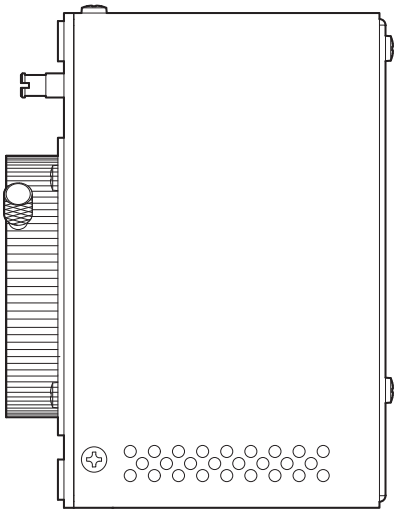
CE

Products conforming to RoHS directive



HDL-F3000

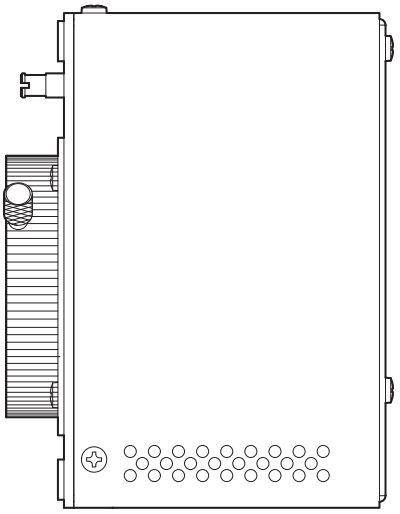
3MOS HDTV CAMERA

Operation Manual

Ikegami

CE

Products conforming to RoHS directive



HDL-F3000

3MOS HDTV CAMERA

Operation Manual

1609 1st Edition (U) (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.

PRODUCTS CONFORMING TO RoHS DIRECTIVE

Following products described in this manual are products conforming to RoHS directive.

・HDL-F3000 HDTV Camera

Products conforming to RoHS directive include products that do not contain specified hazardous substances such as lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) in electrical and electronic equipment excluding following exemption applications based on the EU directive.

* About RoHS Directive

The RoHS directive stands for "the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment" and is one of environmental directives in Europe. This directive restricts the use of specified hazardous substances in electrical and electronic equipment.

●Applications exempted from RoHS directive compliance

Followings applications are permitted as exemptions from RoHS directive compliance.

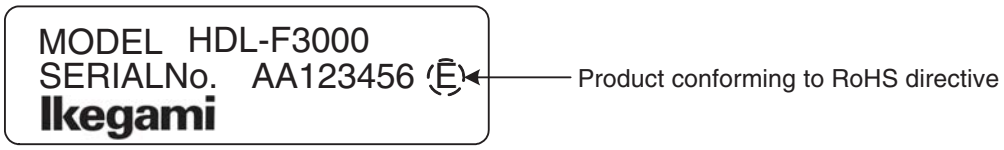
1. Mercury in compact fluorescent lamps not exceeding 5mg per lamp
2. Mercury in straight fluorescent lamps for general purposes not exceeding:
    - ・halophosphate 10mg
    - ・triphosphate with a normal lifetime 5mg
    - ・triphosphate with a long lifetime 8mg
3. Mercury in straight fluorescent lamps for special purposes
4. Mercury in other lamps not specifically mentioned in this Annex
5. Lead in the glass of cathode ray tubes, electronic components and fluorescent tubes
6. Lead as an alloying element in steel containing up to 0.35% lead by weight, aluminum containing up to 0.4% lead by weight and as a copper alloy containing up to 4% lead by weight
7. Lead in following items
    - ・Lead in high melting temperature type solders (i.e. tin-lead solder alloys containing more than 85% lead)
    - ・Lead in solders for servers, storage and storage array systems
    - ・Lead in solders for network infrastructure equipment for switching, signaling, transmission as well as network anagement for telecommunication
    - ・Lead in electronic ceramic parts (e.g. piezoelectronic devices)
8. Cadmium plating except for applications banned under Directive amending Directive relating to restrictions on the marketing and use of certain dangerous substances and preparations
9. Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators
10. Lead used in compliant pin connector systems
11. Lead as a coating material for the thermal conduction module C-ring
12. Lead and cadmium in optical and filter glass
13. Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80% and less than 85% by weight
14. Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages
15. Decabrominated diphenyl ether (Deca-BDE) in polymeric applications

MAINTENANCE OF PRODUCTS CONFORMING TO RoHS DIRECTIVE

Work with care about followings for maintenance of products conforming to RoHS directive.

1. Identification

・For products conforming to RoHS directive, the letter “E” is appended at the end of the serial number on the label. For models that the letter cannot be appended to the serial number, the letter “E” will be described in a distinguishable position on the label. A description example on a main label is shown below.



Label

・Print-circuit board of the products conforming to RoHS directive is manufactured by following methods.

[1] Blue resist ink is used for the print-circuit board. (The color of conventional print-circuit board is green.)

[2] Either one of the following marks is indicated by a serigraph or label.

Phase 3A

Phase 3

2. Soldering

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

・Recommended solder composition is “Sn/3.0Ag/0.5Cu” or equivalent.

・Separate the soldering iron exclusively for RoHS products and the soldering iron for conventional use.

・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 print-circuit board and the tip width of the soldering bit.

・Finish by a lead-free solder looks dull or whitish compared to conventional solder with lead.

・If the customer mixed the lead-solder with the main body wiring or the circuit board, it becomes guarantee off the subject. Ikegami doesn’t guarantee to do the repair work. Because the solder polluted with lead cannot be removed.

3. Parts

Be sure to use parts conforming to RoHS directive.

INFORMATION TO THE USER

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.

The CE mark means

The CE mark means that the following products will meet the Directives 89/336/EEC, 92/31/EEC, 93/68/EEC and standards EN55022(2006), EN61000-3-2(A2:2005), EN61000-3-3(A2:2005), EN55024(A2:2003).
・HDL-F3000 : HDTV CAMERA

Use shielded cable except AC cable.
This equipment is not intended for use in residential areas, so that use in residential areas may cause interference.

SAFETY PRECAUTIONS

This manual describes the precautions for you to use the product safely. Please read these precautions thoroughly before use.

1. Notes on this manual

(1) This manual is written for readers with a basic knowledge of handling this product.
Therefore, the explanation of technical terms is omitted in this manual.

(2) The content of this manual are subject to change without notice in the future.

2. Hazard Alert Symbol and Signal Term Regarding the Safety of This Manual

"Hazard Alert Symbol" that rouses the following attention to the content of the safety related explanation, "Signal Term" that shows the level of danger, "Notice" and "Reference" are used.

HAZARD ALERT SYMBOL : 

SIGNAL WORDS : **DANGER WARNING CAUTION**

The symbols used in this manual are as follows:

⚠ **CAUTION** : Indicates that mishandling of the product by ignoring this label may lead to a danger resulting in an injury or property damage.

Notice : Supplementary information or guidance

Reference : Sections where related information is available

3. Attention on handling of the equipment

This product is designed with safety in mind sufficiently. However, electronic products may cause the electric shock accident and the product damage by incorrect use or under the bad environment.
Therefore, please observe the following items for handling the product.

(1) Do not remove the cover or disjoint the product unless necessary to avoid the breakdown or the electric shock accident. Doing so may cause not only the breakdown but also electric shock accident.

(2) After using the product, always turn off the POWER switch.
Turning on the POWER switch though it is not used may cause the breakdown of the product or the accident when the AC pack is used.

(3) Avoid the strong vibration or shock. Failure to do so may cause the damage and breakdown of the product.

(4) Do not lift or hold the product by the projection parts.
If you lift or hold the camera by the lens, you are prone to dropping it. Moreover, the connection parts between the camera and the lens may be exposed to unnecessary pressure, which may cause equipment damage.

(5) Always install the accessories after placing the camera on a fixed position.
When installing such accessories, fix the camera on a stable place (e.g. on a table, a tripod, etc.).

(6) Avoid use or storage in the following conditions:
Failure to do so may cause the damage of parts.
- Extremely high/low temperature
- In direct sunlight for a long time, or near a heater
- High humidity or dusty
- Exposed to water or other liquid
- Strong vibration or shock
- Strong magnetic field or radio waves
- lightning
- In rain without the rain cover

(7) Do not spread or spill water or other liquid on the equipment.

(8) Avoid moving the equipment suddenly from an extremely cold place to a warm place.
Condensation may occur in the Image sensor.

(9) Be sure to hold the plug and pull when you disconnect the cable. Failure to do so may cause a fire or electric shock due to a broken cable.

(10) Regarding the Lithium Battery

・Do not change the lithium battery inside the camera by yourself.

・Doing so may cause explosion, liquid leak, and at worst fire or injury.

When changing or discarding a battery, please contact Ikegami's sales and service centers.

(11) Clean the product using a dry and soft cloth.

If the stain is hard, soak the cloth with water or detergent, wring well and wipe. If you use detergent, wipe off the detergent with a cloth that is soaked in just water and wrung well.

When cleaning the product, be sure to turn off the power and do not spill water in the product.

(12) Laser beams may damage the Image sensor. If you shoot a scene that includes a laser beam, be careful not to let a laser beam become directed into the Image sensor. A laser beam injection into the Image sensor may cause the damage.

4. Environmental Cautions

(1) When continuously operating the product in a rainy, cold or hot conditions, use a rain cover, cold-weather cover, and shade cover respectively.

(2) Avoid storing the product in a dusty place for a long time. If unavoidable, use a dustproof cover.

(3) When shooting in places such as airports, military bases or transmitting stations where magnetic and radio fields are excessively strong, completely shield the camera by covering it with aluminum foil.

5. Notice for Use

(1) When carrying or storing the product, always use a carrying case.

(2) Before shooting important subjects, take test shots to obtain the desired effect.

(3) After using the product, always turn off the power.

6. Regular maintenance is recommended

This product includes parts that wear out and have a limited life even in proper use or storage. Therefore, regular maintenance is recommended to extend the life and safe use of this product for a long time. Please contact Ikegami's sales and service centers for the regular maintenance and repair of our products.

7. The CE mark (Declaration of conformity)

The CE mark means that the following products will meet the Standards EN55032, EN55024

8. FCC

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 equipment doesn't intend to use at residential areas, so that use in residential areas may cause interference.

9. Cable

Use shielded cable except AC cable.

HDL-F3000

OPERATION MANUAL

(TABLE OF CONTENTS)

1. OUTLINE

The HDL-F3000 are “3MOS HDTV cameras for use with a gyro stabilizer”, in which our cutting-edge camera technologies and digital technologies are used to implement high definition, high stability, and high reliability.
Designed specifically for use with a gyro stabilizer, the optical block in the camera head is minimized in physical depth to facilitate mounting on a small gimbal. The camera control unit (CCU) is also substantially reduced in size and weight to facilitate installation in helicopters where available space is a key consideration.
This camera uses three 2.6M-pixel CMOSs supporting full HDTV (1920×1080 pixels) and digital process LSI (ASIC) used for broadcasting studio HDTV cameras to get resolution and color reproducibility comparable to broadcasting studio HDTV cameras.
Newly-developed 2.6M-pixel CMOSs and our own circuit technologies realize high picture quality with a high sensitivity of F12 and a high S/N ratio of 64dB.

2. FEATURES

■ Camera Head of 80mm Depth

The camera head is thinned to 80mm in physical depth to ensure adequate space for a long lens even when mounted on a small gimbal. The camera head has no projecting parts as connector plugs on the rear side, making cable handling in the gimbal easy. It need not be disassembled or retrofitted for mounting on a gimbal, ensuring high maintainability and noise performance.

■ Small and Lightweight CCU

The reduction in size and weight of the CCU facilitates installation in helicopters where mounting space and allowable weight are limited. Various connectors and operation panels are all laid out on the rear side of the CCU to minimize the physical depth when mounted in a helicopter. The CCU has a flat bottom, so it can be securely installed anywhere in a helicopter.

■ 2.6M-pixel 3MOS Camera

The HDL-F3000 use 2/3-inch 2.6M-pixel CMOS sensor supporting full HDTV (1920×1080 pixels) to implement a high definition of horizontal/vertical resolution 1000TV lines and S/N ratio = 64dB (Sensitivity: F12) in HDTV system.

■ Built-In Filter Servo

The camera incorporates filter servo. Filter position can be remotely controlled from various control panels. In addition, filter position can also be controlled directly from the control panel of the gimbal through external filter control input (CTRL connector) which is newly provided on the CCU.

■ ND Filter and Electric Color Temperature (ECC) Filter

The HDL-F3000 incorporate four-position optical ND filter. IRIS value can be controlled delicately in accordance with the subject even at a place where illumination is extremely different such as outdoor. The camera provides the ND filter control mode, which automatically changes the ND filter one position according to whether the lens extender is used or not, to suppress lens IRIS change.

(Use camera menu “MENU PAGE5” > “EXTENDER-ND FILE” to set this mode.)

Electric color temperature (ECC) filters (3200K/4300K/6300K/8000K) are used as CC filter.

■ Super-high sensitivity mode

The newly-developed image sensor and the noise reduction function provide the minimum subject illumination of 0.0068 lux, and the addition of long exposure mode enables shooting even under the moonlight of 0.00011 lux.

■ Image sharpening function

The newly-developed image sharpening technology enables shooting in high definition under any severe condition such as haze

■ 1080psF format

When capturing a still image, you can select a high-resolution 1080psF format with a single motion. The 1080psF format eliminates line displacements due to the time lag of interlacing, providing a high-resolution still image. In both 1080psF and 1080i formats, the same equipment can be used for transmission and recording.

■ Digital zoom

The digital function, which enables zooming in on the screen center up to 10 times in 0.1-time increments, is loaded.

CAUTION : Activating the digital zoom will deteriorate

■ AVC (Auto Video Level Control) function

The AVC (Auto Video Level Control) lets the camera perform switching the ND filter position, IRIS control, gain control, and shutter speed control automatically and continuously. When a camera operator cannot concentrate on camera operation or when doing rescue or other operations, turning it ON will let the camera keep the video level proper automatically.

■ ATW (Auto Tracking White balance) function

In addition to the single-push AWB, the ATW (Auto Tracking White balance), which tracks a white balance automatically, is loaded.

■ Color Temperature tracking function

The Color Temperature function, which can track a white balance according to color temperature changes during the day with a single knob, is loaded. It is not necessary to readjust a white balance according to sunlight changes.

■ Multi Format

Corresponding to multi scanning method.

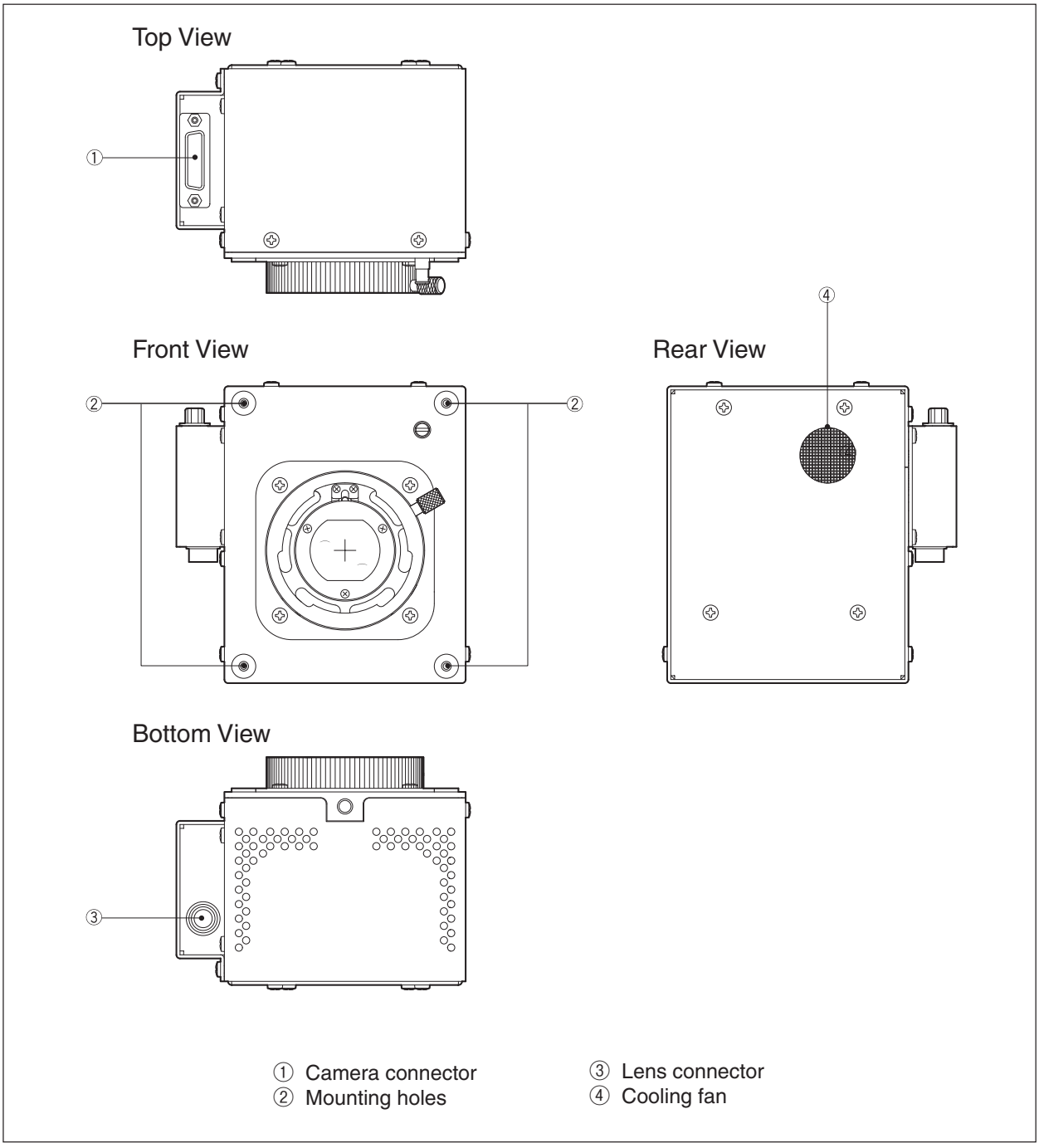
[Corresponding scanning method]

- 1080/59.94i, 1080/50i, 1080/29.97psF, 1080/25psF, 720/59.94p,720/50p

3. NAME and FUNCTION of EACH PART

This section explains the name and function of each part.

