWER switch. It powers on when the POWER switch of the AC adapter is turned on.



Caution

When attaching or detaching a peripheral device, make sure to set the POWER switch of the connected AC adapter to “OFF” beforehand.

4.2 Checking the Output Signal

After turning on the power, ensure that video signal is properly output to the monitor that is connected to the video output terminal.

4.3 Running Auto Setup

This product comes with an Auto Setup feature that automatically adjusts various levels and settings using the CPU inside the camera.
Run according to each intended use.

■ About the Auto Setup Feature

- **Full Auto Setup**
  Executes all auto setup items in the camera. This is mainly executed after maintenance and inspection. The auto setup chart is required.
- **Level Auto Setup**
  Set the video processing levels. This process can be executed daily before using the camera.
  The auto setup chart is required.
- **Full Quick Auto Setup**
  An external chart is not necessary as FULL QUICK auto setup uses an internal electrical test pulse signal built into the camera. Setup is possible even when you are unable to shoot a chart.
- **Quick Auto Setup**
  QUICK auto setup also uses an internal electrical test pulse signal. Level setup can be adjusted without the use of a test chart.
- **Auto White Balance (AWB)**
  Adjusts the white level of the R and B signals. White balance needs to be readjusted when there is a change in the color temperature of the light source or the optical filters as these will affect the white balance.
- **Auto Black Balance (ABB)**
  Adjusts the black level of the R, G and B signals. Although black balance is not affected by the color temperature of the light source or the optical filters, it needs to be readjusted when GAIN is changed or when the ambient temperature has changed significantly.

Note

Auto setup adjusts the camera based on the reference file values. The value for Full Auto Setup can be selected from INT (Internal Reference) and EXT (External Reference). In the factory default, this reference file value is created and stored in the memory.
Creating new file is necessary to chgange the reference value.

Auto setup can be run from the camera, OCP or MCP. Please refer to the next table for adjusted items.

■ List of Auto Setup Functions

Control Item	Auto Setup Functions					
	FULL	LEVEL	FULL QUICK	QUICK	AWB	ABB
REF	INT/EXT	EXT	INT/EXT	EXT	EXT	EXT
LEVEL						
BLK SET	R, G, B	R, G, B	R, G, B	R, G, B		R, G, B
PED	R, G, B	R, G, B	R, G, B	R, G, B		R, G, B
GAIN	R, G, B	R, G, B	R, G, B	R, G, B	R, B	
GAMMA	R, G, B	R, G, B	R, G, B	R, G, B		
FLARE	R, G, B	R, G, B	R, G, B	R, G, B		
WHITE CLIP	R, G, B	R, G, B	R, G, B	R, G, B		
AUTO KNEE						
SLOPE	R, G, B	R, G, B	R, G, B	R, G, B		
POINT	R, G, B	R, G, B	R, G, B	R, G, B		
MANU KNEE						
SLOPE	R, G, B	R, G, B	R, G, B	R, G, B		
POINT	R, G, B	R, G, B	R, G, B	R, G, B		
WHITE SHADE						
H SAW	R, G, B					
H PARA	R, G, B					
V SAW	R, G, B					
V PARA	R, G, B					
CAL × 100 (GAIN, PED)	R, G, B		R, G, B			R, G, B

Reference

- INT of REF (internal reference) is a fixed value that is configured as part of the factory default by software.
- EXT of REF (external reference) is a value that is configured using the Reference Set feature.
- You can switch between INT/EXT of the REF file in the [VIDEO ADJUSTMENT], [AUTO SETUP MODE] and [FULL AUTO REF] camera menus.
- G operates only upon setup using the diascope (built-in chart). During setup using an external chart, IRIS is adjusted to set the Gch level as 100%. (Gch setting will not be altered.)

4.4 Adjusting the Lens

■ Lens Flange Back Adjustment

Broadcast lenses are designed to maintain focus throughout the zoom range when the distance from the lens to the subject does not change.
The Flange Back (Back Focus) adjustment on the lens is used to optimize this function.
Once the lens flange back is adjusted it should not be necessary to readjust until the lens is replaced with another one.
An example of adjustment method is shown below.

1 **Set the Iris mode switch of the zoom lens to [M] (Manual).**

2 **Fully open the iris.**

The depth-of-focus becomes narrow when the iris fully open and it makes easy to focus. Adjust the Flange Back under this condition.

Note

- Use an ND filter or Shutter to reduce the amount of incoming light if the subject is too bright and appears saturated when the iris is fully open.
- Siemens star chart is recommended for a subject. The center part has detailed patterns, so it is easy to adjust the focus. (Refer to the next page.)

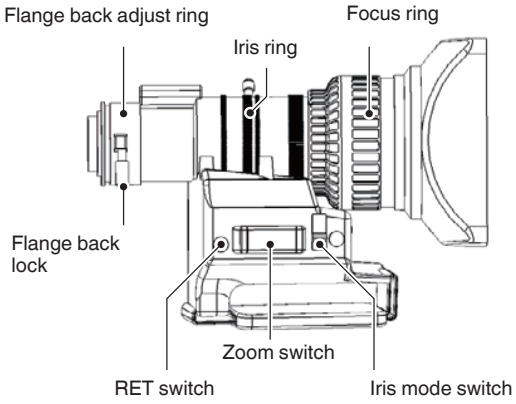
3 **Shoot a subject that is about 5 m away.**

4 **Press [T] on the zoom switch for a tight shot of the subject, and achieve an accurate focus using the focusing ring.**

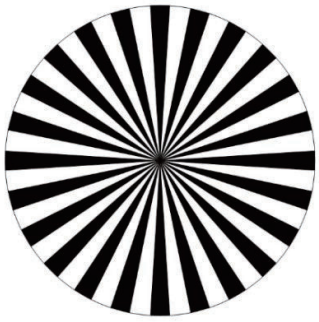
5 **Press [W] on the zoom switch for a wide shot of the subject. Do not readjust the focusing ring.**

6 **Loosen the flange back lock, and turn it to adjust the focus.**

7 **Repeat steps 4 to 6, and tighten the flange back lock with both [T] and [W] in focus.**



■ An example of the flange back adjustment chart



Siemens star chart

■ Configuring Settings for Aberration Correction

When a serial lens with aberration correction data is attached, it is possible to correct lens aberrations using following settings.

1 **Display the menu.**

Please refer to [5.1 Basic Operation of the Menu] for menu operation.

2 **Set the camera to ENGINNER MENU mode.**

Set [MENU MODE] - [ENGINEER MENU] to “ON”.

Reference

Please refer to [5.1 Basic Operation of the Menu] - [Displaying the ENGINEER MENU] for menu operation.

3 **Configure the aberration correction settings in [OPTICAL ABERRATION CORR.(E)].**

Settings such as turning ON/OFF the feature and the amount of correction can be configured in [VIDEO ADJUSTMENT] under [OPTICAL ABERRATION CORR.(E)].

Reference

For more details of this menu item, please refer to [5.2 Menu Configuration and Content] - [VIDEO ADJUSTMENT] - [OPTICAL ABERRATION CORR.(E)].

4 **Close the menu after setting is complete.**

Press and hold the MENU RE (for approx. 1 second) to exit the menu screen.

Reference

This setting is maintained even when the power is “OFF”. If you do not want to apply aberration correction, set this menu item to [DISABLE].

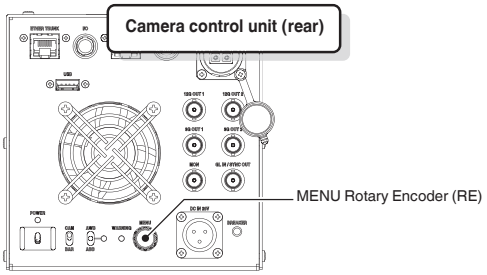
Note

Please refer to [5.5 Screen Display] - [On-screen Display Features] - [OAC indicator] for menu operation.

Chapter 5 Camera Settings and Adjustments

5.1 Basic Operation of the Menu

Various setting items on the Menu screen can be displayed on the MONITOR output to set the various functions of the camera freely.Selections and settings of various items are conducted by looking at the Main menu screen/Submenu screen displayed on the MONITOR output.
The menus are structured in layers, and consist of the User Menu, Standard (Main) Menu and Engineer Menu.



Caution

Turning MENU RE:
Turn the knob to select the item from the list of items under the camera features.
Pressing MENU RE:
Press the RE to finalize the setting for the corresponding camera feature.

Menu Screen Operation

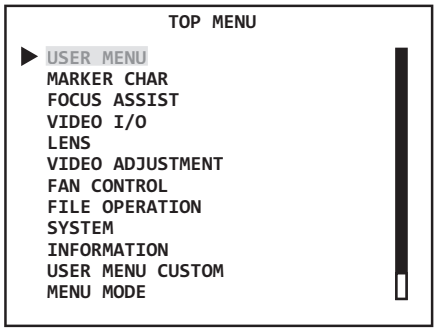
■ Displaying the Main Menu (Top Menu Screen)

Pressing the MENU RE for 0.5 second displays the Main Menu.

■ Menu Settings Screen

The setting items on the Menu screen have a layered system. The menu settings are further divided into user settings, main settings ([TOP MENU]) and engineer settings.

- User Settings : Settings for daily operation
- Main Settings : Settings for daily operation
- Engineer Settings : Settings for periodic maintenance by the user



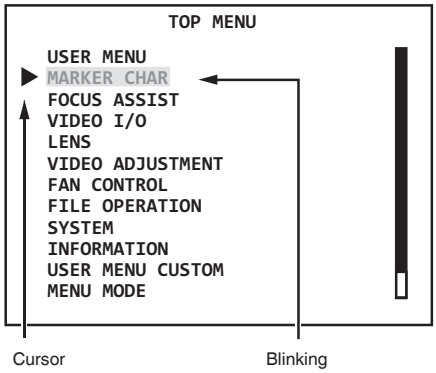
Caution

"Sub-menu"
Displays the different preferences available for the corresponding menu and screen for selecting a setting.

■ Displaying the Menu Settings Screen

Follow the steps below to display the menu screen.

1 **Press the MENU RE to display the Main Menu ([TOP MENU]) screen.**

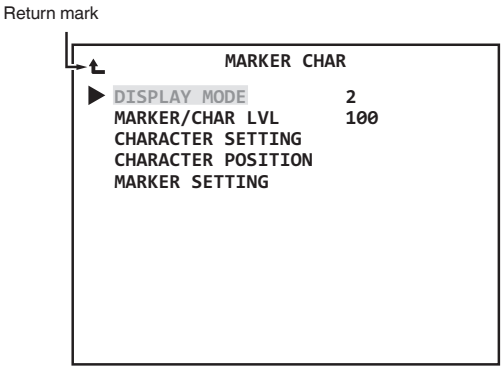


2 **Turn the MENU RE to move the cursor on the Main Menu screen to the item to configure.**

The item at which the cursor is placed starts blinking.

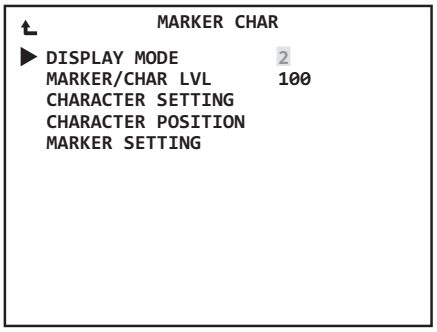
3 **Press the MENU RE to display the sub-menu screen for the selected item.**

The display changes to show the [MARKER CHAR] sub-menu screen as example.



4 **Turn the MENU RE to move the cursor on the sub-menu screen to the item to configure.**

The item at which the cursor is placed starts blinking.



5 **Press the MENU RE. The setting of the item starts blinking. Turn the MENU RE to adjust the setting.**

[Example]

→ 2 → OFF → 1 ┐

6 **After the desired setting is displayed, press the MENU RE to confirm the selection.**

After the setting is confirmed, the display returns to the sub-menu screen.

7 **To return to the Main Menu screen during the setting process, move the cursor to the return mark and press the MENU RE.**

Caution

Note that MENU RE is not pressed after changing the mode setting. Otherwise, the change may not be applied.

Note

- Select " ↵ " and press the MENU RE to return to the Main Menu screen.
- For a long list where all items cannot be displayed on the screen at once, you can keep scrolling up/down the screen to view the other items on the list. As shown in the diagram at the top right of page 13, you will see a scroll bar which tells you which part of the list you are at now.

■ Exiting the Menu Screen

To exit the menu screen, press Exit on the Main Menu ([TOP MENU]) screen.
Alternatively, press and hold the MENU RE (for approx. 1 second) to exit the menu screen.

About the USER MENU

Items which are frequently used in daily operations can be registered to the USER MENU for quick display and setting change.
This section provides descriptions on the initial settings as well as customization, moving and deletion of the USER MENU preferences.

■ Initial USER MENU Settings

1 **Display [USER MENU] by selecting it from [TOP MENU].**

- MARKER CHAR
- FOCUS ASSIST
- VIDEO I/O
- VIDEO ADJUSTMENT
- INFOMATION

■ Customizing USER MENU Items

You can register up to 20 menu items in the User Menu. The steps to register are descrived below.

1 **Select [USER MENU CUSTOM] from the Main Menu ([TOP MENU]).**

2 **Numbers from 1 to 20 appear on the screen as you scroll down. Point the cursor at the number for registering your preference, followed by pressing the MENU RE.**

3 **[SELECT], [MOVE], [DELETE] and [CANCEL] appear on the screen. Point the cursor at [SELECT] and press the MENU RE.**

4 **A list showing the Main Menu items is displayed. Move the cursor to select the number (item) you want to register.**

When you point the cursor at an item, the item will start blinking if it is selectable.

5 **If there are more options below the level of the selected item, [SET], [EXPAND] and [CANCEL] will appear on the screen.**

To register the selected menu item to the User Menu, select [SET].
To expand the selected menu item, select [EXPAND]. A menu list is displayed. Make a selection from the list.

6 **If there are no options available below the level of the selected item or if an item cannot be expanded (i.e., the lowest-level item), the selected item will be registered.**

7 **To continue registering other menu items, repeat steps 2 to 5 or 6.**

■ Moving USER MENU Items

Follow the steps below to move a registered menu item to a different number.

1 **Select [USER MENU CUSTOM] from the Main Menu ([TOP MENU]).**

2 **Numbers from 1 to 20 appear on the screen as you scroll down. Point the cursor at the number (item) you want to move, followed by pressing the MENU RE.**

3 **[SELECT], [MOVE], [DELETE] and [CANCEL] appear on the screen. Point the cursor at [MOVE] and press the MENU RE.**

4 **A list showing the destinations for moving the item to appears on the screen. Move the cursor accordingly and press the MENU RE.**

The item is now moved.