3.1 Camera Head



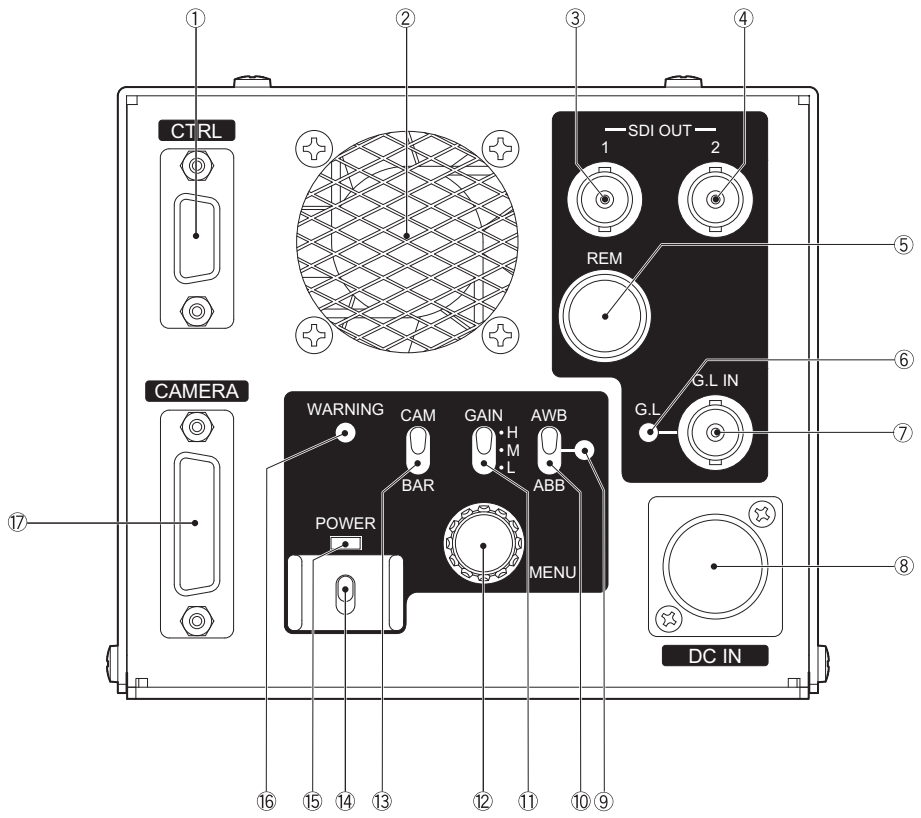
① **Camera connector**
Used to connect the camera cable to the CCU.

② **Mounting holes**
Used to fix the camera head to the inside of the gimbal.
(Screw hole: M4, 6mm depth)

③ **Lens connector**
Used to connect the 12-pin lens cable.

④ **Cooling fan**
Cooling fan for the camera head.
Take care so that the fan opening will not be clogged with dirt. Replace the fan at periodic overhaul.

3.2 Rear of the CCU



① CTRL connector
② Cooling fan
③ SDI OUT 1 connector
④ SDI OUT 2 connector
⑤ REMOTE connector
⑥ GL indicator
⑦ GL IN connector
⑧ DC IN connector
⑨ AWB/ABB indicator
⑩ AWB/ABB select switch
⑪ GAIN select switch
⑫ MENU switch
⑬ CAM/BAR select switch
⑭ POWER switch
⑮ POWER indicator
⑯ WARNING indicator
⑰ CAMERA connector

① CTRL connector

Used to externally control the ND/ECC filters and IRIS.

② Cooling fan

Cooling fan for the CCU.

Take care so that the fan opening will not be clogged with dirt. Replace the fan at periodic overhaul.

③ SDI OUT 1 connector

Outputs the HD-SDI signal (conforming to BTA-S004B). Character signals and VF marker signals can be superimposed on this signal independently of ④ SDI OUT2 connector. Use camera menu “MENU PAGE6” > “SDI MENU MIX”.

④ SDI OUT 2 connector

Outputs the HD-SDI signal (conforming to BTA-S004B). Character signals and VF marker signals can be superimposed on this signal independently of ③ SDI OUT1 connector. Use camera menu “MENU PAGE6” > “SDI MENU MIX”.

⑤ REMOTE connector

Used to connect a remote controller (optional) for the camera.

⑥ GL indicator

Lights in green while the camera is genlocked with the SYNC signal of an external system.

⑦ GL IN connector

Inputs the SYNC signal when the camera is to be genlocked with an external system (internal termination 75Ω). Input of HDTV 3-value Sync or SDTV BBS is possible.

Input level is HDTV ± 0.6Vp-p ± 6dB (75Ω) or SDTV 0.3Vp-p ± 6dB (75Ω).

⑧ DC IN connector

Used to supply DC power. Input voltage range is shown below.

When a lens requiring high power consumption is mounted on the camera head, the camera may not normally operate if the minimum voltage shown below is underrun. Input a higher voltage in such a case (+16V or lower).

- DC +11V to +16V (when the camera cable is 15m or shorter)
- DC +12V to +16V (when the camera cable is 30m or shorter)

No.	Function
①	GND
②	NC
③	NC
④	DC+

Receptacle: HA16RA-4P (76)

⑨ AWB/ABB indicator

Lights in green during execution of AWB (Auto White Balance), or lights in orange during execution of ABB (Auto Black Balance). Goes out upon completion of AWB/ABB execution.

Blinks when AWB or ABB is incomplete. If blinking, operate the AWB/ABB select switch again to cancel the blinking state. Remove the condition for incomplete AWB/ABB, and re-execute AWB/ABB.

⑩ AWB/ABB select switch

Executes AWB (Auto White Balance) or ABB (Auto Black Balance).

This is a momentary switch, which returns to the midpoint when released.

When a remote controller is connected to the REMOTE connector, the operation right goes to the remote controller and this switch is not operable.

⑪ GAIN select switch

Changes the camera gain. Desired gain values can be set through camera menus to satisfy L < M < H.

When a remote controller is connected to the REMOTE connector, the operation right goes to the remote controller and this switch is not operable.

Set arbitrary gain values in camera menu "MENU PAGE3" > "LOW/MID/HIGH GAIN MODE".

⑫ MENU switch

When this switch is held down for one second or more, the menu screen is superimposed on the video signal output from the MONITOR OUT connector. Turn this rotary encoder to select a menu, and press it to determine the menu.

⑬ CAM/BAR select switch

Switches between the video taken with the camera and the color bar signal.

CAM : Video taken with the camera

BAR : Color bar

When a remote controller is connected to the REMOTE connector, the operation right goes to the remote controller and this switch is not operable.

⑭ POWER switch

Turns ON/OFF the power of the camera.

Notice

When turning on the power immediately after power-off, do so after two seconds or more to completely discharge the internal electric charge.

⑮ POWER indicator

Lights in green while the power of the camera is ON.

⑯ WARNING indicator

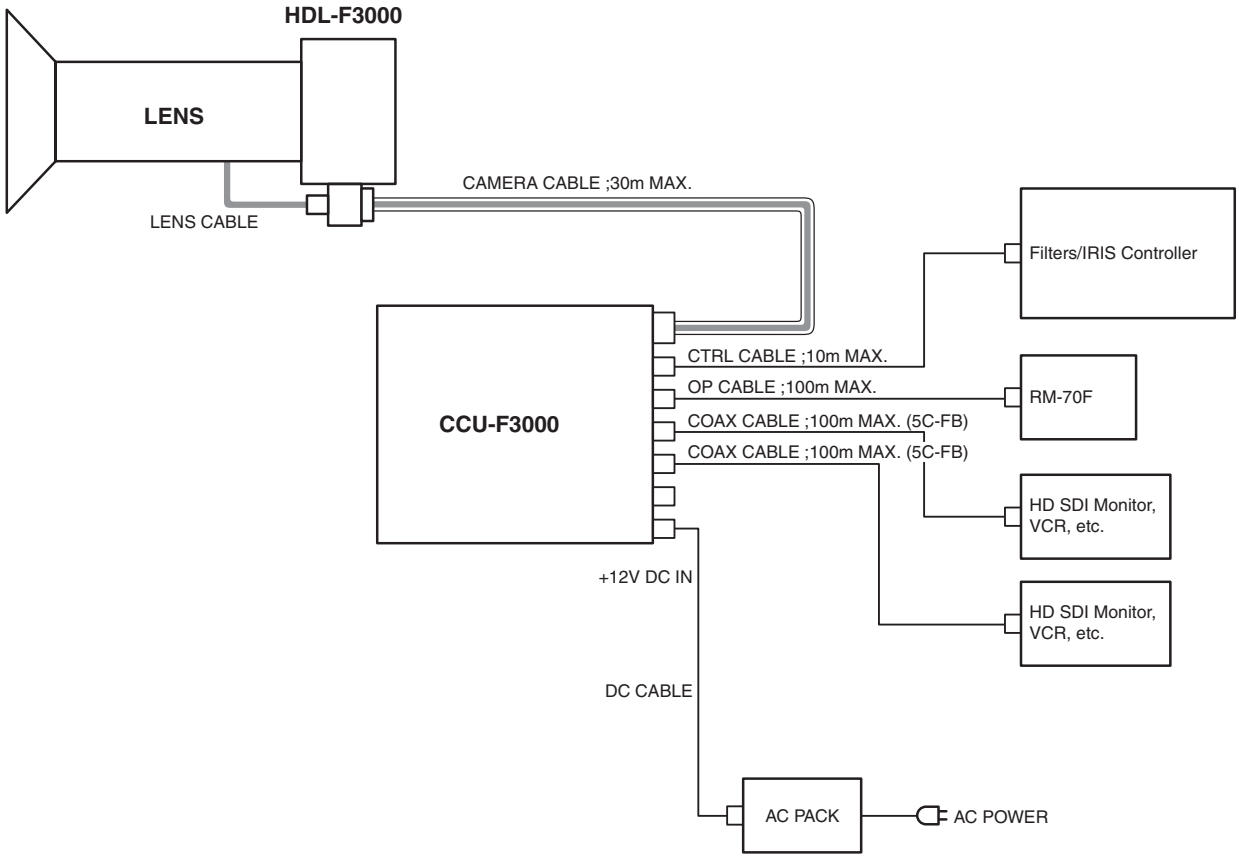
Lights when the input voltage is low. Blinks in red when an error occurs in the camera or the cooling fan of the CCU stops. For further details of errors, refer to "MENU PAGE6" > "WARNING".

⑰ CAMERA connector

Used to connect the camera cable to the camera head.

4. INSTALLATION and CONNECTIONS

4.1 System Setup Diagram

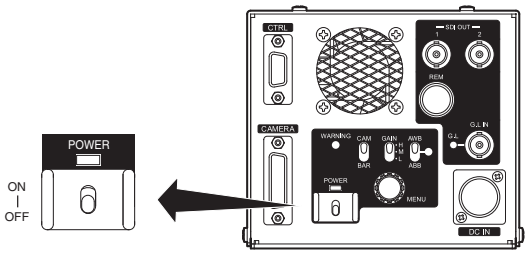


■ About use environment for this product

Read “SAFETY PRECAUTIONS” at the beginning of this document to verify notes on using the product.

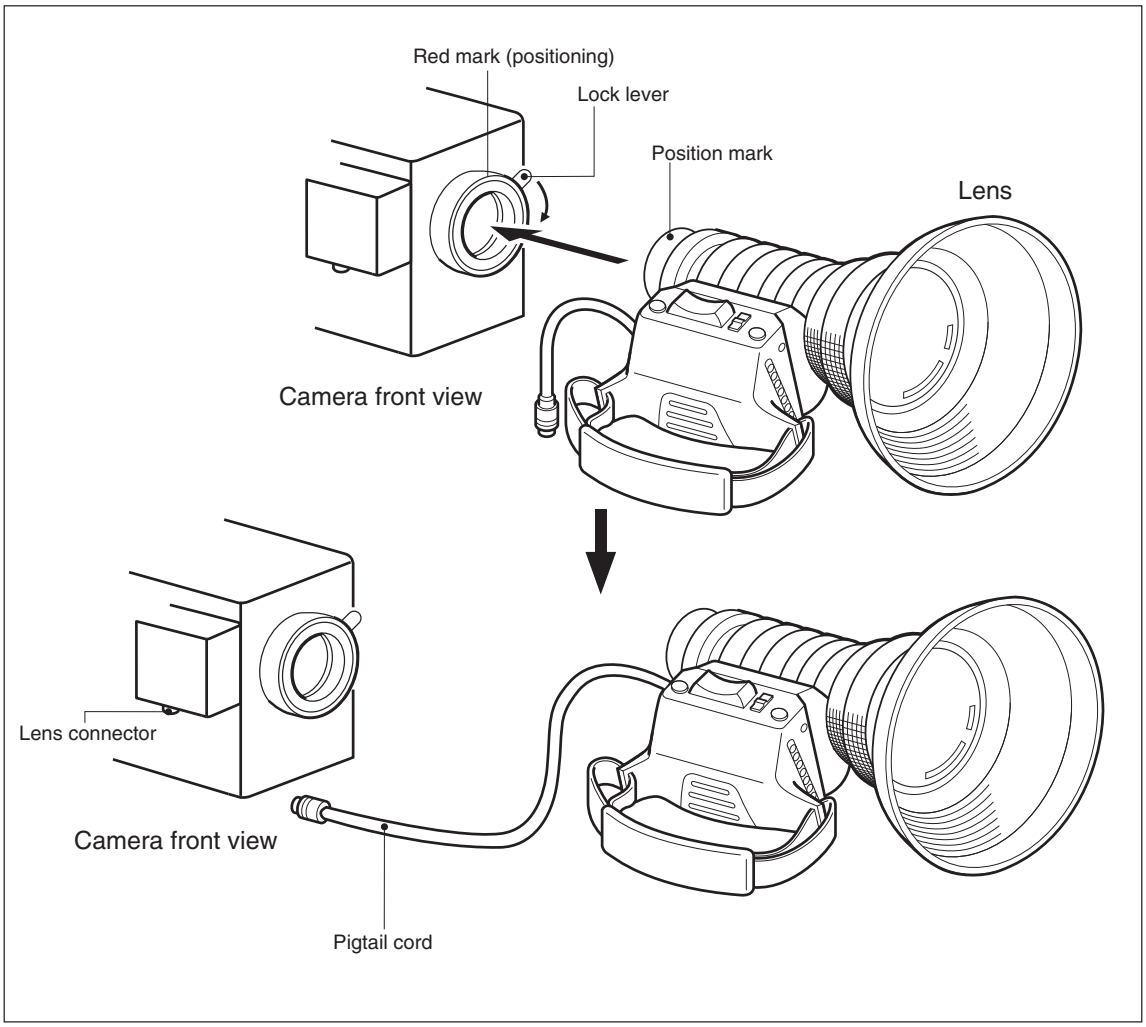
■ Verifying the power switch is OFF

Before connecting this product and peripheral equipment, verify that the power switch is turned “OFF”.



4.2 Lens Mounting

This section explains how to mount the lens on the camera.



Mount the lens on the camera.

1. Remove the protective cap from the camera side mount while holding the camera horizontally or slightly upward to make lens mounting easy.
2. Align the red mark (positioning) on the lens with the red mark (positioning) on the camera side mount.
3. Secure the lens by rotating the lock lever on the camera side mount clockwise.
   Ensure that the lens is properly secured and not loose.
4. Connect the pigtail cord to the lens connector on the side of the camera.

⚠ CAUTION

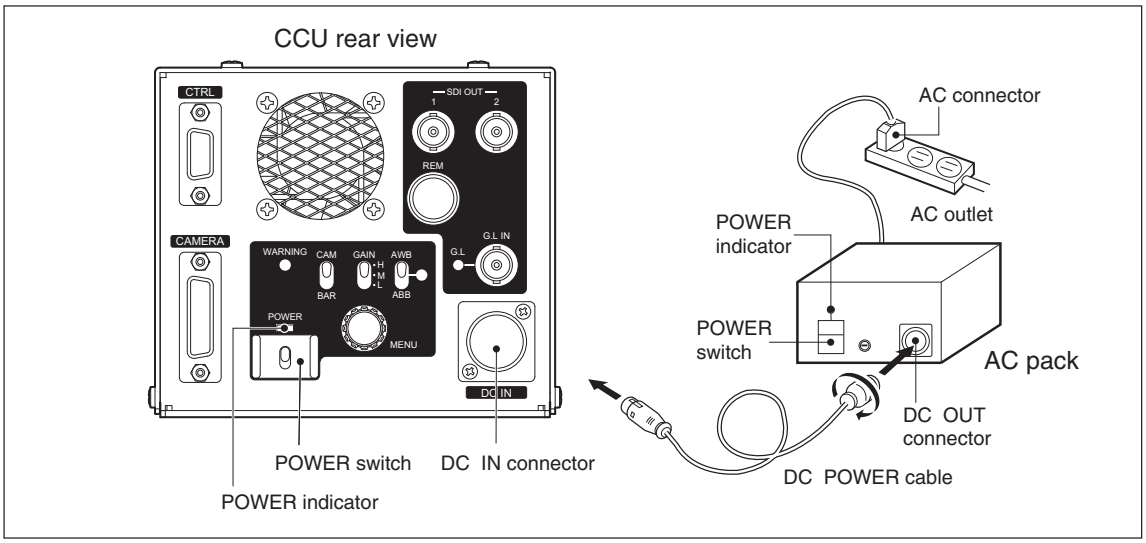
Do not carry the camera holding the lens housing because the mount may be unduly stressed and could bend or break. If you drop the camera accidentally, the optical block may be destroyed.

4.3 Connection of Power Supply

Power supply to the CCU is DC +12V. Its allowable range differs depending on the cable length.
When a lens requiring high power consumption is mounted on the camera head, the camera or lens may not normally operate if the minimum voltage shown below is underrun due to a voltage drop through the camera cable. Input a higher voltage in such a case (+16V or lower).

■ DC +11V to +16V (when the camera cable is 15m or shorter)

■ DC +12V to +16V (when the camera cable is 30m or shorter)



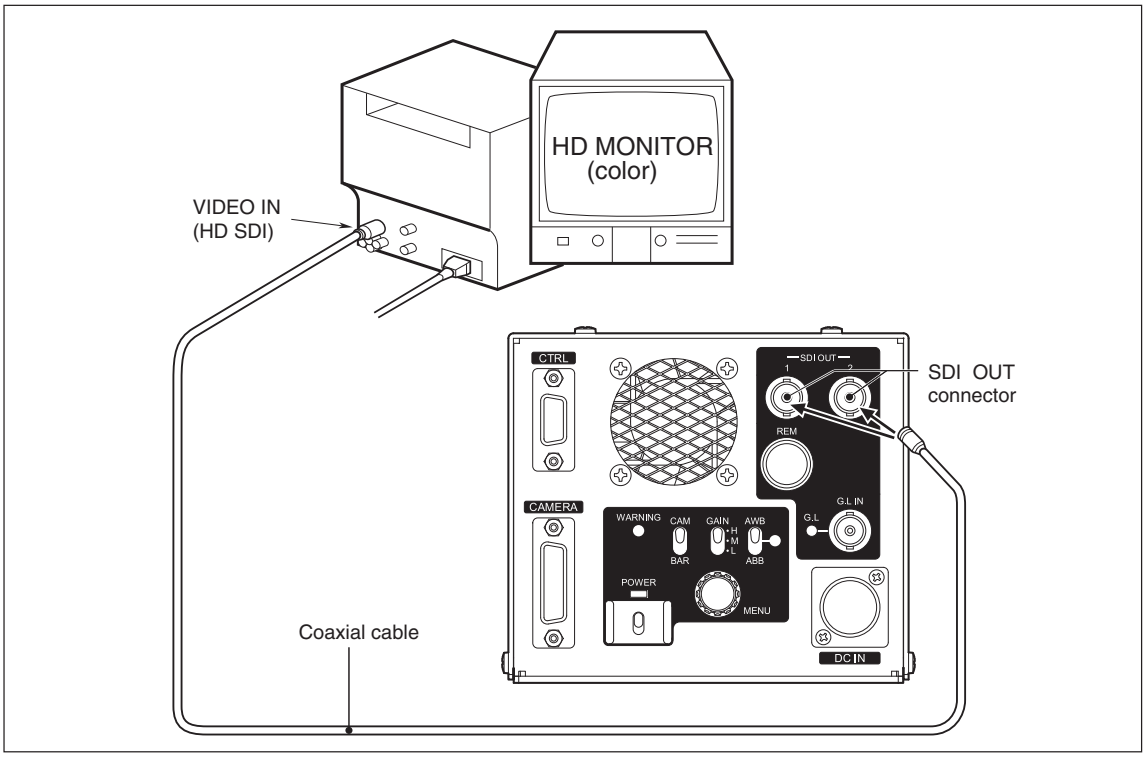
1. Connect the AC connector of the AC pack to an AC outlet.
2. Connect the DC POWER cable to the DC OUT connector on the AC pack and to the DC IN connector on the rear of the CCU. The cable connector to be connected to the DC IN connector is of latch lock type, so just push it into the connector.
3. Turn “ON” the POWER switch on the AC pack. (The POWER indicator on the AC pack lights.)
4. Turning “ON” the POWER switch on the CCU supplies power to the CCU. (The POWER indicator on the CCU lights.)

Notice

When turning on the power immediately after power-off, do so after two seconds or more to completely discharge the internal electric charge.

4.4 Connection of Monitor

[HD-SDI monitor]

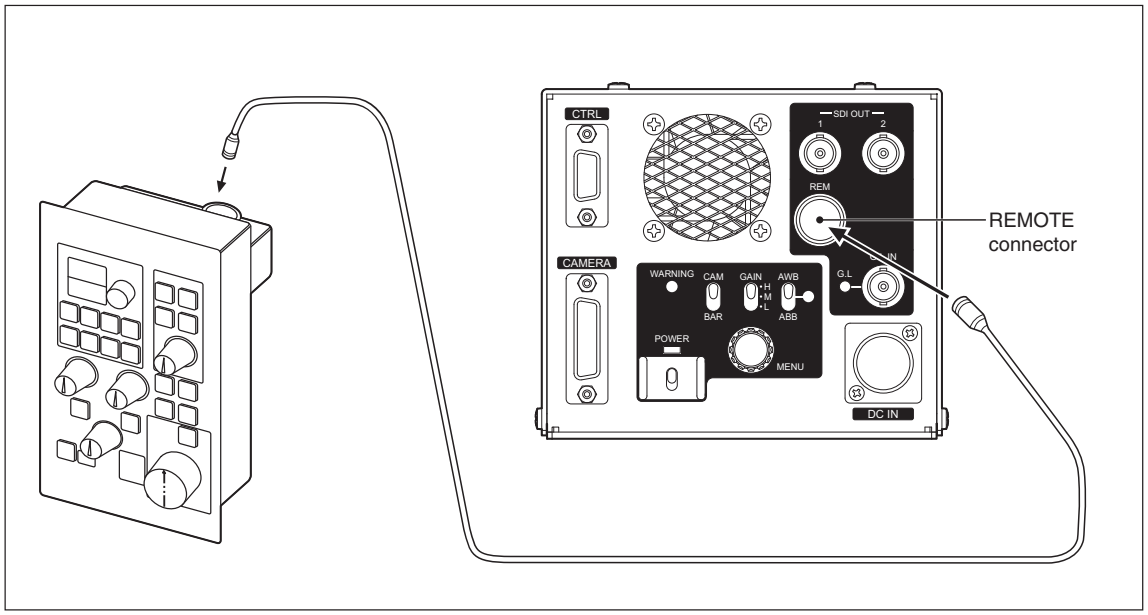


1. As shown in the above figure, connect a coaxial cable from the SDI OUT1 or SDI OUT2 connector on the rear of the CCU to a color monitor capable of inputting HD SDI.
2. Menu characters and VF indicators can be superimposed on the HD SDI signal by separate setting for SDI OUT1 or SDI OUT2 though camera menus.
   Use camera menu “MENU PAGE6” > “SDI MENU MIX”.

4.5 Connection of Remote Control Panel

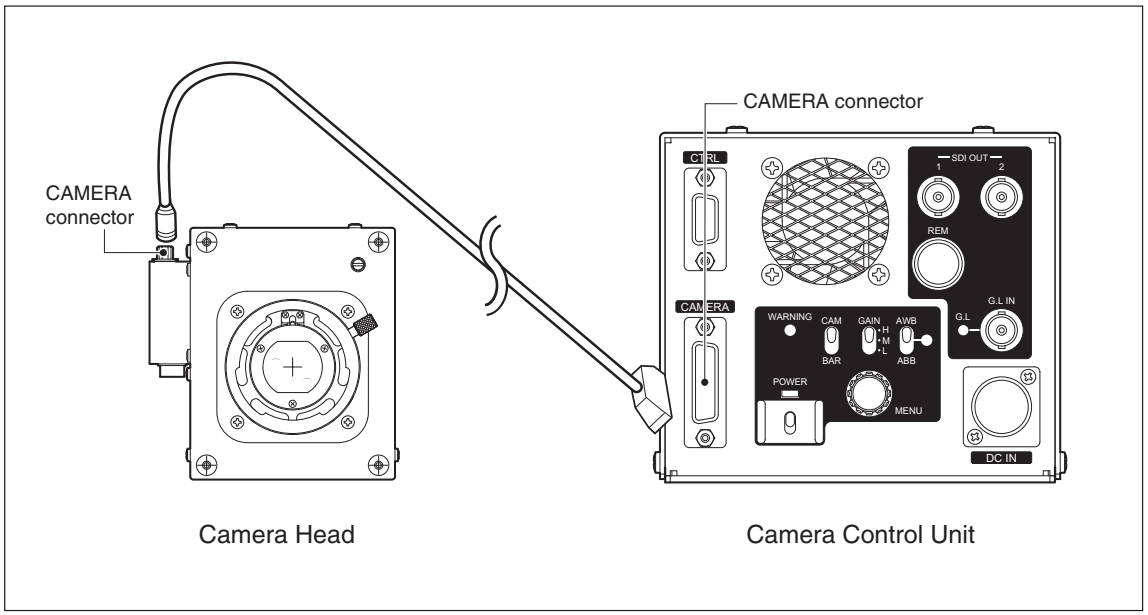
Available remote control panels are RM-70F, OCP-300, etc. For detailed operation, refer to the operation manual for each control panel.

This section explains how to connect a remote control panel (RM-70F in the example below) to the CCU.



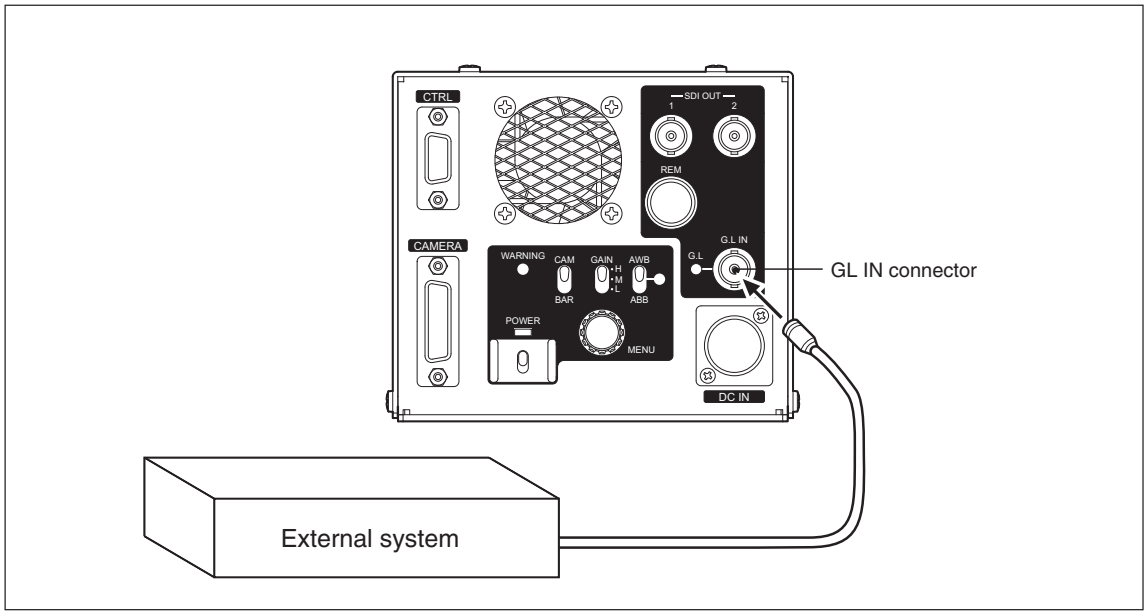
1. Connect a CP cable (max: 100m) from the COMMAND-A connector on the remote control panel (RM-70F) to the REMOTE connector on the rear of the CCU. Be sure to push the connector until it clicks. When the RM-70F is connected, the following controls can be performed.

4.6 Connection of Camera Cable



1. Using the camera cable, connect the camera connector on the camera head and the camera connector on the CCU.
The maximum cable length is 30m. The CCU needs to be adjusted according to the cable length. When the cable length is changed, readjust the CCU. Consult a serviceman for readjustment.

4.7 Connection of External SYNC Signal for Genlock



1. To genlock the camera with an external system, input the SYNC signal from the external system to the GL IN connector (BNC) on the rear of the CCU. When the camera is genlocked with the external SYNC signal, the GL indicator lights in green. If the GL indicator is blinking, the camera is not correctly genlocked. If so, check the extern SYNC signal.

5. OPERATION

5.1 Turning On Power

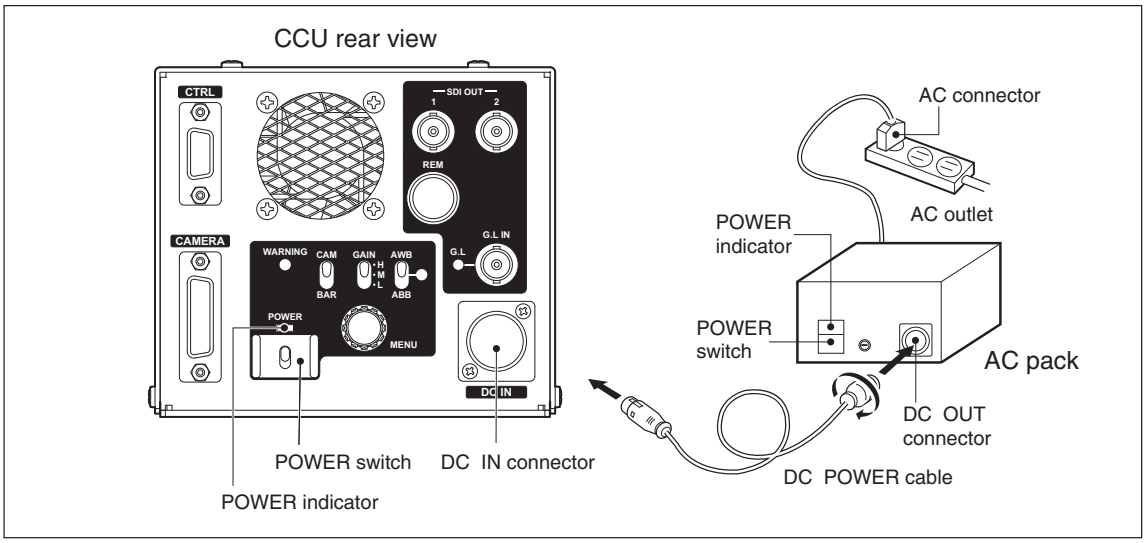
After connecting the camera to the peripheral system components, set the POWER switch on the CCU rear panel to “ON” and check to be sure that the POWER indicator lights.
The image of the camera is output to the HDTV color monitor connected to the CCU.

Notice

When turning on the power immediately after power-off, do so after two seconds or more to completely discharge the internal electric charge.

⚠ CAUTION

Be sure to set the POWER switch of the CCU to “OFF” before connecting or disconnecting the peripheral system components.
Connecting or disconnecting during power on may cause failure of the CCU or the peripheral system components.



5.2 Auto Black Balance (ABB)

Auto black balance (ABB) can be activated with the AWB/ABB select switch on the CCU rear panel, or from the remote control panel connected to the REMOTE connector.
This section explains how to use the AWB/ABB select switch. For use of the remote control panel, refer to its operation manual.

Set the AWB/ABB select switch on the CCU rear panel to the ABB position. The R/G/B black level is adjusted automatically.

Notice

The AWB/ABB indicator lights in orange during execution of auto black balance. It turns off upon completion of auto black balance adjustment and blinks upon failure. In the latter case, operate the AWB/ABB select switch again to cancel the blinking state.
Remove the cause of the ABB failure (e.g., the lens IRIS is not closed during ABB), and activate ABB again.

5.3 Auto White Balance (AWB)

[White balance adjustment]

To create images in correct color balance, it is necessary to perform white balance adjustment in accordance with the condition of the place where the subject is located. This condition is color temperature. It is determined by the light source for illuminating the subject.