5 **To continue moving other menu items, repeat steps 2 to 4.**

Caution

If there already exists a registered item at the destination, it will be overwritten by the item you are moving. This action is irreversible.
The number from which the menu item is moved becomes empty. (Note that this action moves a menu item instead of interchanging two items)
For example, assuming that A is registered to 1 and B is registered to 2. If [MOVE] is performed to move A from 1 to 2, 1 will become empty and A will be registered to 2.

■ Deleting USER MENU Items

Follow the steps below to delete a registered menu item.

1 **Select [USER MENU CUSTOM] from [TOP MENU].**

2 **Numbers from 1 to 20 appear on the screen as you scroll down. Point the cursor at the number (item) you want to delete, followed by pressing the MENU RE.**

3 **[SELECT], [MOVE], [DELETE] and [CANCEL] appear on the screen. Point the cursor at [DELETE] and press the MENU RE.**

4 **To continue deleting other menu items, repeat steps 2 to 3.**

Displaying the ENGINEER MENU

Follow the steps below to display the ENGINEER MENU items.

1 **Move the cursor to [MENU MODE] in the Main Menu ([TOP MENU]), and press the MENU RE.**

2 **Turn the MENU RE to move the cursor to [ENGINEER MENU] and press MENU RE to select “ON”.**

3 **Display the Main Menu ([TOP MENU]). The items to be configured in [ENGINEER MENU] are added to and displayed as [TOP MENU] items.**

Caution

- The ENGINEER MENU settings will be restored to “OFF” each time when you turn off the power and restart the camera. To display the Engineer Menu again, configure [ENGINEER MENU] to “ON”.
- Those in the menu item list that are marked with “(E)” at the end of the item name are ENGINEER MENU items.

5.2 Menu Configuration and Content

This section provides description of the respective menu items.

■ Main Menu Settings

① USER MENU
For configuring items used in daily operation.
(Excludes items related to maintenance checks)

Reference

For more details on USER MENU, please refer to [5.1 Basic Operation of the Menu] and [About the USER MENU](14).

② MARKER CHAR
For configuring area and camera information that is displayed on the monitor output to support the camera operator.

③ FOCUS ASSIST
For configuring whether to display signals to support focusing on the monitor output.

④ VIDEO I/O
For configuring input/output of the GLIN/SYNC OUT and the type of video output.

⑤ LENS
For configuring the setting of the lens and creation of a lens file.

⑥ VIDEO ADJUSTMENT
For configuring the requirements needed for video signal processing and performing auto setup.

⑦ FAN CONTROL
For viewing the operating status and configuring the settings of the built-in fan.

⑧ FILE OPERATION
For saving the settings of this product to a file and loading the file.
Also for saving the settings to or loading the settings from an external USB flash memory.

⑨ SYSTEM
For configuring settings of the camera such as format.

⑩ INFORMATION
Displays the operating state of the camera.

⑪ USER MENU CUSTOM
For configuring the User Menu settings.

⑫ MENU MODE
Displays the [ENGINEER MENU].

Caution

Note that some of the controls on the actual product may have been modified for improvement and thus differ from those described in this manual.

② MARKER CHAR

Menu Item	Initial Setting	Setting Values	Description/Remarks
DISPLAY MODE	2	OFF, 1, 2	OFF : Turns "OFF" markers and characters at all times and displays only the warning message. 1 : Displays markers at all times while characters are displayed for 2 seconds when a function is activated or when the parameter is changed. 2 : Displays the markers and characters at all times.
MARKER/CHAR LVL	100	1 to 100	For configuring the level of each marker or character. Lines appear darker when the level is adjusted toward "1".
CHARACTER SETTING			Transits to another screen that allows character display to be turned on/off individually.
CHARACTER POSITION			
H POSITION	0	-10 to +10	Adjusts the display position (horizontal) of the characters
V POSITION	0	-10 to +10	Adjusts the display position (vertical) of the characters
MARKER SETTING			
FRAME MARKER	OFF	ON-16:9, ON-14:9, ON-13:9, ON-4:3, OFF	For configuring the ON/OFF setting and size (aspect ratio) of the frame marker.
SAFTY AREA	TITLE	ACTION, TITLE	ACTION : Area marker indicating 93% of the screen width and height TITLE : Area marker indicating 88% of the screen width and height
SAFTETY MARKER	ON-16:9	ON-4:3, ON-16:9, OFF	For configuring the ON/OFF setting and size (aspect ratio) of the safety marker.
SIDE MASK	OFF	OFF, ON-14:9, ON-13:9, ON-4:3	For configuring the side mask.
CONTRAST	50	0 to 100	For adjusting the contrast level of the side mask.
BRIGHT	60	0 to 100	For adjusting the brightness level of the side mask.
CENTER MARKER	TYPE3	OFF, TYPE1, TYPE2, TYPE3	For configuring the center marker. OFF : Turns off the center marker TYPE1 : Marker that is blank at the center TYPE2 : Marker with lines intersecting at the center (large) TYPE3 : Marker with lines intersecting at the center (small)

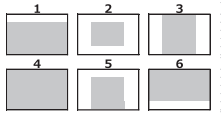
③ FOCUS ASSIST

Menu Item	Initial Setting	Setting Values	Description/Remarks
FOCUS ASSIST WINDOW			
ASSIST AREA	TRIGGER ON	TRIGGER ON, ALWAYS ON, OFF	Display settings for ASSIST AREA. Configure to TRIGGER ON to show display when there is a trigger such as lens operation.
TRIGGER	FOCUS	FOCUS, FOCUS/ ZOOM	Trigger to display ASSIST AREA. This is applicable when TRIGGER ON is selected.
ASSIST DATA	NO.1	NO.1 to NO.4	For selecting an ASSIST DATA created inside the ASSIST DATA SETTING menu.
ASSIST DATA SETTING			
AREA DISP TIME	1.0S	0.0S to 5.0S (in 0.5 increments)	For configuring the time interval from detection of a trigger until the Focus Assist area is cleared.
AREA SIZE	15	1 to 100	For configuring the range of the Focus Assist area. Selecting “100” displays the area in full-screen.
AREA LEVEL	60%	25% to 100%	For configuring the video level of ASSIST AREA.
AREA COLOR	MONO	MONO, COLOR, NEGA	For configuring the ASSIST AREA video to color, black-and-white or negative.
AREA MARKER	OFF	ON, OFF	For configuring whether to display the frame marker of the Focus Assist area.
EDGE BOOST LEVEL	55	1 to 100	For configuring the boost level of edge signals.
EDGE COLOR	RED	MONO, CYAN, MAGENTA, YELLOW, GREEN, RED, BLUE	For configuring the color of edge signals.
STORE DATA	---	NO.1 to NO.4	Saves the settings in the ASSIST DATA SETTING menu as ASSIST DATA. For selecting a number from NO.1 to NO.4 you want to overwrite when saving the current settings.

④ VIDEO I/O

Menu Item		Initial Setting	Setting Values	Description/Remarks
GL IN/SYNC OUT				
	GL IN/SYNC OUT SEL	GL IN	GL IN, SYNC OUT	For selecting the input/output of the GL IN/SYNC OUT connector.
	SYNC OUT FORMAT	1080I59.94	1080I59.94, 1080I50, 1080P59.94, 1080P50, 1080P29.97, 1080P29.97sF, 1080P23.98, 1080P23.98sF, 1080P25, 1080P25sF, 1080P24, 1080P24sF, 720P59.94, 720P50	For configuring the format of the sync signal output from the SYNC OUT connector.
BARS MODE				
	BARS	OFF	ON, OFF	For configuring COLOR BAR to ON/OFF.
	UHDTV 4K COLOR BARS	4K 709	4K 709, ARIB UHD ARIB SIMPLIFIED, ARIB HLG	For selecting a UHD COLOR BAR.
	HDTV COLOR BARS	SMPTE	SMPTE, ARIB, 100/ 100, 75/ 75	For selecting a HDTV output COLOR BAR.
	ARIB BARS TYPE	---	75%, 100%, +I	
	SMPTE BARS TYPE	75%/0%	75%/0%, 100%/0%, +I/0%, -I/+Q	
CAL		OFF	OFF, 100%, 200%	For configuring CAL to ON/OFF.

⑤ LENS

Menu Item	Initial Setting	Setting Values	Description/Remarks
AUTO IRIS SET			
IRIS SET MODE	OFF	ON, OFF	ON: Enables the auto iris operation settings Manual iris adjustment using OCP are disabled while in the "ON" mode.
IRIS LEVEL SET	0	-100 to +100	Adjusts the level for convergence of auto iris. For capturing a registration chart to configure the video level to 75%.
PEAK RATIO SET	-70	-100 to +100	For capturing a grayscale chart to configure the video level to 100%. Adjusting the exposure in the + direction brightens the image, while adjusting in the - direction darkens the image.
WINDOW	1	WINDOW1 to 6	For configuring the level detection range of auto iris. 
IRIS SPEED	50	1 to 100	For configuring the response speed properties of auto iris. Speed is slowest at "1" and fastest at "100".
IRIS GAIN	50	1 to 100	For configuring the response sensitivity properties of auto iris. Sensitivity is lowest at "1" and highest at "100". Focus hunting is more likely to occur when the sensitivity level is high. (If there is no focus hunting, leave the setting at the default level of "50")
IRIS LIMIT	F16	F22, F20, F18, F16	For configuring the maximum aperture (F number) of the iris when in the auto iris mode.
FILE SETTING			
NUMBER	OFF	NO.1 to NO.16, OFF	For selecting a lens file number. ・ "(CODE SEL)" is displayed at the end of the lens number when the lens code is acquired from the lens. ・ "(AUTO SEL)" is displayed at the end of the lens number when [AUTO SEL] is set to "ON".
NAME	(---------)	12 characters	For configuring the file name for each lens file. Appending names such as the lens model helps to ease identification of the lens number that corresponds to a lens.
(MODEL)	(---------)	Name display area for AUTO SEL	Displays the lens name acquired from a serial lens.
EXTENDER	OFF	ON-1, ON-2, ON-3, x0.8 CONV, OFF	Displays the status of the extender.
AUTO SEL	OFF	ON, OFF	Automatically switches the lens file number according to the model name acquired from the lens.
FILE SET(E)	OFF	OFF, MANUAL, AUTO(AWS), AUTO(FULL)	For more details on FILE SET, please refer to [5.3 Creating a Lens File].
SERIAL I/F(E)	ENABLE	ENABLE, DISABLE	For configuring compatibility or incompatibility with the lens serial interface by selecting ENABLE or DISABLE.

⑥ VIDEO ADJUSTMENT

Menu Item	Initial Setting	Setting Values	Description/Remarks
AUTO SETUP MODE			
AUTO SETUP	LEVEL	LEVEL, FULL, QUICK, F.QUICK, AWS	Executes AUTO SETUP.
FULL AUTO REF	EXT	INT, EXT	INT : Converges the convergence value of FULL AUTO SETUP to INTERNAL REF. EXT : Converges the convergence value of FULL AUTO SETUP to EXT REF.
AWB WITH A.IRIS	ON	ON, OFF	For selecting whether to enable A.IRIS automatically while in the AWB mode.
AWB DETECT AREA	WIDE	WIDE, SPOT	For selecting the AWB detection area.
AWB MARKER	OFF	ON, OFF	For configuring the AWB marker to ON/OFF.
SMOOTH AWB	ON-0.5s	OFF, ON-0.3s, ON-0.5s, ON-0.7s, ON-1.0s, ON-1.5s, ON-2.0s	For configuring the transition time for switching smoothly between Ach and Bch of AWB.
AWB REFERENCE	ON	ON, OFF	ON : Converges the convergence value of AWB to EXT AWB REF. OFF : Aligns Rch/Bch with Gch.
CHART SEARCH	ENABLE	ENABLE, DISABLE	ENABLE : Automatically adjusts the viewing angle of the chart when in the FULL AUTO SETUP mode. DISABLE : Manually adjusts the viewing angle of the chart when in the FULL AUTO SETUP mode.
REFERENCE SET	ABB	ABB, AWB, FULL	For creating the convergence values (EXT REF FILE) for AWB, ABB and LEVEL.
PROCESS SETUP			
STEP GAIN	0	-6, -3, 0, +3, +6, +9, +12, +18, +24, +30, +36, +42, +48, +54, +60, +66, +72	For configuring step gain.
GAIN			
R	0.0	-100 to +100	For configuring the gain value of M/G/R/B. Adjusting in the "- (negative)" direction decreases the gain value, while adjusting in the "+ (positive)" direction increases the value.
G	0.0	-100 to +100	
B	0.0	-100 to +100	
M	0.0	-100 to +100	
MANUAL CLR			Collectively restores all the GAIN settings that have been changed to the old settings.
BLK PRS/STR	OFF	-11, -9, -7, -5, -3, OFF, +3, +5, +7, +11	For configuring black stretch.
GAMMA TYPE	NORMAL	NORMAL, CST 1 to 5	For selecting the type of gamma curve. NORMAL : Normal gamma curve CUSTOM1 to 5 : Gamma curve for custom gamma For more details on editing of the custom gamma data, please refer to [CUSTOM GAMMA]. Depending on the monitor in use, the video image may be disrupted momentarily when switching the setting.

<VIDEO ADJUSTMENT (Cont'd)>

Menu Item		Initial Setting	Setting Values	Description/Remarks
STEP GAMMA		0.45	0.45, 0.40, 0.35, OFF	For configuring step gamma.
GAMMA				
	R	0.0	-100 to +100	For configuring the gamma value of M/R/B. Adjusting in the "- (negative)" direction decreases the gamma value, while adjusting in the "+ (positive)" direction increases the value.
	B	0.0	-100 to +100	
	M	0.0	-100 to +100	
	MANUAL CLR			Collectively restores all the GAMMA settings that have been changed to the old settings.
PED				
	R	0.0	-100 to +100	For configuring the pedestal value of M/R/B. Adjusting in the "- (negative)" direction decreases the pedestal value, while adjusting in the "+ (positive)" direction increases the value.
	B	0.0	-100 to +100	
	M	0.0	-100 to +100	
	MANUAL CLR			Collectively restores all the PED settings that have been changed to the old settings.
FLARE				
	FLARE	ON	ON, OFF	For configuring flare to ON/OFF.
	R	0.0	-100 to +100	For configuring the flare value of G/R/B. Adjusting in the "- (negative)" direction decreases the flare value, while adjusting in the "+ (positive)" direction increases the value.
	G	0.0	-100 to +100	
	B	0.0	-100 to +100	
	MANUAL CLR			Collectively restores all the FLARE settings that have been changed to the old settings.
DTL				
	DTL	ON	ON, OFF	For configuring contour correction to ON/OFF.
	GAINDTL	0.0	-100 to +100	For configuring the amount of contour enhancement. Adjusting toward the direction of "-100" decreases the amount of contour enhancement, while adjusting toward "+100" increases the amount.
	FREQUENCY	56.0	52.0, 56.0, 60.0, 64.0, 68.0, 72.0, 80.0, 88.0, 96.0	For configuring the horizontal frequency for contour enhancement.
	BLACK WHTE	0.0	-100 to +100	For configuring the balance of the edge level of bright and dark areas
	BALANCE	0.0	-100 to +100	For configuring the balance of the edge level of horizontal and vertical areas
	THRESH	0.0	-100 to +100	For configuring the lower limit level of video signals to be added with edge signals
	FINE	2		For configuring the amount of edge to reduce for subjects with a huge contrast in brightness.
	NOISE SUP	0.0	-100 to +100	For configuring the noise reduction level.
	MANUAL CLR			Collectively restores all the DTL settings that have been changed to the old settings.
HI-LIGHT DTL SETUP				
	HI-LIGHT DTL	OFF	ON, OFF	For configuring highlight DTL to ON/OFF.
	GAIN	0.0	-100 to +100	For configuring the GAIN of highlight DTL. Raising the value increases the amount of edge to be added to the high brightness areas.
	LIMIT	0.0	-100 to +100	For configuring the clipping point for the edges of DTL.

<VIDEO ADJUSTMENT (Cont'd)>

Menu Item	Initial Setting	Setting Values	Description/Remarks
KNEE	MANUAL	MANUAL, AUTO, OFF	For selecting a KNEE mode.
SMOOTH KNEE SETUP			
SMOOTH KNEE	TYPE1	OFF, TYPE1, TYPE2, TYPE3	For selecting a SMOOTH KNEE type.
TEST PULSE	OFF	ON, OFF	Turns ON/OFF the test pulse for configuring SMOOTH KNEE.
POINT	75	-100 to +100	For configuring the SMOOTH KNEE curve.
SLOPE	10	-100 to +100	
LOAD INIT	CANCEL	CANCEL, INDIV, ALL	Restores the default data.
MATRIX		1:709, 2:2020, 3:SMPTE, OFF	For selecting a MATRIX setting. Depending on the monitor in use, the video image may be disrupted momentarily when switching the setting.
ADVANCED MATRIX	ON	ON, OFF	Turns ON/OFF the advanced matrix.
HV SLIM DTL TYPE	H ONLY	H ONLY, V ONLY, H+V	For configuring the SLIM DTL type.
V SLIM DTL FREQ	A	A, B, C, D	For configuring the boost frequency type for SLIM DTL.
NR MODE	OFF	OFF, LOW, STD, HIGH	For configuring NR (noise reduction).
DOWN CONV FILTER	STD	STD, HI, HQ, LOW	For configuring the filter when converting 4K to HD (1080i & 1080p) video.
STANDARD GAMMA			
GAMMA TABLE	STANDARD1	STANDARD1, STANDARD2	For configuring GAMMA TABLE.
CUSTOM GAMMA			
EASY MODE			Creates customized gamma data easily by configuring the parameters.
DEFAULT RESET	-	EXECUTE, CANCEL	Restores gamma data to the saved data before the customized data is created. The action is irreversible after [SAVE] is executed.
SELECT	NORMAL	NORMAL, CUSTOM1 to 5	For selecting the gamma table to be created.
CURVE TYPE	NORMAL	NORMAL, LOG, SPECIAL	For configuring the basic gamma curve.
INITIAL GAIN	4.5	1.0 to 9.0	For configuring the slope of the gamma curve near the video level of 0%. Specifying a larger value will create a steeper slope.
18% GRAY	58.00 %	14.0 % to 107.0 %	For configuring the video level after gamma correction relative to a video level of 18% before gamma correction.
DYNAMIC RANGE	600%	100% to 600%	For configuring the video level after gamma correction relative to the maximum video level before gamma correction.
WHITE LIMIT	109%	70% to 109%	For configuring the white clip point relative to the video level after gamma correction.
CAL	OFF	OFF, CAL100%, CAL200%, CAL300%, CAL400%, CAL600%	For selecting the test waveform (CAL) for checking the gamma table.
SAVE	READY	EXECUTE, CANCEL	Saves the created data. Data will not be saved (data will be cleared) if you exit the menu without executing SAVE.

<VIDEO ADJUSTMENT (Cont'd)>

Menu Item	Initial Setting	Setting Values	Description/Remarks
SHUTTER	OFF	OFF, PRESET, VARIABLE	For selecting the electronic shutter.
SHUTTER SPEED	-	PRESET 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10k VARIABLE: 1/63.4~1/1983	For selecting a shutter speed. (Available only when SHUTTER is configured to PRESET or VARIABLE)
GAMMA CURVE COPY	-	CUSTOM1 to 5 ↓↓ CUSTOM1 to 5	Copies the customized gamma data created to another gamma table inside the camera.
USB MEMORY			Saves/loads customized gamma data to/from the USB flash memory.
SAVE	-		Saves customized gamma data to the USB flash memory.
LOAD	-		Loads customized gamma data from the USB flash memory.
AVC SETUP			
AVC	OFF	OFF, AVC1, AVC2, AVC3, AVC4	For configuring AVC to ON/OFF.
AVC1 SETUP (E)			
[DAY FILE SETUP]			For configuring settings related to AVC DAY MODE.
PRESET LEVEL	MODE2	MODE1, 2, 3, 4, 5	For configuring the target iris convergence level in the DAY MODE. This option is enabled only when the light of the AUTO IRIS switch on the control panel (e.g., OCP-300) is illuminated while AVC is ON.
MANUAL LEVEL	MODE3	MODE1, 2, 3, 4, 5	For configuring the midpoint of the target iris convergence level in the DAY MODE. Midpoint refers to the point in the middle when the IRIS volume knob is divided into 5 equal segments. For example, when MODE3 is selected, turning the IRIS volume knob toward the open end changes the mode in the sequence of MODE4 → MODE5. Note: As the volume knob is divided into 5 segments, configuring the midpoint mode to a position other than MODE3 means there will be some modes that cannot be configured using the volume knob. This feature is available only when IRIS CONTROL on the control panel is configured to ABS or FULL control. This option is enabled only when the light of the AUTO IRIS switch on the control panel (e.g., OCP-300) is off while AVC is ON.
DETECT AREA	AREA1	AREA1, 2, 3, 4, 5, 6	For configuring the metering area in the DAY MODE.
[NIGHT FILE SETUP]			For configuring settings related to AVC NIGHT MODE.
PRESET LEVEL	MODE2	MODE1, 2, 3, 4	For configuring the target GAIN convergence level in the NIGHT MODE.
GAIN LIMIT	+18dB	+12dB, +18dB	For configuring GAIN LIMIT.
DETECT AREA	AREA1	AREA1, 2, 3, 4, 5, 6	For configuring the metering area in the NIGHT MODE.
D/N CHANGE TIME	FAST	FAST, STANDARD	For configuring the timing (speed) for switching between DAY MODE and NIGHT MODE.
D/N CHANGE LEVEL	TYPE1	TYPE1, 2, 3, 4	For configuring the video level for switching between DAY MODE and NIGHT MODE. Switches the mode in the sequence of TYPE4→3→2→1 starting from the point with the higher video level.

<VIDEO ADJUSTMENT (Cont'd)>

Menu Item	Initial Setting	Setting Values	Description/Remarks
AVC2 SETUP (E)			
[DAY FILE SETUP]			For configuring settings related to AVC DAY MODE.
PRESET LEVEL	MODE2	MODE1, 2, 3, 4, 5	For configuring the target iris convergence level in the DAY MODE. This option is enabled only when the light of the AUTO IRIS switch on the control panel (e.g., OCP-300) is illuminated while AVC is ON.
MANUAL LEVEL	MODE3	MODE1, 2, 3, 4, 5	For configuring the midpoint of the target iris convergence level in the DAY MODE. Midpoint refers to the point in the middle when the IRIS volume knob is divided into 5 equal segments. For example, when MODE3 is selected, turning the IRIS volume knob toward the open end changes the mode in the sequence of MODE4 → MODE5. Note: As the volume knob is divided into 5 segments, configuring the midpoint mode to a position other than MODE3 means there will be some modes that cannot be configured using the volume knob. This feature is available only when IRIS CONTROL on the control panel is configured to ABS or FULL control. This option is enabled only when the light of the AUTO IRIS switch on the control panel (e.g., OCP-300) is off while AVC is ON.
DETECT AREA	AREA1	AREA1, 2, 3, 4, 5, 6	For configuring the metering area in the DAY MODE.
[NIGHT FILE SETUP]			For configuring settings related to AVC NIGHT MODE.
PRESET LEVEL	MODE2	MODE1, 2, 3, 4	For configuring the target GAIN convergence level in the NIGHT MODE.
GAIN LIMIT	+18dB	+12dB, +18dB	For configuring GAIN LIMIT.
DETECT AREA	AREA1	AREA1, 2, 3, 4, 5, 6	For configuring the metering area in the NIGHT MODE.
D/N CHANGE TIME	FAST	FAST, STANDARD	For configuring the timing (speed) for switching between DAY MODE and NIGHT MODE.
D/N CHANGE LEVEL	TYPE1	TYPE1, 2, 3, 4	For configuring the video level for switching between DAY MODE and NIGHT MODE. Switches the mode in the sequence of TYPE4→3→2→1 starting from the point with the higher video level.

<VIDEO ADJUSTMENT (Cont'd)>

Menu Item	Initial Setting	Setting Values	Description/Remarks
AVC3 SETUP (E)			
[DAY FILE SETUP]			For configuring settings related to AVC DAY MODE.
PRESET LEVEL	MODE2	MODE1, 2, 3, 4, 5	For configuring the target IRIS convergence level in the DAY MODE. This option is enabled only when the light of the AUTO IRIS switch on the control panel (e.g., OCP-300) is illuminated while AVC is ON.
MANUAL LEVEL	MODE3	MODE1, 2, 3, 4, 5	For configuring the midpoint of the target IRIS convergence level in the DAY MODE. Midpoint refers to the point in the middle when the IRIS volume knob is divided into 5 equal segments. For example, when MODE3 is selected, turning the IRIS volume knob toward the open end changes the mode in the sequence of MODE4 → MODE5. Note: As the volume knob is divided into 5 segments, configuring the midpoint mode to a position other than MODE3 means there will be some modes that cannot be configured using the volume knob. This feature is available only when IRIS CONTROL on the control panel is configured to ABS or FULL control. This option is enabled only when the light of the AUTO IRIS switch on the control panel (e.g., OCP-300) is off while AVC is ON.
DETECT AREA	AREA1	AREA1, 2, 3, 4, 5, 6	For configuring the metering area in the DAY MODE.
[NIGHT FILE SETUP]			For configuring settings related to AVC NIGHT MODE.
PRESET LEVEL	MODE2	MODE1, 2, 3, 4	For configuring the target GAIN convergence level in the NIGHT MODE.
GAIN LIMIT	+18dB	+12dB, +18dB	For configuring GAIN LIMIT.
DETECT AREA	AREA1	AREA1, 2, 3, 4, 5, 6	For configuring the metering area in the NIGHT MODE.
D/N CHANGE TIME	FAST	FAST, STANDARD	For configuring the timing (speed) for switching between DAY MODE and NIGHT MODE.
D/N CHANGE LEVEL	TYPE1	TYPE1, 2, 3, 4	For configuring the video level for switching between DAY MODE and NIGHT MODE. Switches the mode in the sequence of TYPE4→3→2→1 starting from the point with the higher video level.

<VIDEO ADJUSTMENT (Cont'd)>

Menu Item	Initial Setting	Setting Values	Description/Remarks
AVC4 SETUP (E)			
[DAY FILE SETUP]			For configuring settings related to AVC DAY MODE.
PRESET LEVEL	MODE2	MODE1, 2, 3, 4, 5	For configuring the target IRIS convergence level in the DAY MODE. This option is enabled only when the light of the AUTO IRIS switch on the control panel (e.g., OCP-300) is illuminated while AVC is ON.
MANUAL LEVEL	MODE3	MODE1, 2, 3, 4, 5	For configuring the midpoint of the target iris convergence level in the DAY MODE. Midpoint refers to the point in the middle when the IRIS volume knob is divided into 5 equal segments. For example, when MODE3 is selected, turning the IRIS volume knob toward the open end changes the mode in the sequence of MODE4 → MODE5. Note: As the volume knob is divided into 5 segments, configuring the midpoint mode to a position other than MODE3 means there will be some modes that cannot be configured using the volume knob. This feature is available only when IRIS CONTROL on the control panel is configured to ABS or FULL control. This option is enabled only when the light of the AUTO IRIS switch on the control panel (e.g., OCP-300) is off while AVC is ON.
DETECT AREA	AREA1	AREA1, 2, 3, 4, 5, 6	For configuring the metering area in the DAY MODE.
[NIGHT FILE SETUP]			For configuring settings related to AVC NIGHT MODE.
PRESET LEVEL	MODE2	MODE1, 2, 3, 4	For configuring the target GAIN convergence level in the NIGHT MODE.
GAIN LIMIT	+18dB	+12dB, +18dB	For configuring GAIN LIMIT.
DETECT AREA	AREA1	AREA1, 2, 3, 4, 5, 6	For configuring the metering area in the NIGHT MODE.
D/N CHANGE TIME	FAST	FAST, STANDARD	For configuring the timing (speed) for switching between DAY MODE and NIGHT MODE.
D/N CHANGE LEVEL	TYPE1	TYPE1, 2, 3, 4	For configuring the video level for switching between DAY MODE and NIGHT MODE. Switches the mode in the sequence of TYPE4→3→2→1 starting from the point with the higher video level.
ATW SETUP			
ATW	OFF	ON, OFF	For configuring ATW to ON/OFF.
ATW SPEED	5	1 to 10	For configuring the Auto White Balance adjustment speed.
TRACKING RANGE	STANDARD	NARROW, STANDARD, WIDE	For configuring the threshold value of the video level for automatic adjustment of the white balance.
START UP TIME (E)	OFF	1 to 5, OFF	For configuring the speed of response after the color of the subject has started changing and before correction is performed.
START CC FILTER (E)	B(4300)	A(3200), B (4300), C (6300)	For configuring the CC filter when ATW is ON.
[REFFERENCE]			
RED REFFERENCE (E)	0	-100 to +100	Adjusts the level for convergence of the red (R) component of the video.
BLUE REFFERENCE (E)	0	-100 to +100	Adjusts the level for convergence of the blue (B) component of the video.
DETECT AREA (E)	AREA1	AREA1, 2, 3, 4, 5, 6	For configuring the metering area when ATW is functioning.
AUTO HOLD SETUP			
IRIS	AUTO	HOLD, MANUAL, AUTO	For configuring the iris control settings when both AVC and AUTO HOLD are ON.
DNR SETUP			Digital noise reduction
DNR	OFF	ON, OFF	For configuring DNR to ON/OFF.
DNR LEVEL	0	0 to 15	Adjusts the level of DNR.