The human eye adapts to a changing environment--the color balance for it will not be disturbed seriously even if color temperature varies according to the environmental conditions and stored data. The camera, on the other hand, has no such adaptability--a change in color temperature results in a change in color balance.
This camera, however, switches color filters in accordance with lighting conditions for the subject.

Specifically, electric color temperature (ECC) filters are used and ECC: 3200K/5600K switchover is automatically performed. With this, all the operator has to do is to press the AWB switch in order to cover the full range of color temperature without regard to the relationship between the subject and the color temperature filters. (Setting through camera menus)

Auto white balance (AWB) can be activated with the AWB/ABB select switch on the CCU rear panel, or from the remote control panel connected to the REMOTE connector.
This section explains how to use the AWB/ABB select switch. For use of the remote control panel, refer to its operation manual.

1. You will shoot a subject including white color. The following conditions need to be satisfied:
- White part occupies 20% or more of the screen area.
- The screen contains no other subject brighter than the subject whose white level is to be adjusted.
  (For example, AWB may operate abnormally when the sky is partially contained in the screen.)
- The picture level of the area for which white balance is to be adjusted is 50% or more.

2. Set the ND filter to the position appropriate to the illumination level of the subject. Also, select the ECC filter appropriate to the color temperature of the subject using the ECC button on the remote controller.

3. Set the lens IRIS level to obtain an appropriate picture level.

4. Set the AWB/ABB select switch to the “AWB” position. This executes auto white balance.

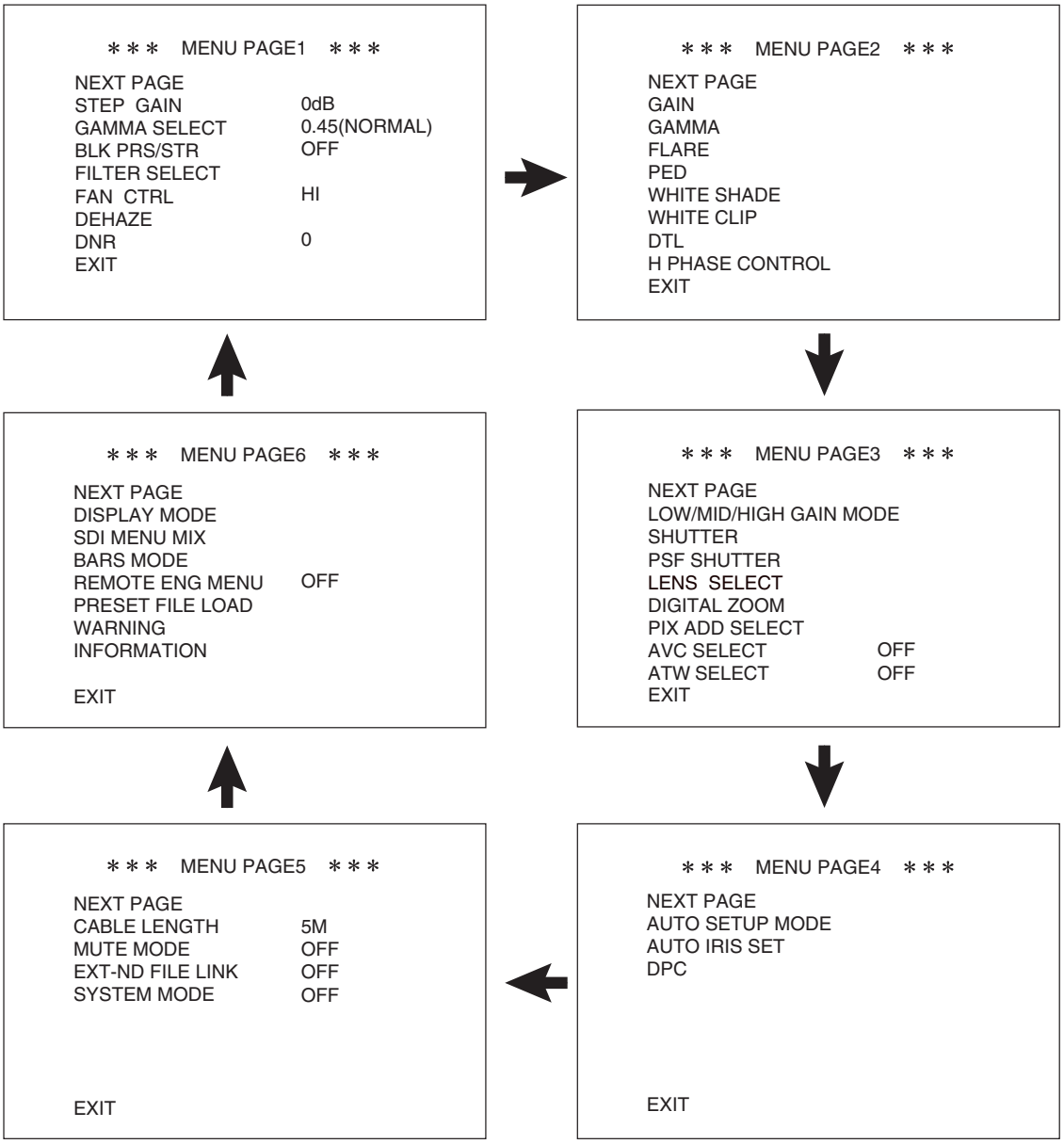
5. The AWB/ABB indicator lights in green during execution of auto white balance. It turns off upon completion of auto white balance adjustment.
If the AWB/ABB indicator blinks, check whether the shooting environment for the subject is correct, and activate AWB again.

Notice

The ATW (Auto Tracking White balance), which tracks a white balance automatically, is also loaded. The ATW is executed with a menu or the switch on the RM-70F. For details, refer to the manual of the RM-70F.

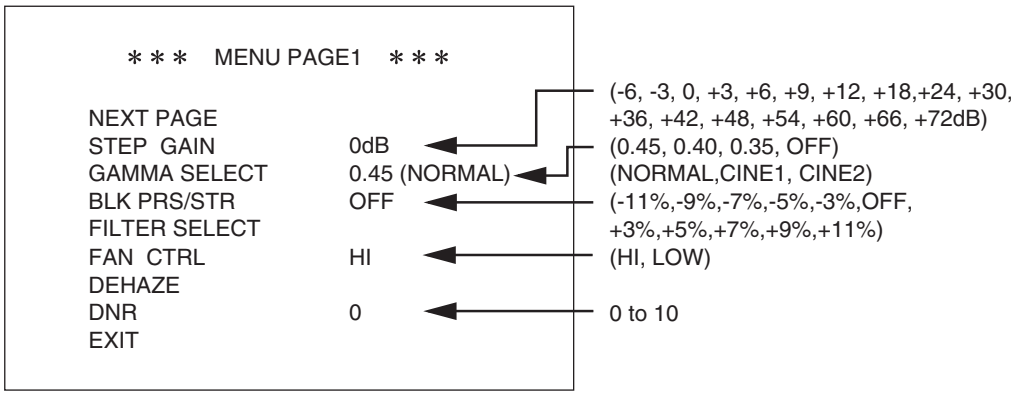
5.4 Camera Menu

Display the camera menu screen by pressing and holding the MENU switch on the CCU rear panel for more than one second.
Select an item in the menu to change the mode.
To move to the next menu, select “NEXT PAGE” and press the MENU switch.
The menu screen automatically disappears if no operation is performed for about one minute. It does not automatically disappear, however, when a remote control panel is connected.



5.4.1 MENU PAGE 1

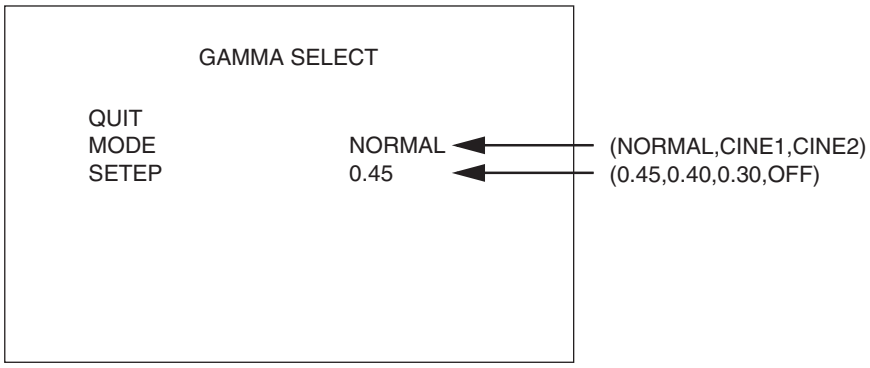
1. "MENU PAGE1" contains eight items: "STEP GAIN", "GAMMA SELECT", "BLK PRS/STR,FILTER SELECT", "CAL", "FAN CTRL", "DEHAZE" and "DNR".
2. To select the desired item, turn and press the MENU switch while the item is blinking.
3. When "STEP GAIN", "STEP GAMMA", "CAL", "FAN CTRL", "MONITOR OUT", or "AUTO BLK SEL" is selected, the blinking cursor moves to the mode at the right of the selected item. Turn the MENU switch to set it to the value to be set and press it while the mode is blinking.
4. When "FILTER SELECT" is selected, the sub menu screen is displayed.
5. If the MENU switch is pressed while "EXIT" is blinking, the menu is turned off.



STEP GAIN : Switches sensitivity (gain) values.
GAMMA SELECT : Switches gamma type (NORMAL,CINE1,CINE2) and step (0.45,0.40,0.30,OFF).
BLK PRS/STR : Switches the level of BLK PRS/STR.
FILTER SELECT : Switches between ND and ECC.
FAN CTRL : Switches speeds of the FAN on the CCU rear panel.
DEHAZE : Selects the image sharpening function.
DNR : Selects the level of digital noise reduction. 0 is OFF and 10 is maximum.

■ GAMMA SELECT

1. "GAMMA SELECT" contains two items: "MODE", and "STEP". To select the desired item, turn and press the MENU switch while the item is blinking.
2. The blinking cursor moves to the mode at the selected item. Turn the MENU switch to set it to the value to be set and press it while the mode is blinking.
3. To return to the menu screen of "MENU PAGE1", select "QUIT" and press the MENU switch while "QUIT" is blinking.



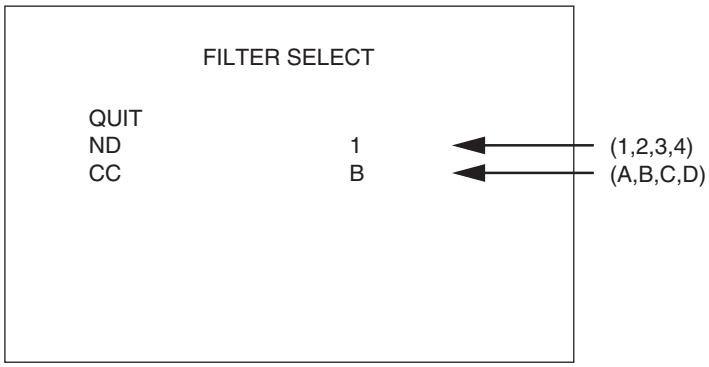
MODE : Switches gamma type.
NORMAL : Normal gamma
CINE1 : CINE gamma type1
CINE2 : CINE gamma type2
STEP : Switches gamma step.

Notice

When MODE is switched to CINE1 and CINE2, KNEE_POINT and KNEE_SLOPE change with the gamma curve. If the setting remains at the normal, KNEE_POINT and KNEE_SLOPE become lower when MODE is switched to CINE1 and CINE2, the necessary dynamic range becomes hard to get. In that case, adjust KNEE_POINT and KNEE_SLOPE from a remote controller according to the type of CINE gamma.
Moreover, return KNEE_POINT and KNEE_SLOPE to former value when you return it from CINE1 and CINE2 to NORMAL.

■ FILTER SELECT

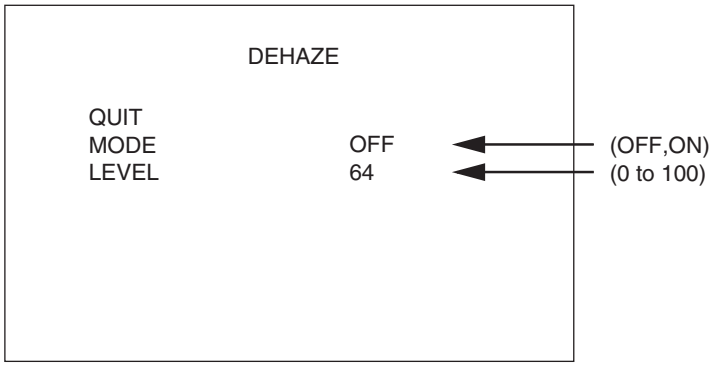
1. FILTER SELECT contains two items: ND and CC. To select the desired item, turn and press the MENU switch while the item is blinking.
2. The blinking cursor moves to the mode at the right of the selected item. Turn the MENU switch to set it to the value to be set and press it while the mode is blinking.
3. To return to the menu screen of "MENU PAGE1", select "QUIT" and press the MENU switch while "QUIT" is blinking.



ND : Switches ND filter positions.
CC : Switches electric color temperature (ECC) filters.

■ DEHAZE

1. DEHAZE is turned ON/OFF at MODE. To select an item, turn the MENU switch, check that the item to adjust (change) is blinking, and then press the MENU switch.
2. The blinking cursor moves to the mode at the right of the selected item. While the mode is blinking, turn the MENU switch to select the desired value, and then press the MENU switch.
3. Choose "LEVEL" and adjust the image sharpening level. It will be minimized and maximized by 0 and 127 respectively.
4. To return to the menu screen of MENU PAGE1, choose "QUIT" and press the MENU switch while "QUIT" is blinking.



MODE : Turns ON/OFF the image sharpening function.
LEVEL : Adjusts the level of image sharpening. It will be minimized and maximized by 0 and 127 respectively.

5.4.2 MENU PAGE 2

1. "MENU PAGE2" contains eight items: "GAIN", "PED", "GAMMA", "FLARE", "PED", "WHITE SHADE", "WHITE CLIP", "DTL", and "H.PHASE CONTROL".
2. To select the desired item, turn and press the MENU switch while the item is blinking. The sub menu screen of the selected item is displayed.
3. If the MENU switch is pressed while "EXIT" is blinking, the menu will turn off.

```
*** MENU PAGE2 ***

NEXT PAGE
GAIN
GAMMA
FLARE
PED
WHITE SHADE
WHITE CLIP
DTL
H PHASE CONTROL
EXIT
```

GAIN	: Adjusts gain of G/B/R.
GAMMA	: Adjusts gamma of M/B/R.
FLARE	: Adjusts flare of G/B/R.
PED	: Adjusts PED of M (MASTER)/B/R.
WHITE SHADE	: Adjusts the phase of H rate and V rate of G/B/R.
WHITE CLIP	: Adjusts WHITE CLIP for G/B/R.
DTL	: Adjusts DTL GAIN.
H PHASE CONTROL	: Adjusts the phase of H PHASE for genlock.

■ **GAIN**

```
GAIN
QUIT      G    B    R
M CLR     0    0    0   ←  (-100 to +100)
```

If the MENU switch is pressed while any of "G," "B," or "R" is blinking, the value below it can be changed.
Selecting "M CLR" makes the system to be set back to the factory setup.

Notice

Changing G GAIN changes the sensitivity of the camera.
In normal use, the value of G GAIN should remain 0 (factory set value).

Notice

The range that the remote controller and the GAIN menu can control will not be ±6 dB.

■ **GAMMA**

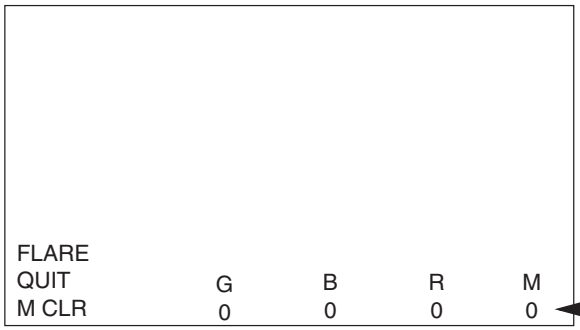
```
GAMMA
QUIT      M    B    R
M CLR     0    0    0   ←  (-100 to +100)
```

If the MENU switch is pressed while any of "M," "B," or "R" is blinking, the value below it can be changed.
Selecting "M CLR" makes the system to be set back to the factory setup.

Notice

"M" means the master mode in which all of "G", "B",and "R" can be changed at one time.

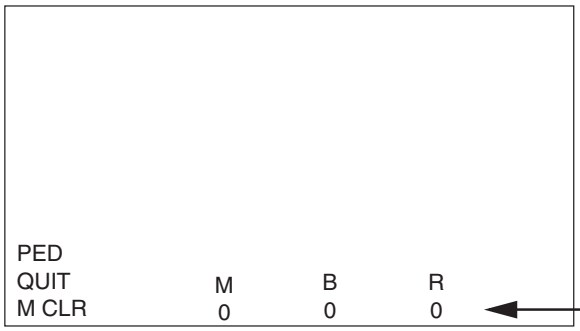
■ FLARE



If the MENU switch is pressed while any of "G," "B," "R," or "M" is blinking, the value below it can be changed.
Selecting "M CLR" makes the system to be set back to the factory setup.

(-100 to +100)

■ PED



If the MENU switch is pressed while any of "M," "B," or "R" is blinking, the value below it can be changed.
Selecting "M CLR" makes the system to be set back to the factory setup.

(-100 to +100)

Notice

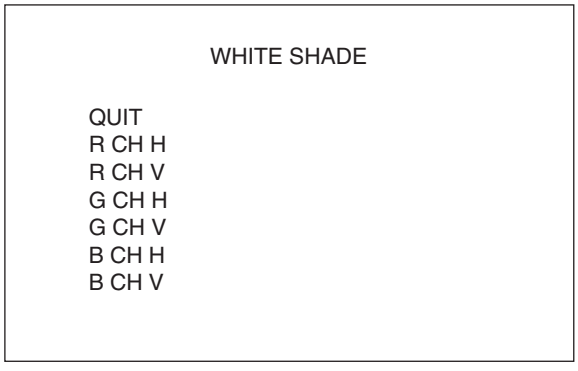
"M" means the master mode in which all of "G", "B", and "R" can be changed at one time.

■ WHITE SHADE

1. WHITE SHADE contains six items: "R CH H", "R CH V", "G CH H", "G CH V", "B CH H", and "B CH V".

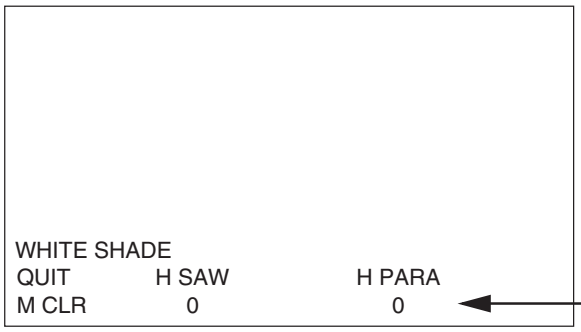
2. To select the desired item, turn and press the MENU switch while the item is blinking. The under sub menu screen of the selected item is displayed, as shown below.

3. To return to the menu screen of "MENU PAGE2", select "QUIT" and press the MENU switch while "QUIT" is blinking.



R CH H : Adjusts H rate for R ch.
R CH V : Adjusts V rate for R ch.
G CH H : Adjusts H rate for G ch.
G CH V : Adjusts V rate for G ch.
B CH H : Adjusts H rate for B ch.
B CH V : Adjusts V rate for B ch.

● R CH H / G CH H / B CH H



If the MENU switch is pressed while any of “H SAW” or “H PARA” is blinking, the value below it can be changed.
Selecting “M CLR” makes the system to be set back to the factory setup.

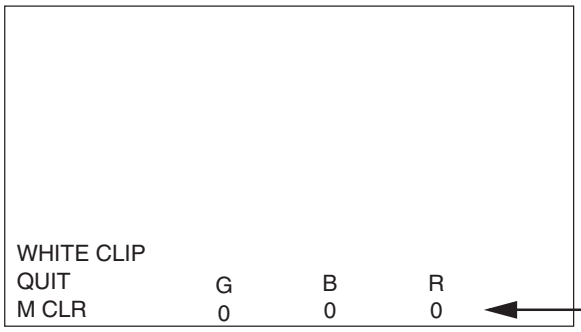
(-100 to +100)

● R CH V / G CH V / B CH V

If the MENU switch is pressed while any of “V SAW” or “V PARA” is blinking, the value below it can be changed.
Selecting “M CLR” makes the system to be set back to the factory setup.

(-100 to +100)

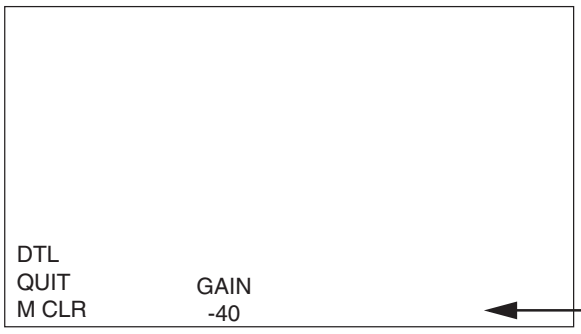
■ WHITE CLIP



If the MENU switch is pressed while any of “G,” “B,” or “R” is blinking, the value below it can be changed.
Selecting “M CLR” makes the system to be set back to the “M SET” value.

(-100 to +100)

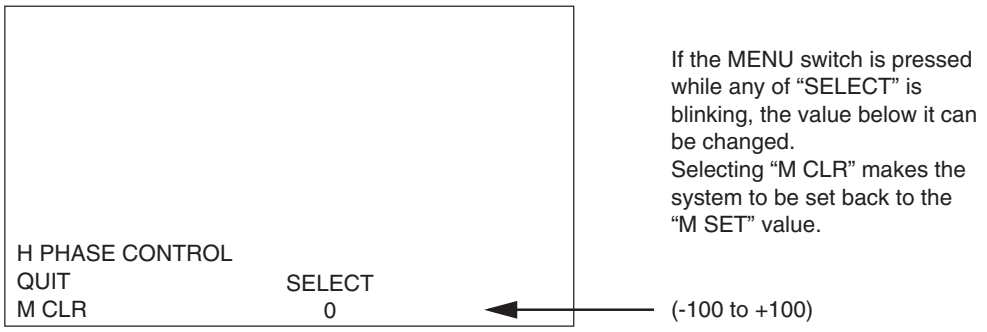
■ DTL



If the MENU switch is pressed while any of “GAIN” is blinking, the value below it can be changed.
Selecting “M CLR” makes the system to be set back to the “M SET” value.

(-100 to +100)

■ **H PHASE CONTROL**

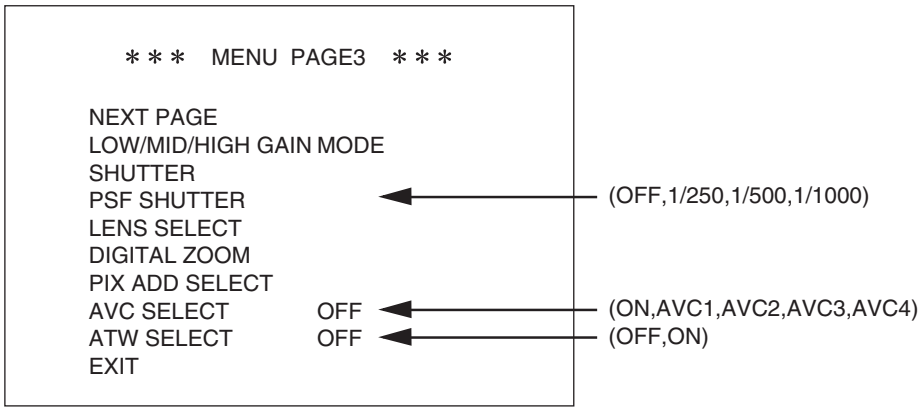


5.4.3 MENU PAGE 3

1. “MENU PAGE3” contains seven items: “LOW/MID/HIGH GAIN MODE”, “SHUTTER”, “LENS SELECT”, “DIGITAL ZOOM”, “PIX ADD SELECT”, “AVC SETUP”, and “ATW SELECT”.

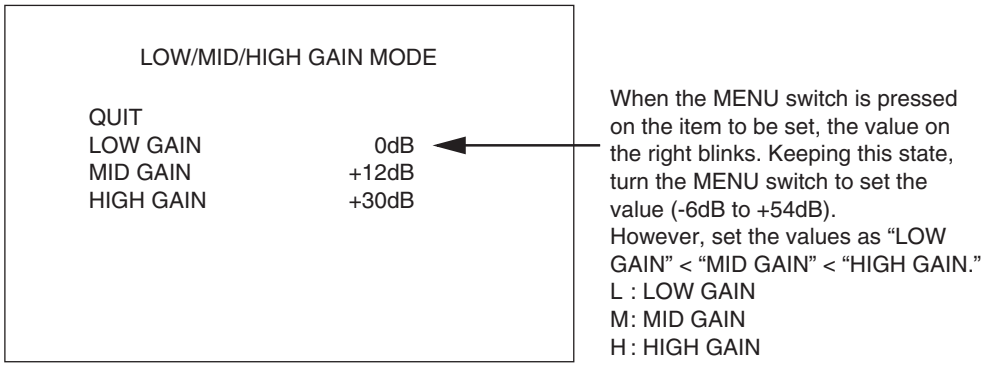
2. To select the desired item, turn and press the MENU switch while the item is blinking. The sub menu screen of the selected item is displayed.

3. If the MENU switch is pressed while “EXIT” is blinking, the menu will turn off.

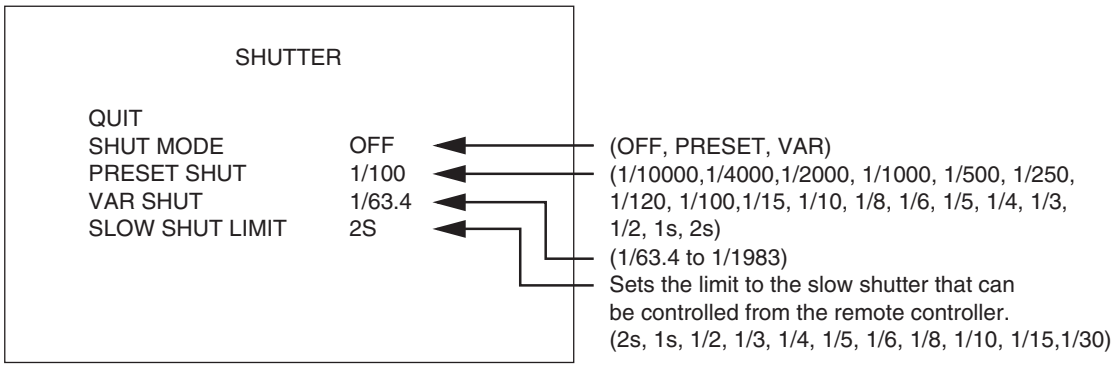


LOW/MID/HIGH GAIN MODE	: Sets the “L”, “M”, and “H” values for the GAIN select switch on the back of the camera.
SHUTTER	: Selects SHUTTER or changes the value.
PSF SHUTTER	: Selects the shutter speed to be linked to the PSF mode from the remote controller.
LENS SELECT	: Selects a lens file.
DIGITAL ZOOM	: Sets the magnification of digital extender zoom.
PIX ADD SELECT	: Sets the gain for starting the horizontal pixel addition.
AVC SELECT	: Clicking this move to next level of MENU
ATW SELECT	: Selects the ATW(Auto Tracking White balance) function.
	OFF : Turns OFF the ATW.
	ON : Turns ON the ATW.

■ **LOW / MID / HIGH GAIN MODE**



■ SHUTTER



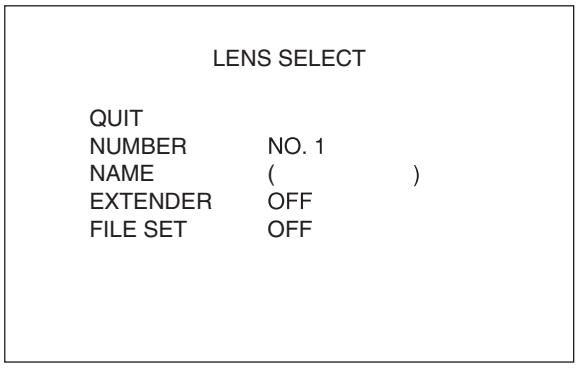
・To select each SHUTTER or change the value, “SHUT MODE” is set to the corresponding item in advance. 1/30, 1/15, 1/10, 1/8, 1/6, 1/5, 1/4, 1/3, 1/2, 1s, and 2s are the Image sensor accumulation sensitivity improvement mode. Sensitivity improves according to the accumulation time. But the residual image also increases according to the accumulation time. The Image sensor accumulation sensitivity improvement needs to be set with the movement of the object.

・When the MENU switch is pressed on the item to be set, the value on the right blinks. Keeping this state, turn the MENU switch to select the desired value and press it.

⚠ CAUTION

The variable range of the variable shutter changes according to the format.

■ LENS SELECT



NUMBER : OFF : No lens file is registered.
No.1 to No.8 : Indicates the lens file number.
NAME ( ) : Manually enter a file name for each lens file.
EXTENDER : OFF : Indicates lens other than one with extender.
ON : Indicates lens with extender.
FILE SET : OFF : Does not create lens file.
MANUAL : Saves the current state as lens file.

● Lens file

The color balance changes resulting from differences in the optical properties of lenses are stored in a lens file.
Up to eight lens files are available and two statuses - extender OFF and extender ON - can be stored in each file.
The data is selected automatically by answer signals from the lens. White shading, flare, gain and gamma are stored in a lens file.
When the HDL-F3000 is shipped, the compensation data based on the factory standard lens is registered in No.1.

[Setting lens file name]

Set a file name for each lens file. It is recommended to use the model name of the lens and the like for easy identification. Use 12 characters for a file name.

1. On “MENU PAGE3”, turn the MENU switch to select “LENS SELECT” and press it. The sub menu of “LENS SELECT” is displayed.
2. Turn the MENU switch to select “NUMBER” and press it. The registered lens file numbers (OFF, No.1 to No.8) are displayed.
3. Turn the MENU switch to select the desired lens file number and press it. Set a file name for No.2 and later since the factory set data is set for No.1.

4. Turn the MENU switch to select “NAME” and press it. The blinking cursor moves to the mode and the mode changes to the character entry mode. Turning the MENU switch changes the character to be entered as shown below.

□ indicates a blank.

Clockwise →

□ABCDEFGHIJKLMN□OPQRSTUVWXYZ□CH : . −+／□0123456789

← Counterclockwise

5. Turn the MENU switch to select the desired character and press it.
One character is set for a file name.
Be sure to use 12 characters for a file name. Use blanks (□) if a file name is shorter. The file name setting mode cannot be completed if the file name has 11 characters or less.

[Verifying extender]

Display the state of the lens with extender.

1. On “MENU PAGE3”, turn the MENU switch to select “LENS SELECT” and press it. The sub menu of “LENS SELECT” is displayed.
2. Turn the MENU switch to select “EXTENDER” and press it. The blinking cursor moves to the mode.
3. Verify the lens state. Any of the following is displayed.
- OFF : Other than lens with extender.
- ON : Lens with extender.

[Making lens file]

Make a lens file.

Check the following in making a lens file.

- Creating a lens file requires precise adjustment. Do not update a lens file without discretion.
- Prepare a uniform white chart on which Kent paper is stuck as a subject. A registration chart is inappropriate as a subject.
- Adjust the illumination for uniform brightness of the imaging surface of the chart by using an illumination meter.
- In making a lens file, verify that a special effect filter is not attached in front of the lens or to the built-in filter disk. If a special effect filter is attached, a lens file may not be made properly.
- In making lens files, prepare everything, including all the target lenses and make lens files at a breath under the same conditions and environment. Precise settings cannot be performed if the conditions or environment change during creation.

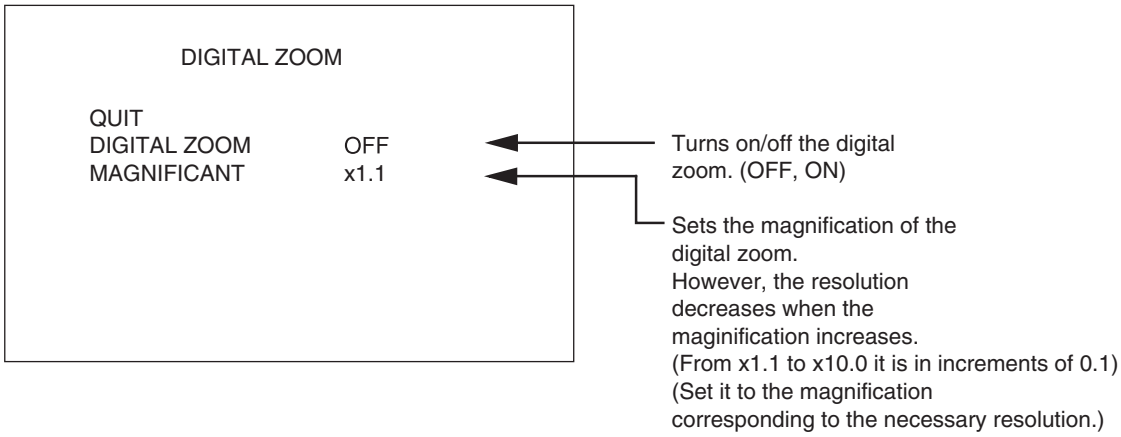
1. Connect the remote control panel.
2. On “MENU PAGE3”, turn the MENU switch to select “LENS SELECT” and press it. The sub menu of “LENS SELECT” is displayed.
3. Turn the MENU switch to select “NUMBER” and the desired lens file number and press it. Select No.2 or later since the factory set data is set for No.1.
4. Verify the lens state for the “EXTENDER” setting mode. Change the setting, if necessary, referring to [Verifying extender] described above.
5. Turn the MENU switch to select “FILE SET” and press it. The blinking cursor moves to the mode. Turn the MENU switch to select “MANUAL” and press it. A “LENS No.x” message is displayed on the lower side of the screen.
6. Adjust lens file items such as GAIN, FLARE, and GAMMA using the remote control panel and press the MENU switch.
7. Turn the MENU switch again to select “FILE SET” and press it. The blinking cursor moves to the mode. Turn the MENU switch to select “OFF” and press it. At this state, the data is stored in the lens file and the file creation is completed.