<VIDEO ADJUSTMENT (Cont'd)>

Menu Item		Initial Setting	Setting Values	Description/Remarks
DEHAZE SETUP				
	DEHAZE	OFF	ON, OFF	For configuring the Image Dehazing feature to ON/OFF.
	DEHAZA LEVEL	0	0 to 100	Adjusts the level of Dehaze.
	CLARIFY MOVE	ON	ON, OFF	For configuring the interframe moving average for feature computation to ON/OFF.
DIGITAL ZOOM SETUP				
	DIGITAL ZOOM	OFF	ON, OFF	For configuring digital zoom to ON/OFF.
	MAGNIFICANT	X1.0	X1.0 to X10.0	For configuring the magnification of digital zoom.
SHARPNESS SETUP				Image Sharpening
	SHARPNESS	OFF	ON, OFF	For configuring SHARPNESS to ON/OFF.
	LEVEL	0	0 to 15	Adjusts the level of SHARPNESS.
[HD FUNCTION]				
PSF SHUTTER		OFF	1/250, 1/500, 1/1000, OFF	For selecting a shutter speed.
HD CUTOUT		OFF	ON, OFF	For configuring HD CUTOUT to ON/OFF.
VAR C.TEMP		OFF	ON, OFF	For configuring VAR C.TEMP to ON/OFF.
MATRIX PRESET DATA(E)				
	MATRIX 1	BT.709	OFF, BT.709, SMPTE, EBU, BT.2020, USER1, USER2	For selecting a color matrix preset. *To select USER1 and 2, it is necessary to configure [MATRIX USER1(2) DATA SET] -[DATA SET MODE] to "ON".
	MATRIX 2	BT.2020		
	MATRIX 3	SMPTE		
MATRIX USER1 DATA SET(E)				For configuring the color matrix preset (USER1).
	BASE COLOR	USER1	OFF, BT.709, SMPTE, EBU, BT.2020, USER1, USER2	For configuring the base data of the color matrix data setting in USER1.
	R-G	0	-100 to +100	For configuring the matrix of R-G.
	R-B	0	-100 to +100	For configuring the matrix of R-B.
	G-R	0	-100 to +100	For configuring the matrix of G-R.
	G-B	0	-100 to +100	For configuring the matrix of G-B.
	B-R	0	-100 to +100	For configuring the matrix of B-R.
	B-G	0	-100 to +100	For configuring the matrix of B-G.
	DATA SAVE	---	READY	READY: In the normal state PUSH SET → CLR: Clears the preset data. CANCEL: Exits [DATA CLEAR] without clearing the settings.
	TRANSFER MATRIX	BT.709	BT.709, BT.2020	For configuring the transmission matrix.

<VIDEO ADJUSTMENT (Cont'd)>

Menu Item	Initial Setting	Setting Values	Description/Remarks
MATRIX USER2 DATA SET(E)			For configuring the color matrix preset (USER2).
BASE COLOR	USER2	OFF, BT.709, SMPTE, EBU, BT.2020, USER1, USER2	For configuring the base data of the color matrix data setting in USER2.
R-G	0	-100 to +100	For configuring the matrix of R-G.
R-B	0	-100 to +100	For configuring the matrix of R-B.
G-R	0	-100 to +100	For configuring the matrix of G-R.
G-B	0	-100 to +100	For configuring the matrix of G-B.
B-R	0	-100 to +100	For configuring the matrix of B-R.
B-G	0	-100 to +100	For configuring the matrix of B-G.
DATA SAVE	---	READY	READY: In the normal state PUSH SET → CLR: Clears the preset data. CANCEL: Exits [DATA CLEAR] without clearing the settings.
TRANSFER MATRIX	BT.709	BT.709, BT.2020	For configuring the transmission matrix.
OPTICAL ABERRATION CORR.(E)			
CORRECTION	ENABLE	ENABLE, DISABLE	Enables/disables aberration correction. This setting is retained even while the power is in the "OFF" mode. If you do not want to apply aberration correction, set this menu item to [DISABLE].
CORR. LEVEL R	0	-10 to 10	Adjusts the amount of correction for the R component.
CORR. LEVEL B	0	-10 to 10	Adjusts the amount of correction for the B component.
OAC GUIDE MARK	OFF	ON, OFF	For configuring the alert display on the Monitor Output screen when the aberration correction value cannot be successfully received from the serial lens.

⑦ FAN CONTROL

Menu Item	Initial Setting	Setting Values	Description/Remarks
CCU FAN CONT MODE	AUTO	AUTO, STOP	AUTO : Automatically adjusts the cooling fan speed according to the level of the internal temperature. STOP : Stops the fan until the internal temperature has reached a dangerous level. This setting is restored to "AUTO" when the power is rebooted. While in the STOP mode, the surface temperature of the camera head may be higher than usual.
CCU	---	(Information display)	SSLOW : Extremely low fan speed SLOW : Low fan speed NOR : Normal fan speed FAST : High fan speed NG : Fan error
CAMERA FAN CONT MODE	AUTO	AUTO	AUTO : Automatically adjusts the cooling fan speed according to the level of the internal temperature.
CAMERA	---	(Information display)	SSLOW : Extremely low fan speed SLOW : Low fan speed NOR : Normal fan speed FAST : High fan speed NG : Fan error

⑧ FILE OPERATION

Menu Item	Initial Setting	Setting Values	Description/Remarks
USB MEMORY			For more information on the use of a USB flash memory, please refer to “5.4 Use of USB Flash Memories”.
SAVE FILE			
ALL DATA	---		Saves the selected data to the USB flash memory.
SNAP SHOT	---		
SCENE	---		
REFERENCE	---		
LENS	---		
CAM STATUS NAME	---		
MENU DATA	---		
LOG DATA	---		
LOAD FILE			
ALL DATA	---		Uploads all files.
SNAP SHOT	---		Loads a snapshot file.
SCENE	---	ALL, NO.1 to 8	For selecting whether to load SCENE DATA collectively or individually (make a selection from 1 to 8).
REFERENCE	---		Loads a reference file.
LENS	---	ALL, NO.1 to 16	For selecting whether to load LENS DATA collectively or individually (make a selection from 1 to 16).
CAM STATUS NAME	---	ALL, ND, CC, GAMMA, MATRIX	Loads a CAM STATUS NAME (ND, CC, GAMMA, MATRIX) file.
MENU DATA	---		Loads the entire menu from “MENU DATA”.
PRESET FILE LOAD			Applies the user-defined settings (ENGINEER SET FILE) or default settings (FACTORY SET FILE) to camera level adjustment or menu settings. Use this option when you want to restore the camera to previous settings.
FILE SELECT	ENGINEER	ENGINEER, FACTORY	ENGINE : Applies the user-defined settings. ER FACTO : Applies the default settings. RY
LOAD START	READY	READY, START, CANCEL	For making a selection to prepare, execute or cancel a setting.
PRESET FILE SAVE(E)			Saves the camera level adjustment and menu settings. Data that is saved can be loaded as the user-defined settings of [PRESET FILE LOAD].
FILE SELECT	ENGINEER	ENGINEER	Saves the user-defined settings.
SAVE START	---	PUSH SET → SAVE	Executes save. Action will be canceled without saving if the rotary encoder is turned without executing PUSH.
PROGRAM UPDATE(E)			Executes all program updates. This is used to update the version of the package.
CCU			
ALL	STRB****V**.**.**	(Information display)	
FILE SELECT	********.IRF	File Name	
CAMERA			
RELAY_PROC	V**.**	(Information display)	
FILE SELECT	********.BIT	File name	

⑨ SYSTEM

Menu Item	Initial Setting	Setting Values	Description/Remarks
12G SDI OUT FORMAT			
IMGAE SIZE	3840x2160	3840x2160, 1920x1080, 1280x720	For selecting an image size.
FREQ&SCAN	59.94P	59.94P, 50P	For selecting a frame rate and scan mode.
SAMPLING	Display of the current status	YCbCr 422, RGB 444	Displays the status of the sampling method.
MAPPING	Display of the current status		Displays the status of SDI mapping.
FORMAT CHANGE	READY	EXECUTE, CANCEL	Selecting EXECUTE applies the above settings.
3G SDI OUT FORMAT			
IMGAE SIZE	1920x1080	1920x1080, 1280x720	For selecting an image size.
FREQ&SCAN	59.94P	59.94P, 29.97PsF, 50P, 25PsF, 59.94I, 50I	For selecting a frame rate and scan mode.
SAMPLING	Display of the current status	YCbCr 422, RGB 444	Displays the status of the sampling method.
MAPPING	Display of the current status		Displays the status of SDI mapping.
FORMAT CHANGE	READY	EXECUTE, CANCEL	Selecting EXECUTE applies the above settings.
MON SDI OUT FORMAT			For selecting a video output for MONITOR OUTPUT.
SOURCE SEL	3G SDI OUT SAME	12G SDI OUT SAME, 3G SDI OUT SAME	For selecting the feature to set MON OUT to when the "ON/OFF" condition of the CUT OUT feature and the psf feature varies between 12G OUT and 3G OUT.
H PHASE	0.0	-100 to +100	Aligns the phase of the internal sync signal with that of the external sync signal. Adjusting in the "-" direction advances the phase of the internal sync signal while adjusting in the "+" direction delays the phase relative to the external sync signal.
V PHASE	0	0 to 1100	Aligns the phase of the internal sync signal with that of the external sync signal. Adjusting in the "-" direction advances the phase of the internal sync signal while adjusting in the "+" direction delays the phase relative to the external sync signal. The range of the settings varies according to the format and mapping.
FILTER SERVO CONT	SERVO	SERVO, MANUAL	SERVO : For configuring to automatic control. MANUAL : For configuring to manual control.
REF VOLT WARN	11.0 V	11.0 to 17.0 V	For configuring the input voltage for sending out an alert.
SYSTEM MODE	ON	ON, OFF	Changes the video settings regardless of whether the control panel is connected. OFF : Does not retain the settings configured on the control panel when it is disconnected. The settings are restored to the state before the connection when the control panel is reconnected. ON : Retains the settings configured on the control panel even when it is disconnected.
ROTATION 180	OFF	ON, OFF	For configuring the flip setting (vertical rotation by 180 degrees) of the video to ON/OFF.

<SYSTEM (Cont'd)>

Menu Item	Initial Setting	Setting Values	Description/Remarks
REMOTE CONTROL SETTING(E)			Displayed only when the REMOTE option is supported
CONNECTION	COMM(ICCP)	LAN(ETHERNET), COMC (ICCP), COM (ISCP)	For selecting a serial communication protocol.
ISCP INTERFACE	422A	422A, TTL	For selecting a serial interface. (Enabled when ISCP is selected)
ISCP BAUDRATE	9600	1200, 2400, 4800, 9600, 19200	For selecting a baud rate. (Enabled when ISCP is selected)
ISCP LOG			(Enabled when ISCP is selected)
RESET LOG	READY	CANCEL, EXECUTE	Resets the ISCP log data.
COMM LOG	0	0 to 82	For configuring the number of items to display when viewing the ISCP log data.
LOG RUN	START	START, STOP	For configuring settings to save the ISCP log data.
ETHERNET(E)			For configuring the ETHERNET settings.
GROUP ID	0	0 to 99	For configuring the group ID of the device. (For ICNP communication)
DEVICE ID	0	0 to 99	For configuring the device ID of the device. (For ICNP communication)
DEVICE NAME	(----------)	16 characters	For configuring the device name of the device. (For ICNP communication)
IP ADDRESS			For configuring the IP ADDRESS settings for ICCP communication.
IP ADDRESS	192.168.1.100	0.0.0.0. to 255.255.255.255	For configuring the IP ADDRESS settings.
SUBNET MASK	255.255.255.0	0.0.0.0. to 255.255.255.255	For configuring the SUBNET MASK settings.
DEFAULT GATEWAY	0.0.0.0	0.0.0.0. to 255.255.255.255	For configuring the DEFAULT GATEWAY settings.
SPEED/DUPLEX	AUTO NEGOTIATION	AUTO NEGOTIATION, 10M HALF, 10M FULL, 100M HALF, 100M FULL	For configuring the speed and mode of ETHERNET communication.
SET	READY	REBOOT CANCEL, REBOOT EXECUTE	Selecting REBOOT EXECUTE applies the settings on the IP ADDRESS screen.
UDP CONTROL			
ICCP PORT NO	50001	0 to 65535	For configuring the PORT NO for ICCP communication.
ICNP PORT NO	50002	0 to 65535	For configuring the PORT NO for ICNP communication.
MASTER			For configuring the IP ADDRESS for ICCP communication.
PRIMARY	DISABLE	DISABLE, ENABLE	Enables/disables the PRIMARY device.
IP ADDRESS	192.168.1.220	0.0, 0.0 to 255.255.255.255	For configuring the IP ADDRESS of the PRIMARY device.
ICNP PORT NO	50002	0 to 65535	For configuring the PORT NO of the PRIMARY device.
SECONDARY	DISABLE	DISABLE, ENABLE	Enables/disables the SECONDARY device.
IP ADDRESS	192.168.1.140	0.0, 0.0 to 255.255.255.255	For configuring the IP ADDRESS of the SECONDARY device.
ICNP PORT NO	50002	0 to 65535	For configuring the PORT NO of the SECONDARY device.
CAMERA ID SETUP(E)			
PROGRAM NO.(E)	1	1 to 99, OFF	For configuring the camera number such as when operating programs. Displays the configured ID number when the camera number is configured on the OCP, and displays the configured ID number on the OCP when the camera number is configured on the camera.