[Reading lens file]

1. On “MENU PAGE3”, turn the MENU switch to select “LENS SELECT” and press it. The sub menu of “LENS SELECT” is displayed.
2. Turn the MENU switch to select “NUMBER” and press it. The blinking cursor moves to the mode. Select the desired lens file number (No.1 to No.8) to read the data out.

■ DIGITAL ZOOM

Sets the digital zoom.



[DIGITAL ZOOM]

ON : Turns on the digital extender.

OFF : Turns on the digital extender.

[MAGNIFICANT]

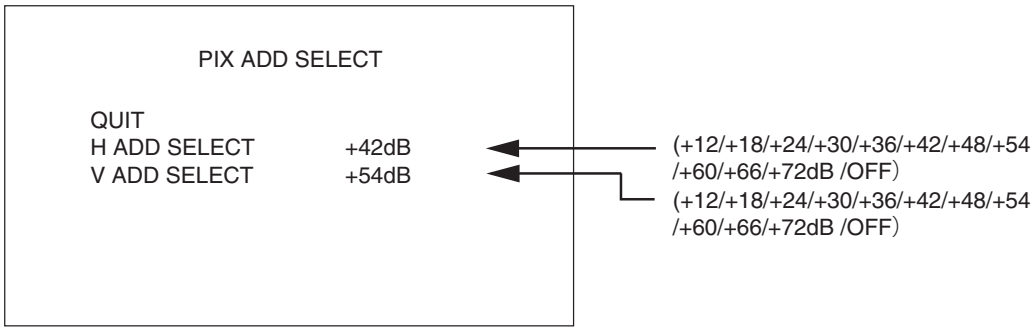
X1.1 : Magnifies X1.1

to

X10.0 : Magnifies X10.0

■ PIX ADD SELECT

Sets the horizontal pixel addition.



H ADD SELECT

Sets the gain for starting the horizontal pixel addition. The horizontal pixel addition is executed when the gain increase becomes over the setting. The sensitivity improvement that suppresses the deterioration of S/N can be executed by the horizontal pixel addition. However, the horizontal resolution decreases. The horizontal pixel addition is not executed at turning off.

V ADD SELECT

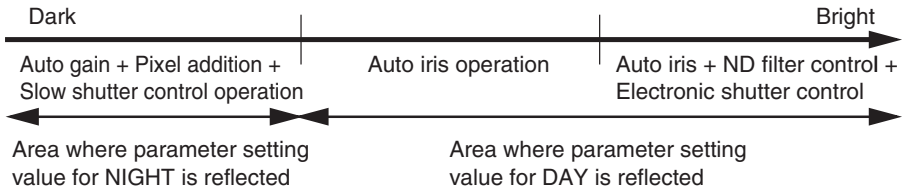
Sets the gain for starting the vertical pixel addition. The vertical pixel addition is executed when the gain increase becomes over the setting. The sensitivity improvement that suppresses the deterioration of S/N can be executed by the vertical pixel addition. However, the vertical resolution and the dynamic resolution decrease. The vertical pixel addition is not executed at turning off.

■ AVC SETUP

Sets the AVC (Auto Video level Control) function.

Notice

The AVC function is controlled automatically to always keep an appropriate image level by using the auto iris, the auto gain control, Pixel addition, Slow shutter, and the ND filter. When the iris cannot be stopped down based on the auto iris, control the ND filter/Electronic shutter and lower the image level. Moreover, when the ND filter is CLEAR and the iris is open, raise the image level by the auto gain control.



Auto iris + ND filter control+Electronic shutter control

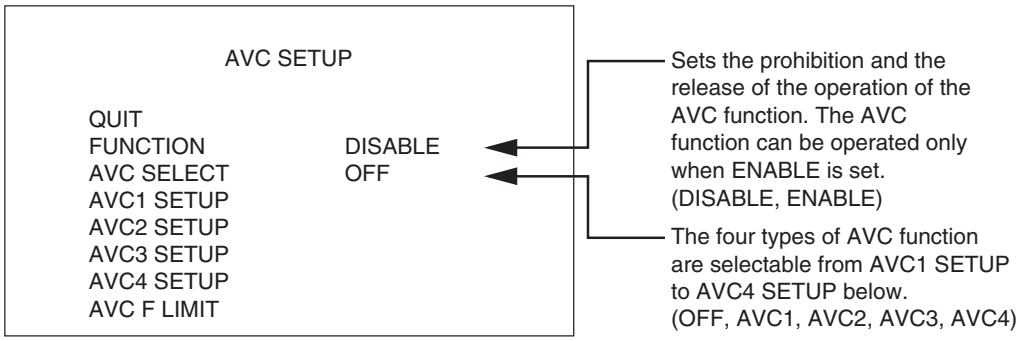
The ND filter enters for one stage when lens IRIS value exceeds F13.

The ND filter drops out of for one stage when lens IRIS value becomes F4 or less.

The electronic shutter will be triggered when the lens IRIS value exceeds F13 with the ND filter prohibited or 4.

Auto gain + Pixel addition + Slow shutter control operation

The auto gain control / Pixel addition / Slow shutter starts when the ND filter is 1. CLEARD and F value becomes F2.8 or less.



[FUNCTION]

Prohibits the operation of DISABLE; AVC function. It is impossible to operate on the remote control panel.

Enables the operation of ENABLE; AVC function. Enables the AVC function ON/OFF on the remote control panel.

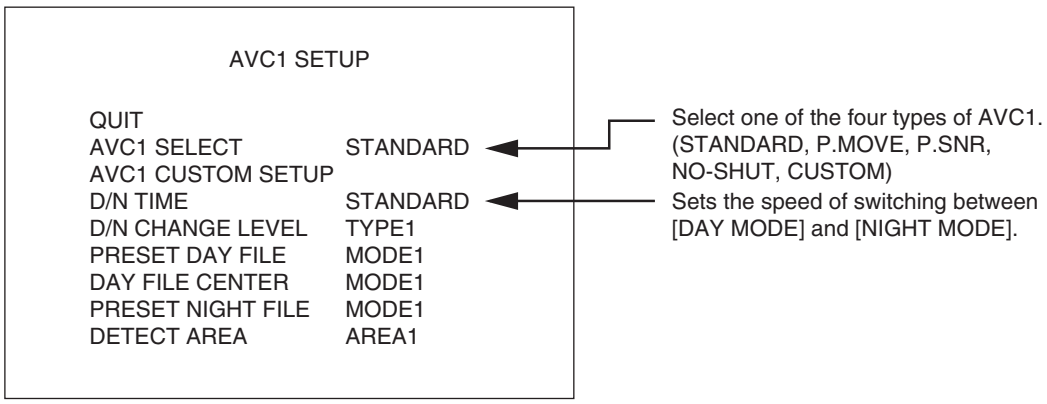
[AVC SELECT]

Selects the AVC function. It is operable only when [FUNCTION] is ENABLE.

Select OFF, or select and turn ON one of the four types.

[AVC1 SETUP]

Makes the setting of AVC1. It is operable only when [FUNCTION] is ENABLE.



AVC1 SELECT

STANDARD : Changes the video level in standard [NIGHT MODE].

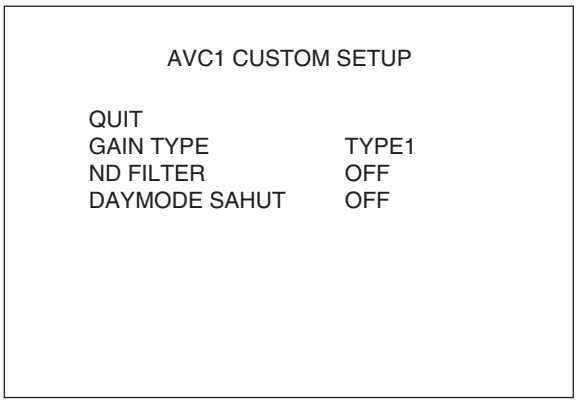
P.MOVE : Changes the video level with a priority placed on movement in [NIGHT MODE]. When it is dark, the S/N ratio is apt to worsen.

P.SNR : Changes the video level with a priority placed on S/N in [NIGHT MODE]. When it is dark, the dynamic resolution is apt to decrease.

NO-SHUT : No use of Electronic Shutter in AVC modes to enable the individual use of Electronic Shutter.

CUSTOM : Allows you to select the way to raise sensitivity in [NIGHT MODE] at AVC1 CUSTOM SETUP. Customize the AVC setting

AVC1 CUSTOM SETUP



GAIN TYPE : Selects the type of gain increase at night.
TYPE1(Priority SNR) to TYPE10(Priority Movement)
ND FILTER : Selects the operation of ND filter in [DAY MODE].
OFF : Does not activate the ND filter.
ON : Activates the ND filter.
DAYMODE SAHUT : Sets the electronic shutter operation in [DAY MODE].
OFF : Activates the electronic shutter.
ON : Does not activate the electronic shutter.

[D/N TIME]

Two kinds of switch timing of [DAY MODE] and [NIGHT MODE] can be set.

STANDARD : Default. It doesn't react to a steep image change. It takes time until switching.
FAST : The switch timing becomes fast against STANDARD.

[D/N CHANGE LEVEL]

Four kinds of switch levels of [DAY MODE] and [NIGHT MODE] can be set.

TYPE1 : Even if the image level decreases, it doesn't immediately switch to the Night Mode. It does after the image level decreases to some degree, It is the setting that suppresses the image level to low at the evening view, and expresses the evening view itself.
TYPE2 : The image level doesn't decrease more than TYPE1, and it switches to the Night Mode.
TYPE3 : The image level doesn't decrease more than TYPE2, and it switches to the Night Mode.
TYPE4 : For surveillance. The image level doesn't decrease so much, and it switches to the Night Mode at once. It always keeps the image level high.

[PRESET DAY FILE]

Selects the convergence value of lens IRIS when the AUTO IRIS of the remote controller is turned ON in Day Mode.

MODE1 : -10%
MODE2 : -5%
MODE3 : Reference value
MODE4 : +10%
MODE5 : +20%

Notice

When the remote controller is connected and its AUTO IRIS is ON, the lens IRIS will converge on the value selected by PRESET DAY FILE in the above menu. When the AUTO IRIS is OFF, the convergence value can be selected with the IRIS knob on the remote controller.

[DAY FILE CENTER]

Determines the center position of the IRIS knob on the remote controller when the AUTO IRIS is OFF.

MODE1 : -10%
MODE2 : -5%
MODE3 : Reference value
MODE4 : +10%
MODE5 : +20%

[PRESET NIGHT FILE]

Selects the convergence value of gain increase in Night Mode from the four patterns.

MODE1 : Darker level than standard value

MODE2 : Reference value

MODE3 : Brighter level than standard value

MODE4 : Brighter level than MODE3

Notice

In MODE2, gain increase will start when the video level has become about 50%. In MODE1, gain increase will start at a much lower video level.

[DETECT AREA]

Sets the detection area of the AVC function. AREA1, AREA2, AREA3, AREA4, AREA5, AREA6, and AREA7 can be selected. When one of the detection areas is selected, it will be displayed on the screen with a BOX marker.

[AVC SETUP2] to [AVC SETUP4]

Makes the settings from AVC2 to AVC4, as with [AVC SETUP1].

[AVC F LIMIT]

The AVC F LIMIT is a function to set F2.8 to the F value triggering auto gain control operation.
Since the function is necessary in the case of lens replacement, it is not usually required to be set.

■ ATW SELECT

Turns ON/OFF the ATW (Auto Tracking White Balance) function.

- OFF : This is a normal mode.
- ON : Activates the ATW function.

Notice

The AWB and the Variable Color Temperature functions are not activated while the ATW function is active.

5.4.4 MENU PAGE 4

1. "MENU PAGE4" contains three items: "AUTO SETUP MODE", "AUTO IRIS SET", and "AUTO DPC".
2. To select the desired item, turn and press the MENU switch while the item is blinking. The sub menu screen of the selected item is displayed.
3. If the MENU switch is pressed while "EXIT" is blinking, the menu will turn off.

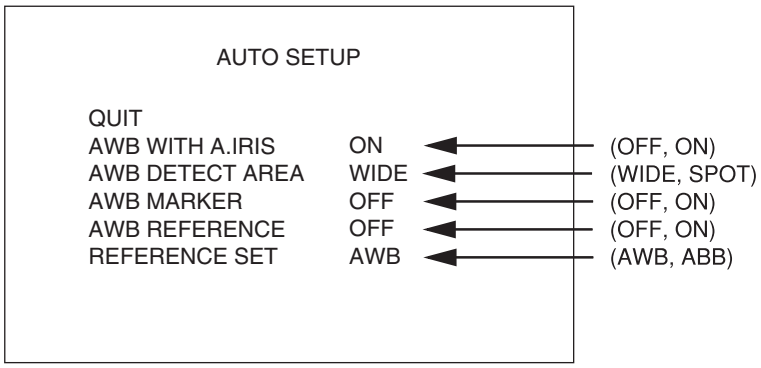
```
        ＊＊＊  MENU PAGE4  ＊＊＊

    NEXT PAGE
    AUTO SETUP MODE
    AUTO IRIS SET
    DPC




    EXIT
```

AUTO SETUP MODE : Selects or sets AWB and ABB.

AUTO IRIS SET : Performs the fine adjustment to the iris and adjustment to the PEAK balance when AUTO IRIS is in operation.

DPC : This is the function to correct Image sensor defects. Performs correction by interpolation from the next pixel when white or black defects are created.

■ AUTO SETUP



When the MENU switch is pressed on the item to be set, the value on the right blinks.
Keeping this state, turn the MENU switch to select the desired value and press it.

[AWB WITH A.IRIS]

- ON : Forcibly controls the IRIS to perform AWB at 100% picture level.
- OFF : Performs AWB with the current IRIS value.

[AWB DETECT AREA]

- WIDE : Performs AWB using about 80% of the screen as the measurement area.
- SPOT : Performs AWB using about 10% (center) of the screen as the measurement area.

[AWB MARKER]

- ON : Displays a marker for the area measured for AWB.
- OFF : Does not display a marker for the measurement area.

[AWB REFERENCE]

- ON : Performs AWB based on the value set for "REFERENCE SET".
- OFF : Performs AWB based on the picture level of G ch.

[REFERENCE SET]

Sets the convergence values when AWB and ABB are performed.
When AWB and ABB are selected, "PUSH SET → START" blinks on the lower side of the menu screen. When the MENU switch is pressed again at this time, AWB and ABB are performed. When you do not perform AWB and ABB, rotate the MENU switch and move to another item.

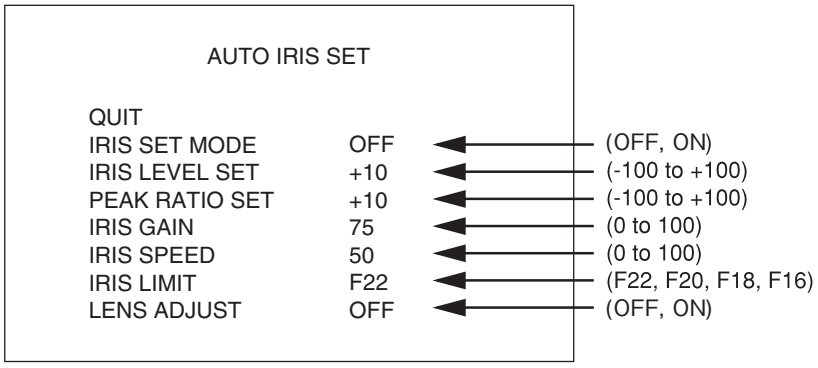
・AWB

1. Set "AWB REFERENCE" to "ON".
2. Set the GAIN value for each channel.
3. Perform "REFERENCE SET".
4. Perform "AWB" to converge to the set value.

・ABB

1. Set the PED value.
2. Perform "REFERENCE SET".
3. Perform "ABB" to converge to the set value.

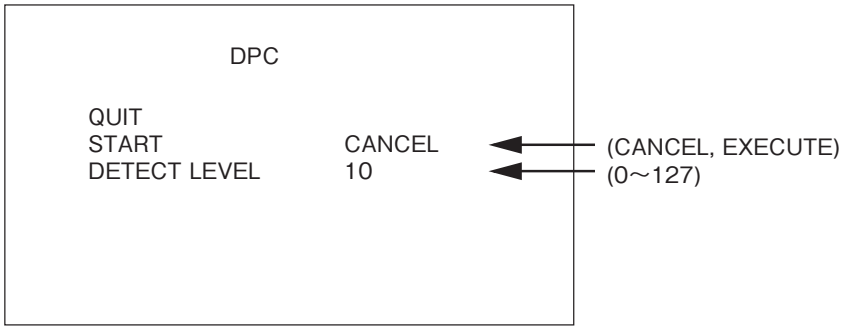
■ AUTO IRIS SET



IRIS SET MODE : ON : Enables the adjustment of AUTO IRIS.
: OFF : Prohibits the adjustment of AUTO IRIS.
IRIS LEVEL SET : Adjusts the video level where AUTO IRIS converges.
PEAK RATIO SET : Adjusts the AUTO IRIS response. The larger the value is, the more sensitive to a small light source the camera gets.