<SYSTEM (Cont'd)>

Menu Item	Initial Setting	Setting Values	Description/Remarks
CAM STATUS NAME SET(E)			
FILTER NAME			
ND			For configuring the ND filter name.
1:	1	1, 2, 3, 4, 5, 1/4, 1/8, 1/16, 1/64, /256, CLR, 25%, 12.5%, 6.25%, 1.5%, 0.39%, CUSTM	For configuring the name of the ND filter (1, 2, 3, 4, 5). Enables customization of the name when CUSTM is selected.
2:	2		
3:	3		
4:	4		
5:	5		
CC			For configuring the CC filter name.
A:	A	A, B, C, D, E, 3200K, 4300K, 6300K, CROSS, CUSTM	For configuring the name of the CC filter (A, B, C, D, E). Enables customization of the name when CUSTM is selected.
B:	B		
C:	C		
D:	D		
E:	E		
GAMMA NAME			For configuring the GAMMA name.
CUSTOM GAMMA:	DEFAULT	DEFAULT, CUSTOM	For selecting whether to use a DEFAULT or customized name for the GAMMA name.
1:	CST1		CUSTOMGAMMA name is customizable only when [CUSTOM] is selected in the CUSTOM GAMMA item above.
2:	CST2		
3:	CST3		
4:	CST4		
5:	HLG		
MATRIX NAME			For configuring the MATRIX name.
MATRIX SELECT:	DEFAULT	DEFAULT, CUSTOM	For selecting whether to use a DEFAULT or customized name for the MATRIX name.
OFF:	OFF		MATRIX name is customizable only when [CUSTOM] is selected in the MATRIX SELECT item above.
BT.709:	709		
SMPTE:	SMPTE		
EBU:	EBU		
BT.2020	2020		
USER1	USER1		
USER2	USER2		
DATE(YY/MM/DD)(E)	---	YY / MM / DD	For configuring the time and date for saving files to the USB flash memory.
TIME(E)	---	HH : MM : SS	For configuring the time and date for saving files to the USB flash memory.

⑩ INFORMATION

Menu Item	Initial Setting	Setting Values	Description/Remarks
WARNING			
CCU			
REF VOLT	OK	OK (voltage display), NG (voltage display)	Displays the DC power voltage supplied from an external source.
TEMP	OK	OK, NG (information display)	Displays the current temperature inside the camera.
FAN	OK	OK, NG (information display)	Displays the state of the fan rotation.
MEM BATT	OK	OK, NG (information display)	Displays the status of the battery inside the P_MPU module.
CAMERA			
REF VOLT	OK	OK (voltage display), NG (voltage display)	Displays the DC power voltage supplied from an external source.
TEMP	OK	OK, NG (information display)	Displays the current temperature inside the camera.
FAN	OK	OK, NG (information display)	Displays the state of the fan rotation.
WORKING TIME	---	****.*H (information display)	Displays the cumulative operating time of the camera.
SUB WORKING TIME	---	****.*H (information display) RESET	Displays the cumulative operating time of the camera. Unlike [WORKING TIME], this can be reset at the discretion of the user.
ETHERNET			
IP ADDRESS	192.168 to 1.100	(Information display)	Displays the ETHERNET settings. Menu items other than MAC_ADDRESS can be configured in [SYSTEM]-[ETHERNET(E)]-[IP ADDRESS].
SUBNET MASK	255.255.255. 0	(Information display)	
DEFAULT GATE WAY	0. 0. 0. 0	(Information display)	
SPEED/DUPLEX	AUTO NEGOTIATION	(Information display)	
MAC ADDRESS	00-05-2A-00-**-**	(Information display)	
FIRMWARE VERSION			
FIRMWARE		STRB6484V**.**.** (Information display)	Displays the firmware version.
SOFTWARE	---	STRB6485V**.**.** (Information display)	Displays the software version.
CHECK SUM	---		Displays the software error detection code.
P_PROC_HC	---	(Information display)	Displays the FPGA version.
HC_VISI	---		
P_MPU			
CAMERA	---		
HARDWARE VERSION			
P_PROC_HC	---	(Information display)	Displays the version of the module board.
HC_VISI	---	(Information display)	
P_MPU	---	(Information display)	
P_AXII_T	---	(Information display)	
P_AXII_B	---	(Information display)	
CAMERA	---	(Information display)	
SERIAL NUMBER	---	(Information display)	Displays the serial number of the camera head.
MODULE SW	---	(Information display)	Displays the settings of the DIP switch on the board.

<INFORMATION (Cont'd)>

Menu Item			Initial Setting	Setting Values	Description/Remarks
OPT RX LEVEL(E)					
	CAMERA >>> CCU				Displays the light-receiving level.
		RX1_LVL	**.*dBm	(Information display)	
		RX2_LVL	**.*dBm	(Information display)	
		RX3_LVL	**.*dBm	(Information display)	
		RX4_LVL	**.*dBm	(Information display)	
	CCU >>> CAMERA				
		RX1_LVL	**.*dBm	(Information display)	
		RX2_LVL	**.*dBm	(Information display)	
		RX3_LVL	**.*dBm	(Information display)	
		RX4_LVL	**.*dBm	(Information display)	

⑪ USER MENU CUSTOM

Menu Item	Initial Setting	Setting Values	Description/Remarks
1	MARKER CHAR	Selection from Main Menu or sub-menu items	For more details on how to operate the menu, configure settings and make changes, please refer to "5.1 Basic Menu Screen Operations" and "About the User Menu". You can register up to 20 items in the User Menu.
2	FOCUS ASSIST		
3	VIDEO I/O		
4	VIDEO ADJUSTMENT		
5	INFORMATION		
6 ⋮ 20	--- ---		

⑫ MENU MODE

Menu Item	Initial Setting	Setting Values	Description/Remarks
ENGINEER MENU	OFF	ON, OFF	Configuring to "ON" adds the ENGINEER MENU to the display.

5.3 Creating a Lens File

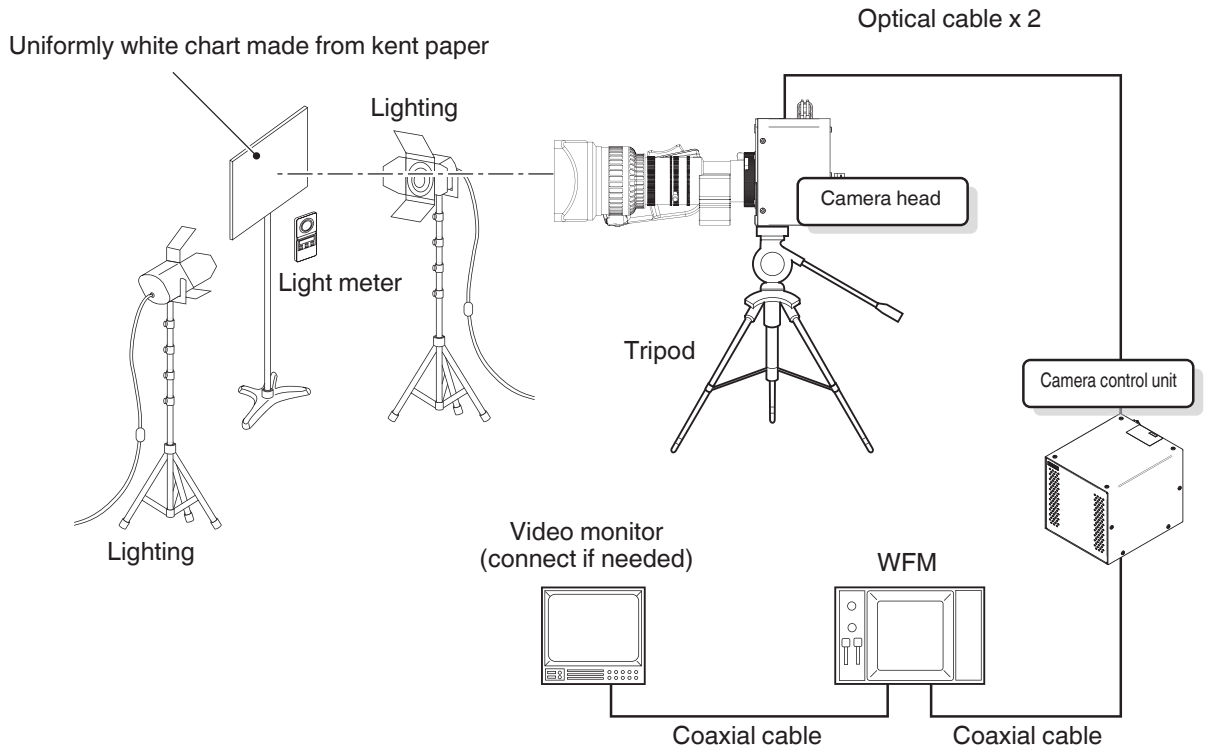
The purpose of creating lens files is to store information on changes in the color balance due to the different optical properties of the lenses in advance, thereby enabling GAIN and W SHADING to be optimized when using a lens with a different magnification or by a different manufacturer, or when the extender is in or not.
Simply by choosing a lens number from the menu, the lens file will switch automatically, and there is no need to make adjustments each time. At the same time, it also allows the state of the extender to be stored in the memory, and the lens file can be switched automatically according to the answer signal from the lens.
Up to 16 lens files can be registered to each camera so that lens files can also be created when a prompter or external filter is used.

■ System Setup

Set up the system as illustrated in the diagram below.
Make sure to attach the “standard lens” to the camera, which is to be used as the reference lens.
Also, use a chart for the subject that is uniformly white throughout, such as one that is made using Kent paper, and adjust the lighting with the use of a light meter to ensure that the chart surface is uniformly illuminated.

Note

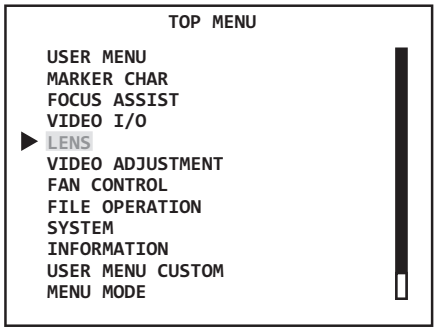
- When creating a lens file, set optical filter to ND: CLEAR (100%) and CC filter to 3200K. Also, ensure that a special effect filter is not attached to the front of the lens or the built-in filter disc. Lens file may not be correctly created if a special effect filter is attached.
- Prepare thoroughly when creating a lens file, get ready all the necessary lenses and create the lens files at the same time under the same conditions. Note that the settings will not be accurate if the conditions change while creating the lens files. The lens file stores information on the level error between lenses. Thus, if there are changes in the lighting or chart, it will not be possible to determine whether the error was due to the lenses, or whether it was due to the lighting or chart.



■ Creating a Lens Off File

Firstly, create a “lens off file”, which is the lens file for the standard lens. The lens off file will be the reference value when creating a lens file.

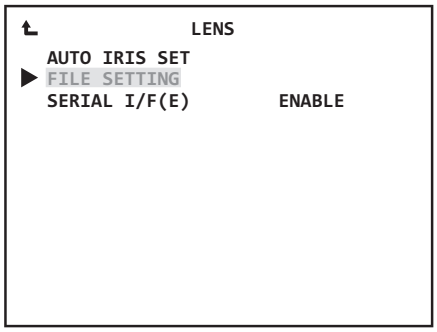
1 **Display the ENGINEER MENU screen, select [LENS] and press the MENU RE.**



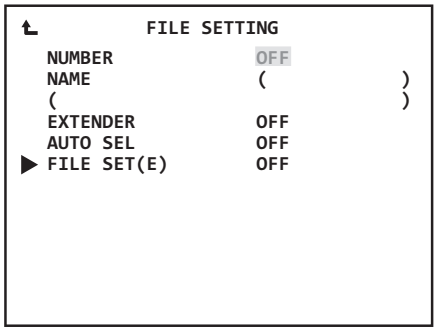
Caution

Configure ENGINEER MENU to “ON” when creating a lens file. For more details on the ENGINEER MENU settings, please refer to [5.1 Basic Operation of the Menu].

2 **Display the [LENS] sub-menu screen, select [FILE SETTING] and press the MENU RE.**

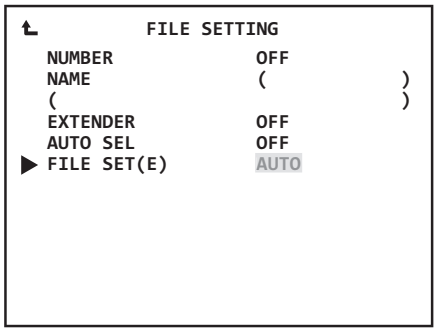


3 **Select “OFF” for [NUMBER].**



4 **Select “AUTO” for [FILE SET], followed by selecting [START].**

Data acquisition starts. Creation of the lens off file is complete when a [COMPLETED] message appears.



■ Creating a Lens File

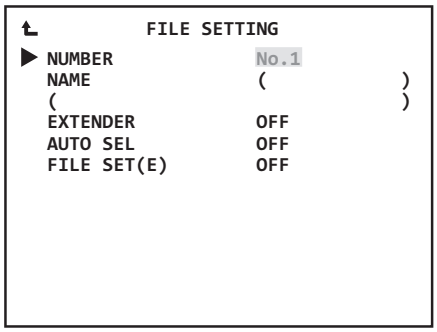
After the lens off file is created, proceed to create the lens file for each of the lenses. These lens files that are created will store information on the difference with respect to the data of the lens off file.
The following describes the steps for creating a file for lenses that support serial interface.

1 **Display the ENGINEER MENU screen, select [LENS] and press the MENU RE.**

2 **Display the [LENS] sub-menu screen, select [FILE SETTING] and press the MENU RE.**

3 **Select [No.**] for [NUMBER].**

Make a selection from No. 1 to No. 16.
Specify the number to configure in [NUMBER].
Note that creating a lens file with the same number as an existing file will overwrite the existing data.



4 **Select “ON” for [AUTO SEL].**

Configure the file name in [NAME] (first line) for each lens file.
When this is done, information on [NAME] (second line) and [EXTENDER] will be acquired automatically.

```
        FILE SETTING
  NUMBER            No.1(AUTO SEL)
  NAME              (             )
  (AB12X34ABCD                    )
  EXTENDER          OFF
▶ AUTO SEL          ON
  FILE SET(E)       OFF
```

Note

There are two types of display for the lens file name.
- For the first line (NAME field), configure the file name manually for each lens file. Appending names such as the lens model helps to ease identification of the lens number that corresponds to the lens.
- The second line (AUTO SEL NAME field) displays the model name that is automatically acquired from the lens if the lens supports serial interface. The model name is acquired while creating the lens file, and is stored for each number of the lens file.

5 **Select “AUTO” for [FILE SET], followed by selecting [START].**

Data acquisition starts.
Creation of lens file is now complete.

```
        FILE SETTING
  NUMBER            No.1(AUTO SEL)
  NAME              (             )
  (AB12X34ABCD                    )
  EXTENDER          OFF
  AUTO SEL          ON
▶ FILE SET(E)       AUTO
```

Note

GAIN and W SHADING can also be adjusted manually. You can create a lens file by selecting “MANUAL” for [FILE SET] after making adjustments on the OCP.

```
        FILE SETTING
  NUMBER            No.1(AUTO SEL)
  NAME              (             )
  (AB12X34ABCD                    )
  EXTENDER          OFF
  AUTO SEL          ON
▶ FILE SET(E)       MANUAL
```

6 **Select “ON” for [EXTENDER].**
Select “AUTO” for [FILE SET], followed by selecting [START].

Data acquisition starts. Creation of the EXTENDER file is complete when a [COMPLETED] message appears.

5.4 Use of USB Flash Memories

The camera settings can be saved or read using a USB flash memory.