IRIS GAIN : Adjusts the sensitivity of AUTO IRIS.
IRIS SPEED : Adjusts the operation speed of AUTO IRIS.
IRIS LIMIT : Select a limit value of the iris that can be closed by AUTO IRIS. The iris can be closed up to the F value to be selected.
LENS ADJUST : Used to adjust the combination with lenses. Normally, this item is not used.

■ **DPC**



START : CANCEL : Cancels the execution of defective pixel correction.
: EXECUTE : Executes defective pixel correction.
DETECT LEVEL : Adjusts the level at which defective pixel correction is executed.

[Correction Method]

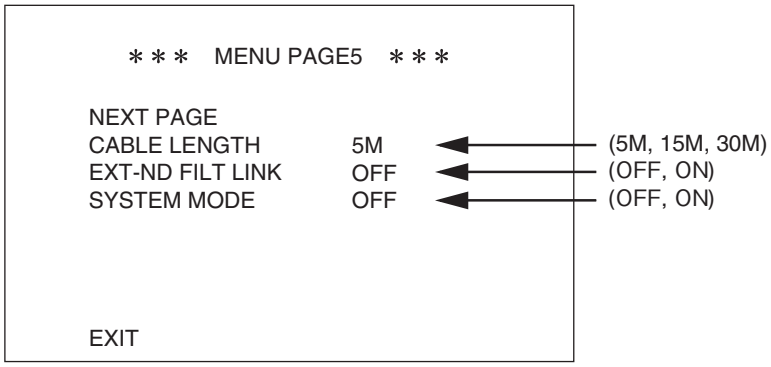
1. On "MENU PAGE4", select "AUTO DPC" and press the MENU switch.
2. Set "DETECT LEVEL" depending on the level of defect pixels. 10 is recommended.
3. Set "START" for EXECUTE.
4. If any defective pixels persist, decrease the value of "DETECT LEVEL" and execute it again.

Notice

When the Detect Level setting is decreased, smaller defective pixels will be corrected accordingly. However, correction tracks may be conspicuous because of the increased pixels to correct.
Moreover, if it is decreased excessively, an error may occur because the number of corrections is limited.

5.4.5 MENU PAGE 5

1. "MENU PAGE5" contains four items: "CABLE SELECT", "MUTE MODE", "EXT-ND FILT LINK", and "SYSTEM MODE".
2. To select the desired item, turn and press the MENU switch while the item is blinking. The sub menu screen of the selected item is displayed.
3. If the MENU switch is pressed while "EXIT" is blinking, the menu will turn off.



CABLE LENGTH : Select a cable compensation circuit according to the length of the camera cable to be used.
MUTE MODE : Turns on/off the adjustment mode to block the video from the camera head.
EXT-ND FILT LINK : Sets the mode to switch the ND filter interacting with the lens extender.
SYSTEM MODE : When the remote controller is disconnected, selects whether to maintain the state set via the remote control panel.

■ **CABLE LENGTH**

Select a value nearest to the length of the camera cable to be used. When the length of the camera cable to be used is different from the setting, cable compensation is not performed properly.

5M : Specify this item when a 5m or shorter-long cable is used.

15M : Specify this item when a 10m to 20m-long cable is used.
30M : Specify this item when a 20m to 35m-long cable is used.
50M : Specify this item when a 35m to 50m-long cable is used.

Notice

The adjustment of the CCU is required according to each cable length. When the cable length is changed after purchase, a readjustment by our serviceman is necessary. Without a readjustment, a proper camera performance cannot be achieved at high gain increase.

■ EXT-ND FILT LINK

Selects ON/OFF of the mode to control the ND filter that interworks with on/off of the lens extender.

- OFF: The ND filter is not switched if the lens extender is turned on/off.
- ON : The ND filter gets one level brighter if the lens extender is turned on. The ND filter gets one level darker if the lens extender is turned off.

Notice

When the brightest ND filter is used before the extender is turned on, the ND filter is not switched.
When the darkest ND filter is used before the extender is turned off, the ND filter is not switched.

Notice

When FILT ENABLE is input to the CTRL connector on the CCU, the ND filter is not switched automatically but follows the ND filter control input to the CTRL connector.

⚠ CAUTION

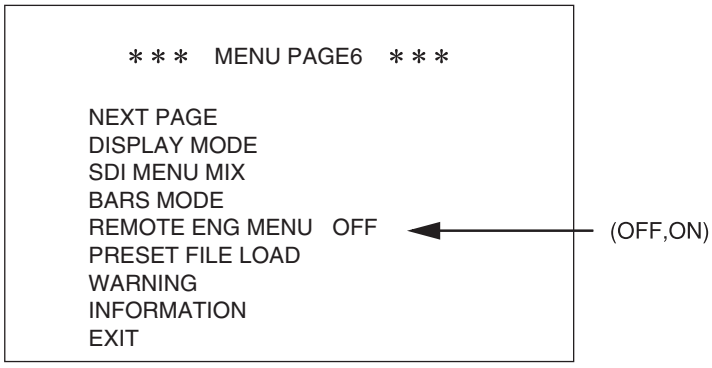
When the ND filter position (order or density) is changed to other than the standard,
please do not use this function. Appropriate ND filter control is not performed for other than the standard position.

■ SYSTEM MODE

SYSTEM MODE : OFF: Cancels the value set by the remote controller when the remote controller is disconnected. When the remote controller is connected again, the setting returns to the state before it is disconnected.
ON : Maintains the value set by the remote controller even if the remote controller is disconnected.

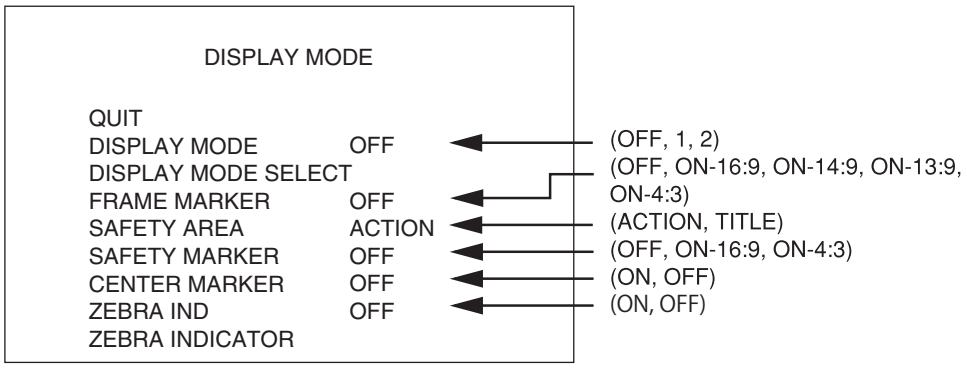
5.4.6 MENU PAGE 6

1. "MENU PAGE6" contains seven items: "DISPLAY MODE", "SDI MENU MIX", "BARS MODE", "REMOTE ENG MENU", "PRESET FILE LOAD", "WARNING", and "INFORMATION".
2. To select the desired item, turn and press the MENU switch while the item is blinking. The sub menu screen of the selected item is displayed.
3. If the MENU switch is pressed while "EXIT" is blinking, the menu will turn off.



DISPLAY MODE : Selects MENUs and VF indicators that are superimposed on the video.
SDI MENU MIX : Selects MENUs for the SDI1 and SDI2 connectors and the superposition state of VF indicators.
BARS MODE : Sets the type of the color bar.
REMOTE ENG MENU: When the engineer menu is opened from the remote controller, it is turned on. When the menu is closed, it returns to be turned off.
PRESET FILE LOAD : It is used to return to the factory setup data or the data saved by "ENGINEER SET FILE RENEW" in the engineer menu
WARNING : Displays the monitoring information such as the input voltage, internal temperature, and cooling fan of the camera.
INFORMATION : Displays settings on various states and environment of the camera.

■ DISPLAY MODE



DISPLAY MODE : Sets the display mode for the gain, shutter, and filters.
DISPLAY MODE SELECT : Selects the gain, shutter, and filter displays independently.
FRAME MARKER : Selects ON/OFF of the frame marker display and the marker size.
SAFETY AREA : Sets the type of the safety marker.
SAFETY MARKER : Selects ON/OFF of the safety marker display and the marker size.
CENTER MARKER : Selects ON/OFF of the center marker display.
ZEBRA IND : Selects ON/OFF of the zebra indicator display.
ZEBRA INDICATOR : Sets the display level of the zebra indicator.

[DISPLAY MODE]

Sets the display mode for the gain, shutter, and filters.

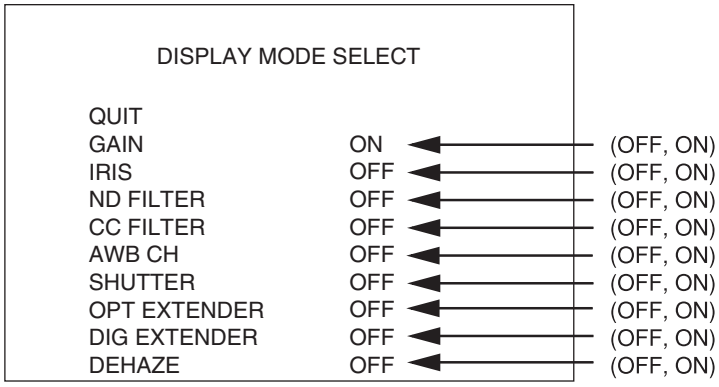
OFF: Displays only WARNING.

1 : Displays the gain, shutter, and filters for 2 seconds after the state changes.

2 : Always displays the gain, shutter, and filters. 0dB for the gain disappears 2 seconds after it is displayed.

[DISPLAY MODE SELECT]

Selects the content to be displayed.



GAIN : ON : Displays the gain.
OFF : Does not display the gain.
IRIS : ON : Displays the lens iris number.
OFF : Does not display the lens iris number.
ND FILTER : ON : Displays the number of the ND filter.
OFF : Does not display the number of the ND filter.
CC FILTER : ON : Displays the number of the CC filter.
OFF : Does not display the number of the CC filter.
AWB CH : ON : Displays the AWB channel.
OFF : Does not display the AWB channel.
SHUTTER : ON : Displays the shutter speed.
OFF : Does not display the shutter speed.
OPT EXTENDER : ON : Displays ON of the lens extender.
OFF : Does not display ON of the lens extender.
DIG EXTENDER : ON : Displays ON and magnification of the digital extender.
OFF : Does not display ON and magnification of the digital extender.
DEHAZE : ON : Displays the DEHAZE operation.
OFF : Does not display the DEHAZE operation.

[FRAME MARKER]

Sets the display mode of the frame marker.

- OFF : Does not display the frame marker.
- ON-16:9 : Displays the 16:9-size frame marker.
- ON-14:9 : Displays the 14:9-size frame marker.
- ON-13:9 : Displays the 13:9-size frame marker.
- ON-4:3 : Displays the 4:3-size frame marker.

[SAFETY AREA]

Sets the type of the safety marker.

- ACTION : Displays the safety marker for the ACTION area (90%).
- TITLE : Displays the safety marker for the TITLE area (80%).

[SAFETY MARKER]

Sets the display mode of the safety marker.

- OFF : Does not display the safety marker.
- ON-16:9 : Displays the 16:9-size safety marker.
- ON-4:3 : Displays the 4:3-size safety marker.

[CENTER MARKER]

Sets the display mode of the safety marker.

- OFF : Does not display the center marker.
- ON : Displays the center marker.

[ZEBRA IND]

Sets the display mode of the zebra marker.

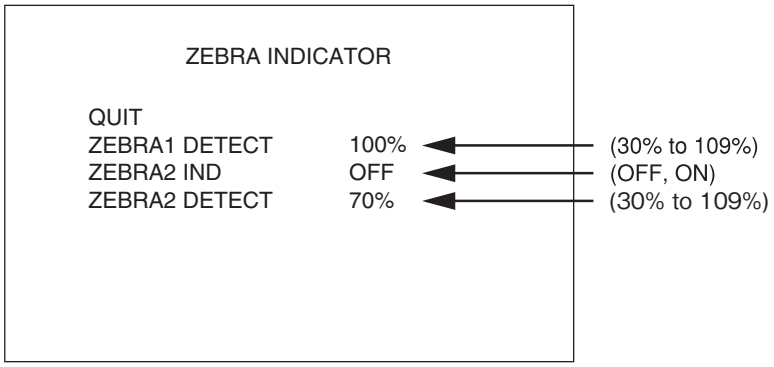
- OFF : Does not display the zebra marker.
- ON : Displays the zebra marker.

[ZEBRA INDICATOR]

Sets the zebra signals. The zebra signals are striped patterns that appear superimposed on the video. There are two types of zebra signals: the zebra 1 signal which appears in the area where the video level of the subject is higher than the set value for “ZEBRA1 DETECT”, and the zebra 2 signal which appears only in the area where the video level is the same as the set value for “ZEBRA2 DETECT”.

The striped patterns to be generated for the zebra 1 signal and zebra 2 signal are different. For the zebra 1 signal, thin and diagonal striped patterns run in the upper right direction of the screen. For the zebra 2 signal, thick and diagonal striped patterns slightly and slowly run in the lower right direction of the screen.

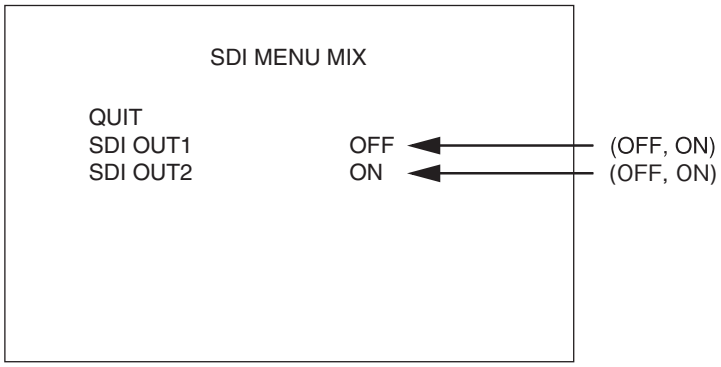
The zebra 1 signal is used to manage tones for the overall screen. The zebra 2 signal is used to mange partial tones of subjects associated with memory colors such as face tones.



ZEBRA1 DETECT : Sets the signal level to display the ZEBRA1 indicator.
ZEBRA2 IND : ON : Displays the ZEBRA2 indicator.
OFF : Does not display the ZEBRA2 indicator.
ZEBRA2 DETECT : Sets the signal level to display the ZEBRA2 indicator.

■ SDI MENU MIX

Sets ON/OFF of the superposition of MENU characters and VF indicators to the SDI signals for the SDI OUT1 and SDI OUT2 connectors.



SDI OUT1 : Sets the superposition to the SDI OUT1 connector.
- ON : Superimposes MENU characters and VF indicators.
- OFF : Does not superimpose MENU characters and VF indicators.

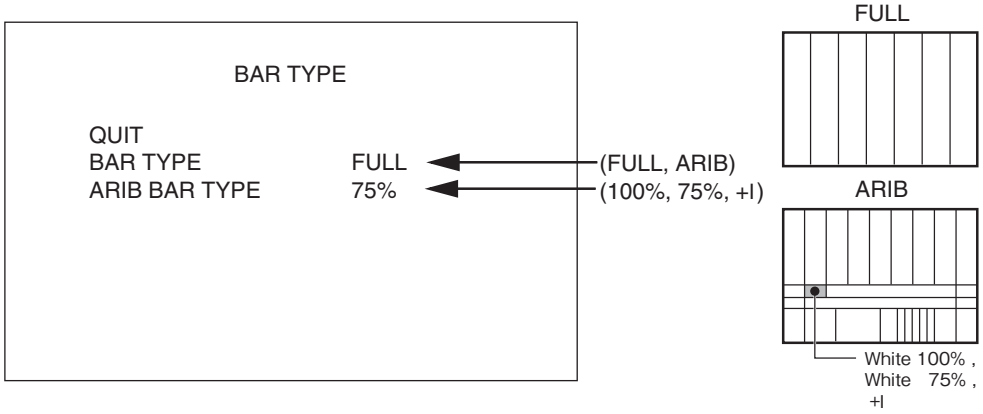
SDI OUT2 : Sets the superposition to the SDI OUT2 connector.
- ON : Superimposes MENU characters and VF indicators.
- OFF : Does not superimpose MENU characters and VF indicators.

Notice

Even if it is set to “OFF”, the MENU screen is displayed on the analog signal output from “MON OUT connector” on the back of the camera.

Even if both items are set to “OFF”, the menu screen of “MENU PAGE1” appears by setting the CAM/BAR switch on the rear of the camera to “BAR” and pressing the MENU switch for several seconds. After that, “ON” can be set by selecting “SDI MENU MIX” of “MENU PAGE6”.

■ BARS MODE



BARS TYPE : Sets the type of the color bar.

ARIB BARS TYPE : Sets the White level of the ARIB bar as shown in the right figure.

Notice

ARIB : Association of Radio Industries and Businesses

■ REMOTE ENG MENU

Sets how to open the engineer menu from the remote controller.