Caution

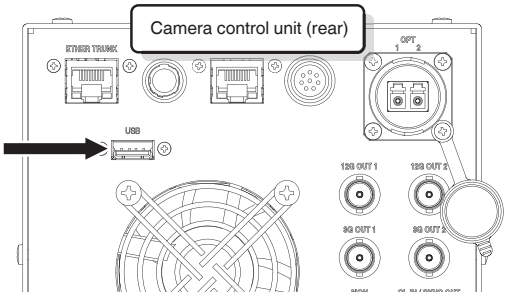
- While we have conducted thorough checks on the operation of commercially available USB flash memory devices, we shall not be liable for guaranteeing their operation.
- USB flash memory devices that are password-protected cannot be used.

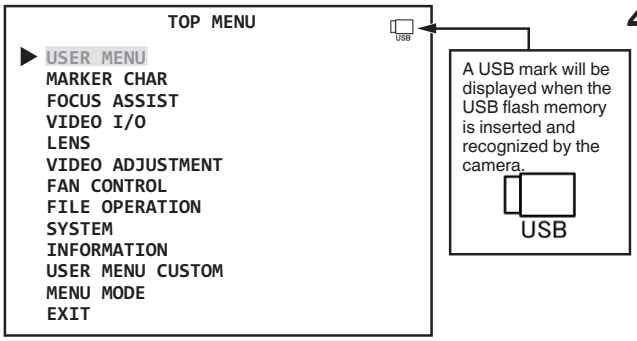
■ Inserting/Removing a USB Flash Memory

There is a USB flash memory slot at the back of the camera control unit as illustrated in the diagram below.

Caution

Ensure that the orientation of the USB flash memory is correct before inserting it into the slot.



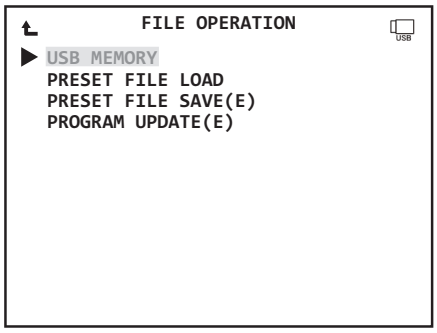


■ Saving Camera Settings to the USB Flash Memory

1 **On the Main Menu screen, use the MENU RE to move the cursor to [FILE OPERATION], followed by pressing the MENU RE to display the [FILE OPERATION] sub-menu.**

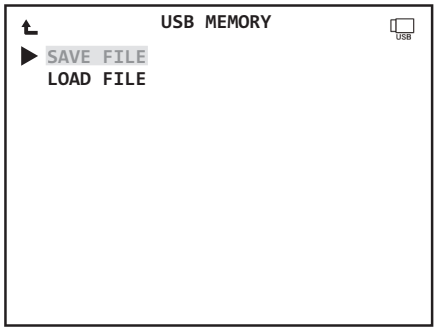
2 **Select [USB MEMORY] and press the MENU RE.**

The [USB MEMORY] sub-menu is displayed.

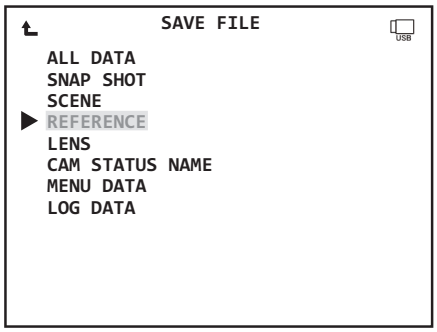


3 **Select the action to execute from the [USB MEMORY] sub-menu.**

In the diagram, [SAVE FILE] for saving a file is selected.

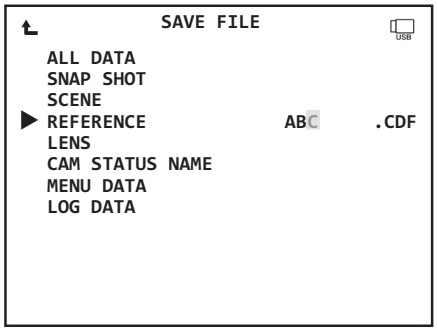


4 **After selecting the item to save, press the MENU RE.**

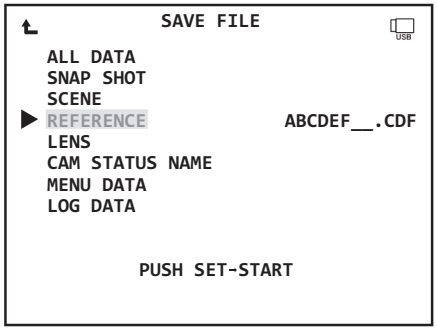


5 **Use the MENU RE to create an 8-character file name.**

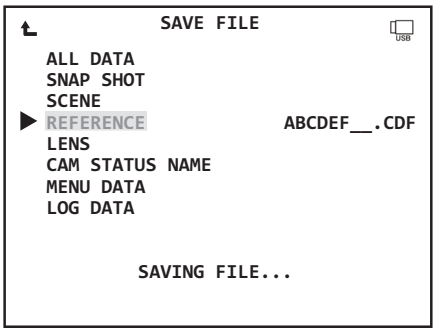
Turn the MENU RE to select a character for the blinking character position, followed by pressing the MENU RE to confirm the selection. Pressing the MENU RE moves the cursor to the next character position.

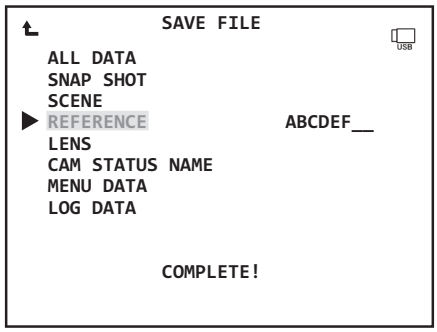


6 **After confirming the file name, the display returns to the [SAVE FILE] screen where you will see the [PUSH SET→START] option. Press the MENU RE. If a file with the same name already exists inside the USB flash memory, you will be directed to step 8. To cancel the action, turn the MENU RE while [PUSH SET→START] is displayed, followed by selecting [CANCEL] and pressing the MENU RE.**



7 **[SAVING FILE...] is displayed while the file is being saved. [COMPLETE!] is displayed after the file is successfully saved.**





Caution

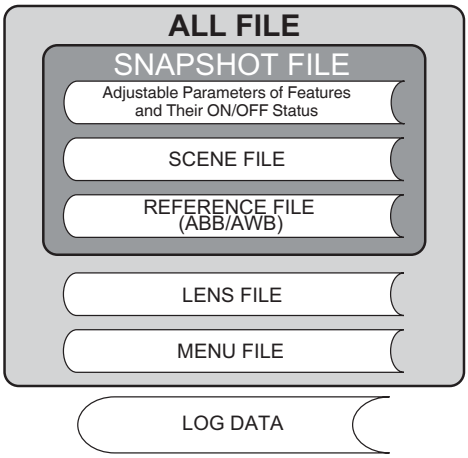
Do not remove the USB flash memory during writing to the USB flash memory is in progress. While writing to USB flash drive, [SAVING FILE...] is displayed and the access indicator is lit. Otherwise, data in the USB flash memory or the USB memory device itself may be damaged.

8 **If a file with the same name already exists in the USB flash memory, a message will appear asking whether to overwrite the file. To allow the file to be overwritten, change the selection from [NO] to [YES], followed by pressing the MENU RE. Selecting [NO] will cancel the action and you will be directed back to step 3.**

Note

A conceptual diagram of the files to be saved is shown below.

- Selecting ALL DATA saves all the items in the light gray area in the diagram.
- Selecting SNAP SHOT saves all the items in the dark gray area in the diagram.
- Each item can be saved individually.

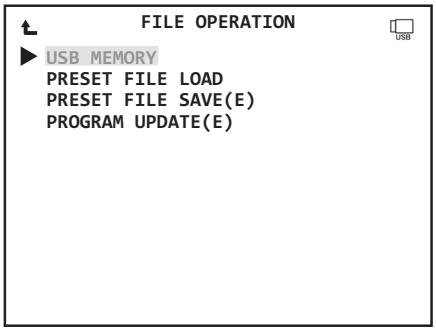


■ Loading Camera Settings from the USB Flash Memory

1 **On the Main Menu screen, use the menu selection knob to move the cursor to [FILE OPERATION], followed by pressing the MENU RE to display the [FILE OPERATION] sub-menu.**

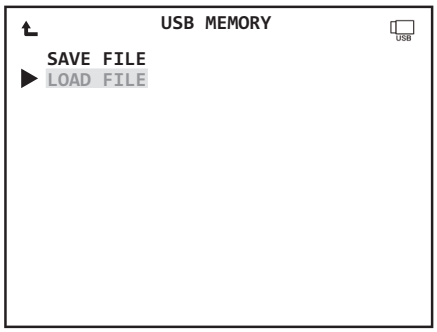
2 **Select [USB MEMORY] and press the MENU RE.**

The [USB MEMORY] sub-menu is displayed.



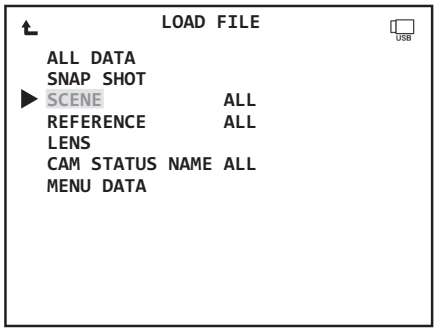
3 **Select the action from the [USB MEMORY] sub-menu.**

Select [LOAD FILE] to load a file.

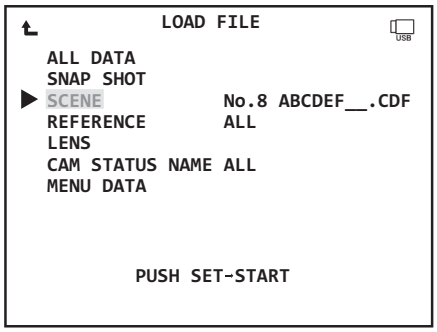


4 **Select the item to load to the camera from the LOAD FILE sub-menu.**

Make a selection and press the MENU RE. [SCENE] has been selected in the diagram below.



5 **After selecting the item to load to the camera, press the MENU RE. Next, select whether to load all data files or individual data files between No. 1 and No. 8. [NO.8] is selected in the example illustrated below. Next, select the file that is stored in the USB flash memory. After confirming, the [PUSH SET→START] option is displayed. Press the MENU RE. To cancel the action, turn the MENU RE while [PUSHSET→START] is displayed.**

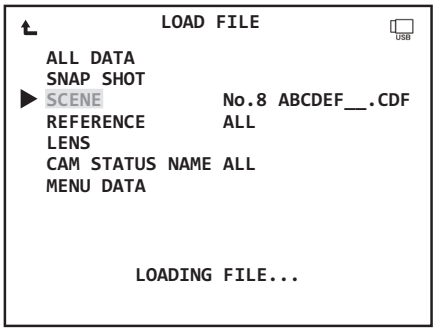


Note

For SCENE FILE and LENS FILE, you can choose whether to retrieve all data (ALL) or individual data.
For MENU DATA, only the file selection is available.

- SCENE : ALL, NO.1 to NO.8
- LENS FILE : ALL, NO.1 to NO.16
- MENU DATA : <No options>

6 **[LOADING FILE...] is displayed while the file is loading. [COMPLETE!] is displayed after the file is successfully loaded. For ALL FILE and MENU DATA, the camera restarts automatically when [COMPLETE!] is displayed after loading is complete.**



Caution

Do not remove the USB flash memory while data is loaded from the USB flash memory. Data is currently being loaded from the USB flash memory if [LOADING FILE...] is displayed and the access indicator of the USB flash memory is lit. Otherwise, data in the USB flash memory and the camera or the USB memory device itself may be damaged.

Caution

The file name will not be displayed correctly when it is modified to one of the following states on devices such as a PC.

- The file name has more than 8 characters.
- The file name uses characters other than single-byte alphabets (e.g., kanji and kana characters).

■ Error Message

If an error occurs while saving or loading a file, an error message will be displayed.
Please refer to the table below for a list of error messages and their descriptions.

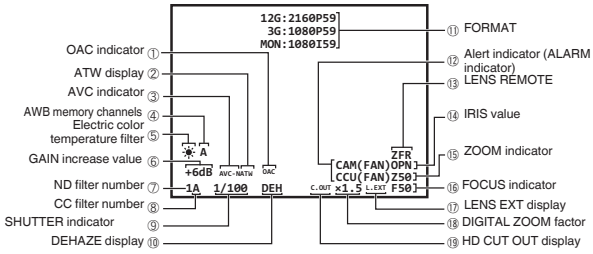
Error Message	Description
NO DEVICE	USB flash memory is not inserted.
CANNOT OPEN FILE	File cannot be opened.
NOT CAMERA DATA FILE.	The file is not a camera data file.
FILE OF DIFFERENT CAMERA.	The file is for a different camera model.
RELEVANT DATA IS NOT FOUND.	Unable to find related data.
WIRTE ERROR	Writing error
READ ERROR	Loading error
ERROR	Other types of error

5.5 Screen Display

This section describes the name and features of the markers and characters that are displayed on the Monitor Output screen.

Monitor Output

■ Status Display



■ On-screen Display Features

① OAC indicator

Displays the status of the Optical Aberration Correction setting. It is displayed when [OAC GUIDE MARK] is configured to “ON” in the menu settings ([VIDEO ADJUSTMENT]→[OPTICAL ABERRATION CORR]).

- OAC : Displayed for 2 seconds when the aberration correction data is successfully received from the serial lens.
- OAC Z : Appears blinking when information on the zoom position of the lens is not correctly received. Move the zoom of the camera.
- OAC I : Appears blinking when information on the iris position of the lens is not correctly received. Move the iris of the camera.
- OAC F : Appears blinking when information on the focus position of the lens is not correctly received. Move the focus of the camera.

② ATW display

Displayed when the camera is operating in the ATW mode.

③ AVC indicator

Displayed when the camera is operating in the AVC mode.

- AVC-D : DAY mode
- AVC-N : NIGHT mode

④ AWB memory channels

Displays the memory selected using the AWB selection switch.

- A : Selects the Ach memory.
- B : Selects the Bch memory.
- O : White balance correction is in the preset state (3200K)

⑤ Electric color temperature filter

Displays * when the electric color temperature filter is set to ON.

⑥ GAIN UP value

Displayed for 2 seconds when the step gain up value is changed. has been changed. The increments can be configured to -6, -3, 0, +3, +6, +9, +12, +18, +24, +30, +36, +42, +48, +54, +60, +66 or +72 dB.

⑦ ND filter number

⑧ CC filter number

Displays position numbers of optical filters.
Please refer to the table below.

ND	1	2	3	4	5
	CLEAR	1/4	1/16	1/64	1/256
CC	A	B	C	D	E
	3200K	4300K	6300K	CROSS	CAP (Option)

⑨ SHUTTER indicator

Displays the shutter speed value when the shutter is turned on.

⑩ DEHAZE display

Displayed when the Image Dehazing feature (DEHAZE) is set to “ON”.

⑪ FORMAT

Displays the image format settings of 12G OUT, 3G OUT and MON OUT of this product.

⑫ Alert indicator (ALARM indicator)

Displays the respective alert when the optical unit (camera head) is in the following conditions.

CAM(FAN)	:	Appears blinking when the built-in fan of this product stopped running due to an error.
CAM(TEMP)	:	Appears blinking when the internal temperature of this product is high.
CAM(VOLT)	:	Appears blinking when the voltage of the external power supply to this product falls below the lower limit setting configured in the menu.
CAM(OPT)	:	Appears blinking when the optical level reception is abnormal.

Displays the respective alert when the camera control unit(CCU) is in the following conditions.

CCU(FAN)	:	Appears blinking when the built-in fan of this product stopped running due to an error.
CCU(TEMP)	:	Appears blinking when the internal temperature of this product is high.
CCU(VOLT)	:	Appears blinking when the voltage of the external power supply to this product falls below the lower limit setting configured in the menu.
CCU(OPT)	:	Appears blinking when the optical level reception is abnormal.

⑬ LENS REMOTE

Displayed when the lens control authority is configured to the remote mode (via OCP-300, etc.). Lens control authority can be acquired or canceled on the lens and the remote control panel.

⑭ IRIS value

Displays the iris value (F number) of the lens that is attached to the camera.

⑮ ZOOM indicator

Displays the zoom position of the lens between the range of 0 and 100.

⑯ FOCUS indicator

Displays the focus position of the lens between the range of 0 and 100.

⑰ LENS EXT display

Displayed when the Lens Extender is set to “ON”.

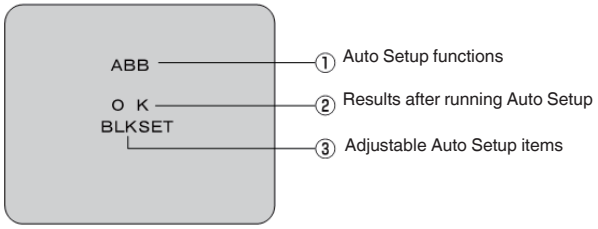
⑱ DIGITAL ZOOM factor

Displays the zoom factor of the digital zoom feature.

⑲ HD CUT OUT display

Displayed when the HD CUT OUT feature is set to “ON”.

■ Auto Setup display



① Auto Setup functions

Displays the Auto Setup functions that are currently running.

AWB	:	Displayed when Auto White Balance is running
ABB	:	Displayed when Auto Black Balance is running
FULL SETUP	:	Displayed when Full Auto Setup is running
LEVEL SETUP	:	Displayed when Auto Level Setup is running, etc.

② Results after running Auto Setup

Displays the results after running Auto Setup (including AWB and ABB).

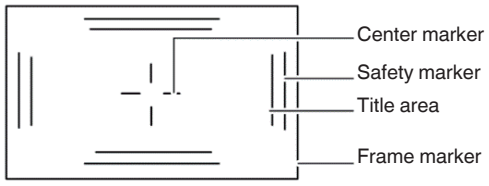
OK	:	Completed Auto Setup.
NG	:	Auto Setup not completed.
STOP	:	Auto Setup has been discontinued.
LEVEL OVER	:	Input signal level is too high.
LEVEL UNDER	:	Input signal level is too low.
CHG FILTER	:	Inappropriate optical filter

③ Adjustable Auto Setup items

Displays the item that is being adjusted while Auto Setup is running.
“FLARE GAMMA GAIN”
“PED”
“IRIS”
The display will show the corresponding item such as the above.

■ Center marker
Safety marker
Frame marker

- The center marker is used to determine the center of the screen or for adjusting the verticality or horizontality of the camera. You can choose one of the three center marker types on the menu screen.
- Safety marker is used to identify the safety zones for actions and titles. You can switch between the action and title modes on the menu screen.
- Frame marker is used to identify the frame for capturing images.
- You can configure the aspect ratio separately for the center marker and frame marker (4:3/13:9/14:9/16:9).

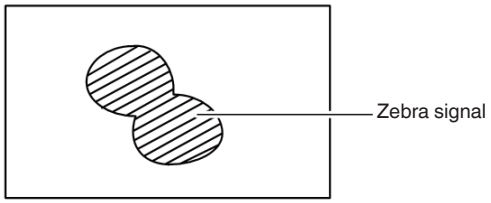


Reference

For more details on settings related to the marker displays, please refer to [5.2 Menu Configuration and Content].

■ Zebra indicator

Zebra pattern refers to a striped pattern that is superimposed on the video image display. There are two types of zebra signals. Type 1 indicates the area where the video level of the subject has exceeded the preset level, while Type 2 indicates only the area where the video level coincides with the settings. You can assign the ON/OFF action of the zebra indicator to one of the function buttons in front of the viewfinder (F1, F2 or F3).



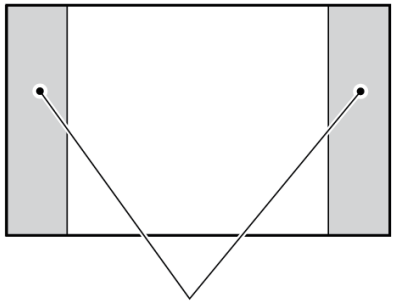
Reference

For more details on the zebra signal settings, please refer to [5.2 Menu Configuration and Content].

■ Side mask feature

Using 16:9 as the aspect ratio for the camera output displays video images on the screen in the 16:9 format. This feature allows you to adjust the brightness outside the frame marker upon taking into consideration cases where you want to convert it to the 4:3 format. The side mask appears when the frame marker setting is as follows.

- 16:9 Mode : 14:9, 13:9, 4:3
- 4:3 Mode : 13:9, 14:9, 15:9, 16:9



Enables adjustment of brightness outside the frame marker

Reference

For more details on settings related to the marker displays, please refer to [5.2 Menu Configuration and Content].

Chapter 6 Troubleshooting

6.1 When the WARNING indicator is lit

This product is equipped with a self-diagnosis function to monitor and detect errors on the camera. This feature is activated concurrently when the power of the camera is turned on, and continues to function while you are operating the camera.

Caution

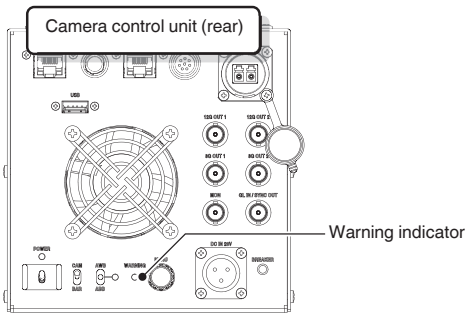
The self-diagnosis feature immediately detects errors that have occurred on the camera and lights up the WARNING indicator. An alert will also be displayed on the Monitor Output screen at the same time.

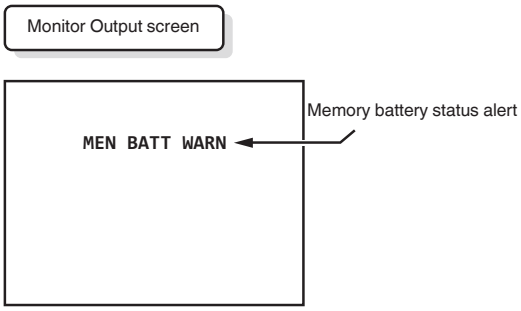
Self-diagnosis Information on This Unit

■ List of alerts

The alerts in the table below will be displayed when any of the corresponding errors have occurred on this unit.

Status to check	WARNING indicator	Screen display
Fan rotation	Lit (red)	For details on the display locations of the screen displays for CAM/CCU (FAN, TEMP, VOLT, OPT) and the respective alert condition, please refer to [5.5 Screen Display] ⑱.
Internal temperature		
Supply voltage		
Optical level reception		
Memory battery		[MEM BATT WARN] appears blinking for a few seconds





When an alert is displayed, check the description and take the necessary actions or contact our nearest service center or sales office.

6.2 Initializing the Settings of This Product

There are two ways to initialize the settings of this product.

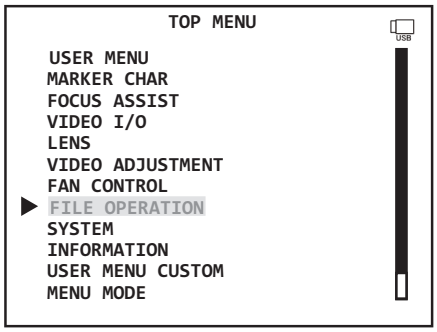
① Reset to user-defined settings (ENGINEER SET FILE)
This option resets the camera to the condition configured and saved by the customer.

② Reset to factory default (FACTORY SET FILE)
This option resets the camera to the factory default.

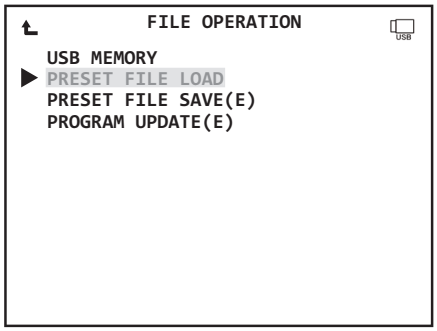
Make use of the menu screen to change the settings. The following provides description on the steps to initialize the settings.

■ Initializing this product

1 **On the Main Menu (TOP MENU), turn the MENU RE to move the cursor to [FILE OPERATION], followed by pressing the MENU RE to display the sub-menu.**

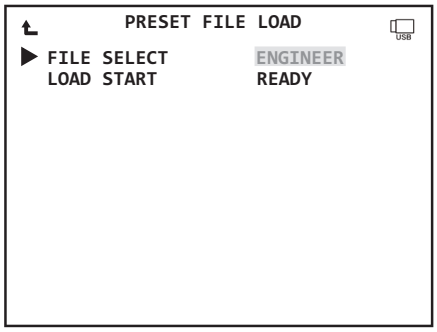


2 **Turn the MENU RE to move the cursor to [PRE SET FILE LOAD], followed by pressing the MENU RE.**



3 **Turn the MENU RE to move the cursor to [FILE SELECT], followed by pressing the MENU RE.**

The cursor moves to the mode settings.



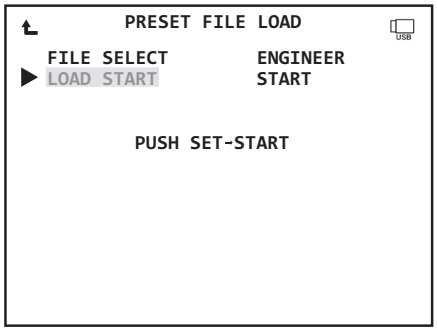
4 **Turn the MENU RE to move the cursor to the setting you want to select (ENGINER, FACTRY), followed by pressing the MENU RE.**

The setting is now confirmed.

5 **Move the cursor to [LOAD START], and then press the MENU RE.**

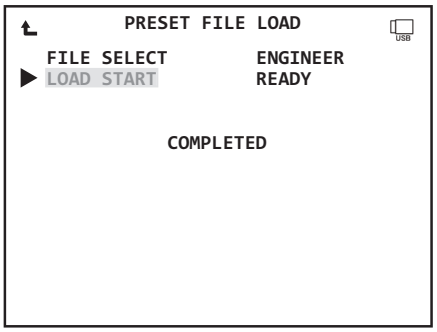
When the MENU RE is pressed while the cursor is at [LOAD START], pressing the MENU RE again changes the display of the mode setting from “READY” to “START”.

- Selecting “CANCEL” by pressing the MENU RE cancels the setting and exits [PRESET FILE LOAD].
- Selecting “START” displays [PUSH SET → START] at the bottom of the screen.
  When the setting is configured to “START”, you will be directed to step 6.



6 **Press the MENU RE.**

Initialization starts.
After file loading is complete, [COMPLETED] is displayed on the screen. Next, [CAMERA RESTART] blinks for about 3 seconds. The power of the camera then restarts, and initialization using the settings file selected in [FILE SELECT] is now complete.



Caution

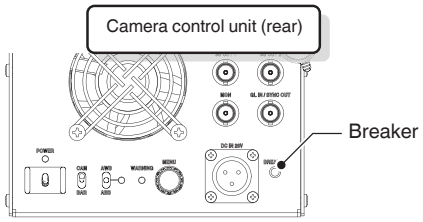
It is important to understand the following before initializing this product.

① Initialization of the engineer settings is to restore the settings saved by the user. Those that are not saved will be reset.

② Initialization to the factory settings resets all the settings configured by the user to the factory default.

6.3 Checking the Breaker

The breaker may have tripped if the power of the camera does not turn on even though the camera control unit has powered on successfully and the peripheral devices are properly connected. Perform the recovery steps below if the breaker has tripped.
Turn off the power switch and AC adapter power, followed by unplugging the DC power cable.
Use a thin rod or other similar objects to push the breaker all the way in. If the breaker is tripped, you will hear a “click” sound when the breaker is restored.
(No change will occur if the breaker is not tripped.)



Caution

If the breaker has not tripped but power of the camera does not turn on, or if the breaker trips again, it could be due to malfunction of the product. If you encounter the above, please consult our service center or the salesperson in charge.

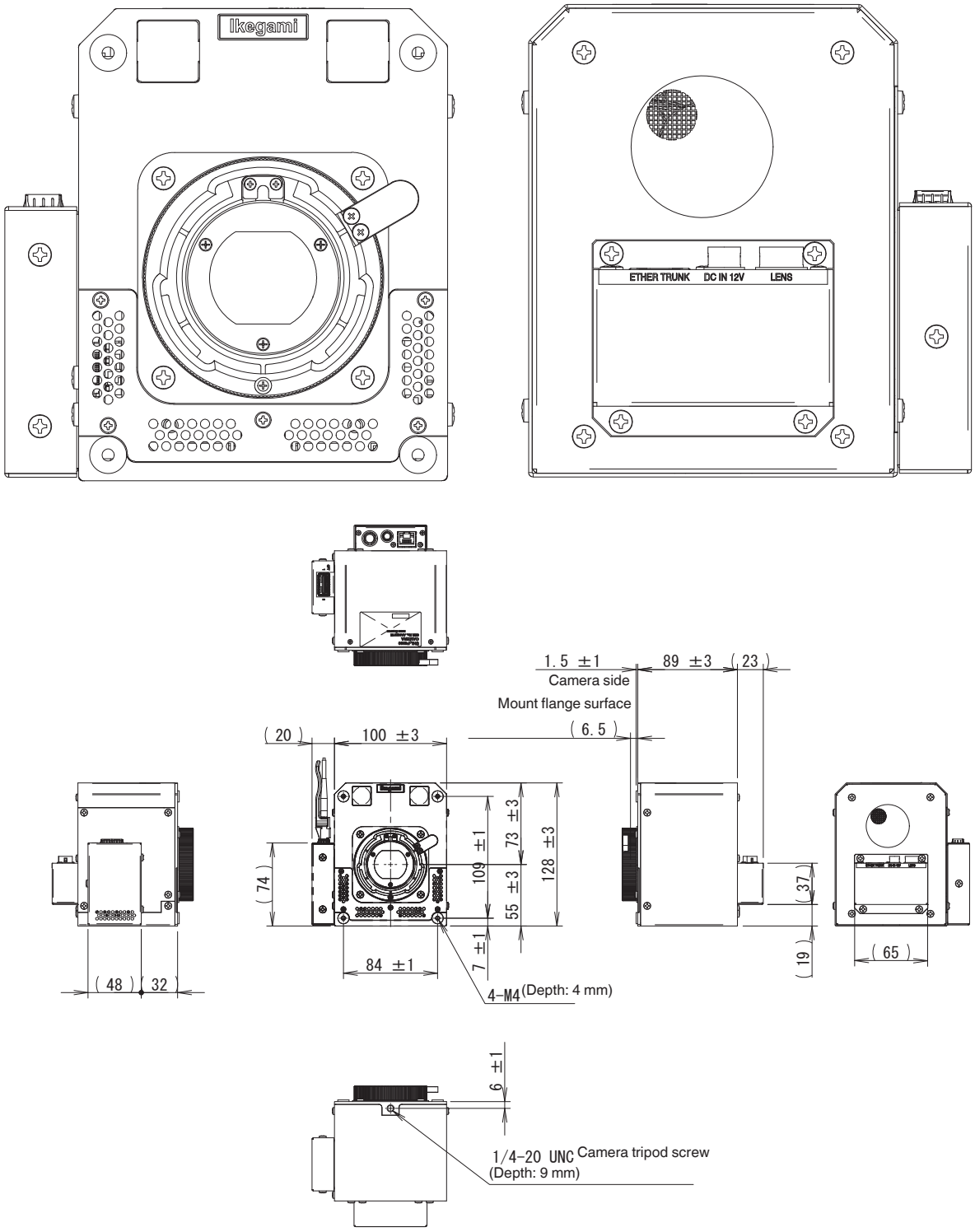
Chapter 7 Product Specifications

7.1 Rated Specifications

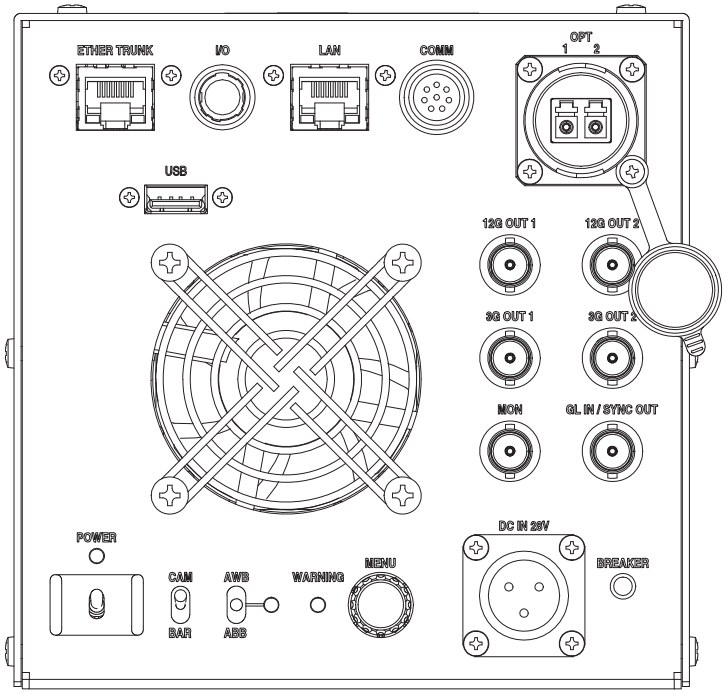
<table>
<tr><th></th><th>Item</th><th colspan="2">Rated specifications</th><th>Remarks</th></tr>
<tr><td>1</td><td>Scan mode</td><td colspan="2">2160p59.94 or 50</td><td></td></tr>
<tr><td>2</td><td>Image sensor</td><td colspan="2">Global Shutter CMOS × 3 sensors</td><td></td></tr>
<tr><td>3</td><td>Optical system</td><td colspan="2">2/3-inch RGB prism</td><td></td></tr>
<tr><td>4</td><td>Lens mount</td><td colspan="2">ARIB TR-B37 compliant</td><td></td></tr>
<tr><td>5</td><td>Effective resolution</td><td colspan="2">3840(H)×2160(V)</td><td></td></tr>
<tr><td>6</td><td>Optical filter</td><td colspan="2"><table>
<tr><td rowspan="2">ND</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>CLEAR</td><td>1/4</td><td>1/16</td><td>1/64</td><td>1/256</td></tr>
<tr><td rowspan="2">CC</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr>
<tr><td>3200K</td><td>4300K</td><td>6300K</td><td>CROSS</td><td>CAP
(Option)</td></tr>
</table></td><td></td></tr>
<tr><td>7</td><td>Supply voltage</td><td>Camera head
Camera control unit</td><td>DC: +11 to +16 V
DC: +24 to +32 V</td><td></td></tr>
<tr><td>8</td><td>Temperature range</td><td>Operating temperature
Storage temperature</td><td>-20 °C to +45 °C
-30 °C to +60 °C</td><td></td></tr>
<tr><td>9</td><td>Operating humidity range</td><td colspan="2">30 % to 90 %</td><td>No condensation</td></tr>
<tr><td>10</td><td>External dimensions diagram</td><td>Camera head
Camera control unit</td><td>W100 x H128 x D90
W145 x H145 x D173</td><td>Excludes protrusions</td></tr>
<tr><td>11</td><td>Mass</td><td>Camera head
Camera control unit</td><td>1.1 kg
2.6 kg</td><td></td></tr>
<tr><td>12</td><td>Power consumption</td><td>Camera head
Camera control unit</td><td>28W
82W</td><td></td></tr>
</table>

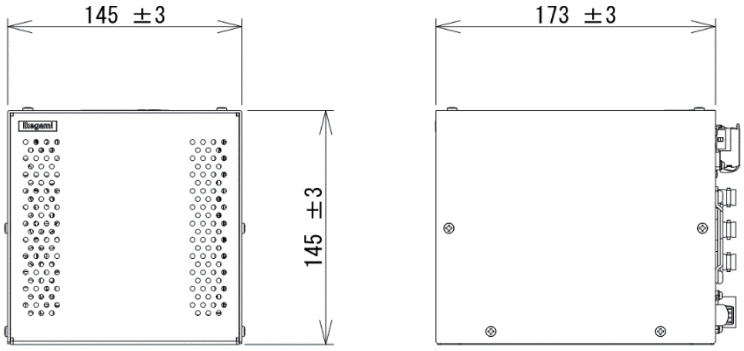
7.2 External Dimensions Diagram

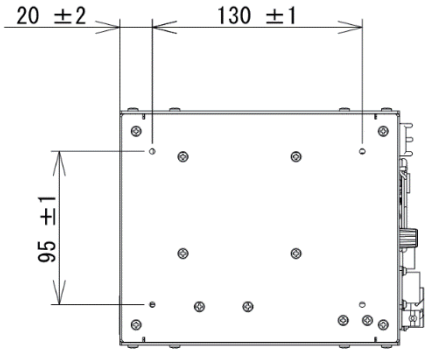
■ Camera head



■ Camera control unit







7.3 Performance

	Item	Performance	Remarks
1	S/N ratio	62 dB (typ.) @ HD	
2	Modulation factor	60% (typ.) @ HD	
3	Limiting resolution	1000 TVL (typ.) @ HD	
4	Sensitivity	F12@4K F12@HD	2000 lx, Reflectance 89.9%
5	Minimum illumination	0.0015Lx @ F1.4	*Calculated value with 50% of video level and 72dB of Gain
6	GAIN	-6, -3, 0, +3, +6, +9, +12, +18, +24, +30, +36, +42, +48, +54, +60, +66, +72dB	
7	GAMMA	OFF, 0.35, 0.4, 0.45, CUSTOM1 – 5	CUSTOM1 ~ 5 support HLG
8	Electronic shutter	1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000	Variable shutter supported

7.4 Input/Output Connectors

■ Camera head

	Item	Rated specifications
1	OPT	FTL4C1QW2N (LC x2) (x1)
2	LENS	HR10A-10R 12pin (x1)
3	DC IN	HR10A-7R 6pin (x1)
4	ETHER TRUNK	J00-0065NL (RJ45) (x1)

■ Camera control unit

	Item	Rated specifications
1	ETHER TRUNK	J00-0065NL (RJ45) (x1)+D4:D14
2	I/O	HR10A-10R 10pin (x1)
3	LAN	J00-0065NL (RJ45) (x1) (POE Non-compliant)
4	COMM	ICCP/ISCP: EPRC05 8pin (x1)
5	OPT	SW20-LCR-1 (LC x2) (x1)
6	USB	USB 2.0, Type A, 4pin (x1)
7	12G OUT	BNC output (x2) 0.8Vp-p, 75Ω ・ 4K output 12G-SDI : SMPTE 2082 ・ HD output 3G-SDI : SMPTE 424/425 Level-A/B HD-SDI : SMPTE 292M
8	3G OUT	BNC output (x2) 0.8Vp-p, 75Ω ・ HD output 3G-SDI : SMPTE 424/425 Level-A/B HD-SDI : SMPTE 292M
9	MON OUT	BNC output (x1) 0.8Vp-p, 75Ω ・ HD output 3G-SDI : SMPTE 424/425 Level-A/B HD-SDI : SMPTE 292M
10	GL IN/SYNC OUT	BNC input/output (x1) ・ GL IN HD : Tri-level sync SMPTE 274M, 0.6Vp-p, 75Ω SD : Black burst NTSC : 0.286Vp-p, 75Ω, PAL : 0.3Vp-p, 75Ω ・ SYNC OUT HD : Tri-level sync SMPTE 274M, 0.6Vp-p, 75Ω
11	DC IN	PT02E-12-3P (025) (x1)

7.5 Supported Formats

12G OUT (12G-OUT1/12G-OUT2)					
MAIN FORMAT	**IMAGE SIZE**	**FREQ&SCAN**	**SAMPLING**	**MAPPING**	**MAIN OUTPUT FORMAT**
1	3840x2160	59.94P	YCbCr 422	12G-SDI	2160 59.94P
2	3840x2160	50P	YCbCr 422	12G-SDI	2160 50P
3	1920x1080	59.94P	YCbCr 422	3G-SDI LVL-A	1080 59.94P
4		59.94I	YCbCr 422	HD-SDI	1080 59.94I
5	1920x1080	50P	YCbCr 422	3G-SDI LVL-A	1080 50P
6		50I	YCbCr 422	HD-SDI	1080 50I
7	1280x720	59.94P	YCbCr 422	HD-SDI	720 59.94P
8		50P	YCbCr 422	HD-SDI	720 50P

12G OUT	**3G OUT (3G-OUT1/3G-OUT2)**					**MON OUT**	
MAIN FORMAT	**IMAGE SIZE**	**FREQ & SCAN**	**SAMPLING**	**MAPPING**	**SUB OUTPUT FORMAT**	**SOURCE SEL ***	**MON OUT**
1	1920x1080	59.94P	YCbCr 422	3G-SDI LVL-A	1080 59.94P	3G SDI OUT SAME	1080 59.94I
		59.94I	YCbCr 422	HD-SDI			
		29.97psf	YCbCr 422	HD-SDI			1080 29.97psf
	1280x720	59.94P	YCbCr 422	HD-SDI	720 59.94P		720 59.94P
2	1920x1080	50P	YCbCr 422	3G-SDI LVL-A	1080 50P	3G SDI OUT SAME	1080 50I
		50I	YCbCr 422	HD-SDI			
		25psf	YCbCr 422	HD-SDI			1080 25psf
	1280x720	50P	YCbCr 422	HD-SDI	720 50P		720 50P
3	1920x1080	59.94P	YCbCr 422	3G-SDI LVL-A	1080 59.94P	12G SDI OUT SAME	1080 59.94I
						3G SDI OUT SAME	
		59.94I	YCbCr 422	HD-SDI	1080 59.94I	12G SDI OUT SAME	
						3G SDI OUT SAME	
		29.97psf	YCbCr 422	HD-SDI	1080 29.97psf	12G SDI OUT SAME	1080 59.94I
						3G SDI OUT SAME	1080 29.97psf
4	1920x1080	59.94I	YCbCr 422	HD-SDI	1080 59.94I	12G SDI OUT SAME	1080 59.94I
						3G SDI OUT SAME	
		29.97psf	YCbCr 422	HD-SDI	1080 29.97psf	12G SDI OUT SAME	1080 59.94I
						3G SDI OUT SAME	1080 29.97psf
5	1920x1080	50P	YCbCr 422	3G-SDI LVL-A	1080 50P	12G SDI OUT SAME	1080 50I
						3G SDI OUT SAME	
		50I	YCbCr 422	HD-SDI	1080 50I	12G SDI OUT SAME	
						3G SDI OUT SAME	
		25psf	YCbCr 422	HD-SDI	1080 25psf	12G SDI OUT SAME	1080 25psf
						3G SDI OUT SAME	
6	1920x1080	50I	YCbCr 422	HD-SDI	1080 50I	12G SDI OUT SAME	1080 50I
						3G SDI OUT SAME	
		25psf	YCbCr 422	HD-SDI	1080 25psf	12G SDI OUT SAME	1080 50I
						3G SDI OUT SAME	1080 25psf
7	1280x720	59.94P	YCbCr 422	HD-SDI	720 59.94P	3G SDI OUT SAME	720 59.94P
8	1280x720	50P	YCbCr 422	HD-SDI	720 50P	3G SDI OUT SAME	720 50P

The configurable sub formats vary according to the settings of the main output format.

sF: segmented Frame

* Select from “SYSTEM” - “MON SDI OUT FORMAT” - “SOURCE SEL” in the menu setting.

Changing Information

This chapter contains revision information on user-specific specifications or design changes requested by the user.
Read through this chapter while referring to the main text of the maintenance manual.

UHL-F4000

4K/HD Multi Purpose Camera

OPERATION MANUAL

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