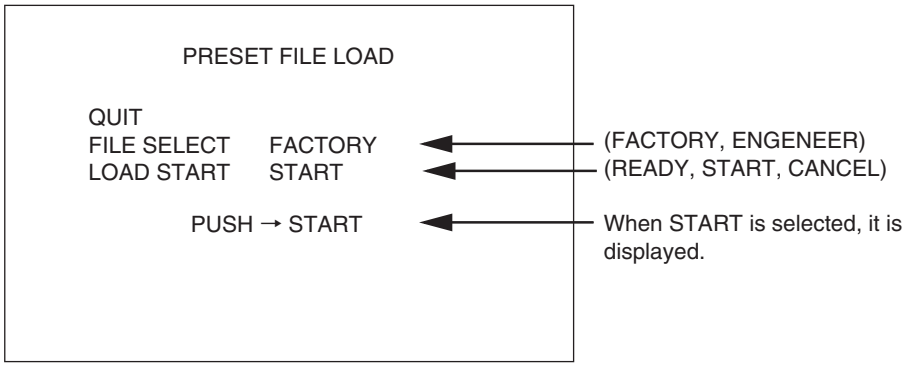
- OFF : Standard mode. The engineer menu cannot be opened from the remote controller.
- ON : Opens the engineer menu from the remote controller.

Notice

Once the REMOTE ENG MENU is turned on, it cannot be turned off until the camera menu operation is completed. It returns to be turned off when the camera menu operation is completed.

■ PRESET FILE LOAD

It is used to return to the factory setup data or the data saved by “ENGINEER SET FILE RENEW” in the engineer menu.



FILE SELECT : Selects the data to load.
FACTORY : Selects the factory setup data.
ENGINEER: Selects the data saved by ENGINEER SET FILE RENEW.
LOAD START : Starts to load data.
When START is selected after READY, PUSE SET → START is displayed.
When loading, select START again.
When discontinuing, select CANCEL or close the menu with QUIT.

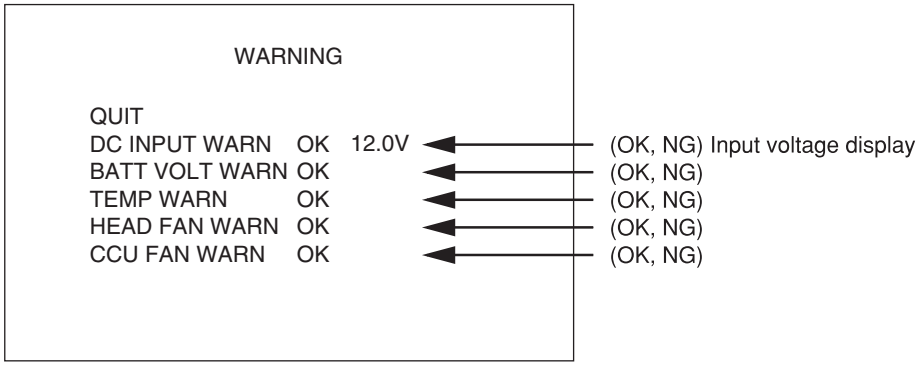
Notice

Before shipment, the ENGINEER SET FILE data is the same as the FACTORY data.
The ENGINEER SET data is overwrited by executing the engineer menu ENGINEER SET FILE RENEW.

Notice

When the data loading of ENGINEER and FACTORY is executed, the display may licker for a few seconds.

■ WARNING



DC INPUT WARN : Displays the voltage state for the +12V power input. Also displays the voltage value.
OK : The input voltage is normal.
NG : The input voltage is abnormal.
BATT VOLT WARN : Displays the voltage state of the battery for the backup of the MPU module.
OK : The battery voltage is normal.
NG : The battery voltage is abnormal.
TEMP WARN : Displays the temperature state inside the CCU.
OK : The internal temperature is normal.
NG : The internal temperature is abnormal.
HEAD FAN WARN : Displays the rotational state of the Camera head fan.
OK : The fan rotation is normal.
NG : The fan rotation is abnormal.
CCU FAN WARN : Displays the rotational state of the CCU fan.
OK : The fan rotation is normal.
NG : The fan rotation is abnormal.

■ INFORMATION

```
INFORMATION

QUIT
SWITCH
WORKING TIME        123.4H
SUB TIME            12.3H
HEAD CPU            STRB6173 V＊＊
HEAD FPGA           STRB6174 V＊＊
CCU MPU             STRB6175 V＊＊
CHECK SUM(115C)
V CLEAR             STRB6176 V＊＊
```

SWITCH : Displays: Displays the setting state of the dip switches in the MPU module.
WORKING TIME : Displays accumulated operation time of the camera up to now.
SUB TIME : Displays accumulated operation time of the camera.
HEAD CPU : Displays the ROM version of the module in the MAIN of the camera head.
HEAD FPGA : Displays the FPGA version of the module in the MAIN of the camera head.
CCU MPU : Displays the ROM version in the MPU module of the CCU.
CHECK SUM : Displays the checksum of the ROM data.
V CLEAR : Displays the ROM version of the FPGA in the V CLEAR module of the CCU.
In changing the ROM version, verify that the checksum separately informed and the one displayed on the menu screen match.

[SWITCH]

Displays the switch settings for the MPU module of the CCU and the HEAD I/F module of the camera head in the following sub menu screen. Pressing the menu switch while this screen is being displayed moves to the “INFORMATION” screen.

```
CCU MODULE

  (SW1)      RESET SW
1－OFF       OFF
2－OFF
3－OFF
4－OFF
5－OFF
6－OFF
7－OFF
8－OFF
```

[WORKING TIME]

Displays accumulated operation time since the shipment.

[SUB TIME]

Displays the accumulated operation time of the camera. Unlike “WORKING TIME”, this can be reset by a user.

1. Select “SUB TIME” and press the MENU switch. The blinking cursor moves to the mode.

2. Select “RESET” and press the MENU switch. The operation time is reset to “0.0H”.

5.5 Engineer Menu

The camera provides engineer menus for maintenance in addition to the camera menus.
New engineer menus ENGINEER PAGE1, ENGINEER PAGE2, and ENGINEER PAGE3 are displayed in this order after camera menu MENU PAGE6.

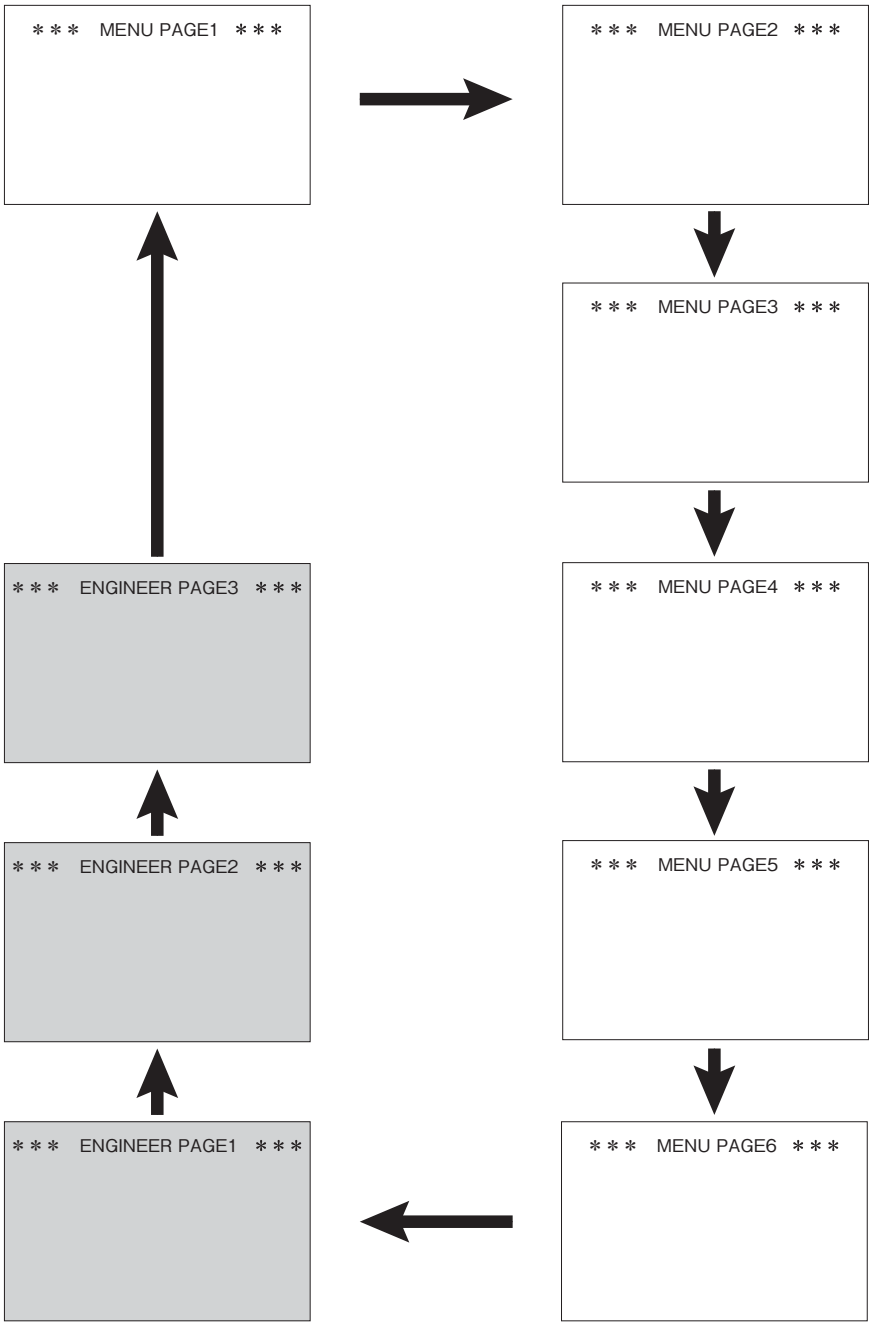
⚠ CAUTION

As some items set on engineer menus affect the main video signal, be extremely careful when setting engineer menu items. Especially, it is not recommended to operate the engineer menu while the camera is on air.

[Displaying the engineer menu screen]

1. Set the CAM/BAR select switch on the CCU rear panel to the "BAR" position.
2. Keep on pressing the MENU switch until the WARNING indicator lights.
3. The engineer menu screen is displayed when the WARNING indicator lights.

The camera menu screen is redisplayed automatically when the engineer menu screen is exited.



5.5.1 Hierarchical Structure of the Engineer Menus

ENGINEER PAGE1

MAIN MENU	SUB MENU 1	SUB MENU 2	SELECT	DEFAULT	FUNCTION
NEXT PAGE					Transitions to the PAGE2 of the engineer menu.
CAL			OFF, 100%, 200%	OFF	Outputs the test signal. The test signal is for checking the signal, and does not show the accurate video level.
ECC CTRL CN			OUT, IN	OUT	Selects whether the ECC terminal of the CTRL terminal is used for input or output.
SMOOTH KNEE SETUP	QUIT				Transitions from the sub menu to the main menu.
	SMOOTH KNEE		OFF, TYPE1, TYPE2, TYPE3	TYPE1	Selects the type of SMOOTH KNEE.
	TEST PULSE		ON,OFF	OFF	Turns ON/OFF the test pulse for setting SMOOTH KNEE.
	POINT1				Sets the curve of SMOOTH KNEE. Since there are three curve points, set each of them to determine the whole curve. You can set each of the curves: TYPE1, TYPE2, and TYPE3.
	SLOPE1				
	POINT2				
	SLOPE2				
	POINT3				
	SLOPE3				
	LOAD INT				Restores the factory default data.
HI-LIGHT DTL SET UP	HI-LIGHT DTL		ON, OFF	OFF	Turns ON/OFF the highlight DTL.
	GAIN		0 to +100		Sets the GAIN of highlight DTL. Setting a larger value will increase the edges to be added to high-brightness parts.
	LIMIT		-100 to +100		Sets the clip point of highlight DTL edges. Limits the amplitude of edges.
FINE DTL			0 to 8	8	Sets the level of FINE DTL. FINE DTL increases the edges to be added to a subject with low contrast; conversely, it decreases the ones to be added to a subject with high contrast.
ND FILE			ON,OFF	ON	Offsets the color temperature for each ND filter when set to ON. This corrects the white balance deviation caused by using the ND filter. No offset is triggered when it is set to OFF.
DNR SETUP	QUIT				Returns to the previous screen.
	DNR FUNCTION		ENABLE, DISABLE	ENABLE	Sets whether or not to execute digital noise reduction.
	3D DNR		ON, OFF	ON	Selects the mode in which 3D DNR is not used.
ATW SETUP	QUIT				Returns to the previous screen.
	ATW DAY MODE		NORMAL, CUSTOM	NORMAL	Sets the operating range in DAY MODE. NORMAL is a standard operating range. To change the operating range, use CUSTOM mode. The variable range is adjusted at C.TEMP SETTING RED/C.TEMP SETTING BLUE/ATW REFERENCE.
	ATW NIGHT MODE		NORMAL, CUSTOM	NORMAL	Sets the operating range in NIGHT MODE. NORMAL is a standard operating range. To change the operating range, use CUSTOM mode. The variable range is adjusted at C.TEMP SETTING RED/C.TEMP SETTING BLUE/ATW REFERENCE.
	ATW SPEED		1 to 10	2	Adjusts the pull-in speed of ATW. Setting 10 will reduce the pull-in speed.
	START UP TIME		0FF, 1 to 5	OFF	Adjusts the time before the ATW is activated. Setting 5 will lengthen the time before the activation starts.
	C.TEMP SETTING RED	QUIT			Returns to the previous screen.
		RED LIMIT AUTO SET	ON, OFF	OFF	Establishes the mode that can set the operating range for the side with low color temperature.
		RED LIMIT CONTROL	-100 to +100	0	Sets the operating range for the side with low color temperature.
		RED LIMIT INIT	ON, OFF	OFF	Restores the default value.

MAIN MENU	SUB MENU 1	SUB MENU 2	SELECT	DEFAULT	FUNCTION
ATW SETUP	C.TEMP SETTING BLUE	QUIT			Returns to the previous screen.
		BLUE LIMIT AUTO SET	ON, OFF	OFF	Establishes the mode that can set the operating range for the side with high color temperature.
		BLUE LIMIT CONTROL	-100 to +100	0	Sets the operating range for the side with high color temperature.
		BLUE LIMIT INIT	ON, OFF	OFF	Restores the default value.
	ATW REFERENCE	QUIT			Returns to the previous screen.
		ATW RED REFERENCE	-100 to +100	0	Adjust the red level for conversion.
		ATE BLUE REFERENCE	-100 to +100	0	Adjust the blue level for conversion.
EXIT	-	-	-		Turns off the menu.

*****ENGINEER PAGE2*****

MAIN MENU	SUB MENU	SELECT	DEFAULT	FUNCTION
NEXT PAGE	-	-	-	Moves to MENU PAGE4.
IRIS CIRCUIT ADJUST	QUIT	-	-	Moves from the sub menu to the main menu.
	ADJUST MODE	-	-	Automatically sets output for controlling the fixed iris value of the lens. The control voltage values corresponding to F2.8 and F16 are set in order to automatically adjust the relationship between the lens control voltage value and lens iris value.
FILTER SETUP	-	ON, OFF	OFF	When it is set to ON, impresses the voltage to filter servo forcibly.
ND FILE SETUP MODE	-	ON, OFF	OFF	Creates ND FILE when set to ON, and AWB is executed at each ND filter position.
ENGINEER SET FILE RENEW	QUIT	-	-	Moves from the sub menu to the main menu.
	DATA RENEW MODE	-	-	Saves the camera level adjustments and menu item settings. The saved data can be read as user-set data through “PRESET FILE LOAD” of MENU PAGE6.
PROGRAM UPDATE	CAMERA ROM	READY, CANCEL, EXECUTE	-	Updates the program software of the camera. Operates while connecting the operation control panel (RCP-50, etc.) with a memory card slot.
EXIT	-	-	-	Turns off the menu.

*****ENGINEER PAGE3*****

MAIN MENU	SUB MENU	SELECT	DEFAULT	FUNCTION
NEXT PAGE	-	-	-	Moves to the camera menu (1/6).
SCAN FORMAT SELECT	QUIT	-	-	Moves from the sub menu to the main menu.
	SCAN MODE	1080I59. 1080I50 1080P25SF 1080P29.SF 720P59 720P50	1080I59.	Selects the operation format of the camera. Only the format set to [ENABLE] on the SCAN FORMAT ENABLE can be selected. 1080I59. : 1080/59.94i 1080I50 : 1080/50i, 1080P25SF : 1080/25psF 1080P29.SF : 1080/29.97psF
SCAN FORMAT ENABLE	REMOTE CONTROL	ENABLE, DISABLE	ENABLE	ENABLE : Enables the scanning format by the SCAN FORMAT SELECT from the remote control panel. DISABLE : Disables the scanning format by the SCAN FORMAT SELECT from the remote control panel.
	1080I59	ENABLE, DISABLE	ENABLE	Only the format set to [ENABLE] on the SCAN FORMAT ENABLE can be selected. To prevent the wrong operation, it cannot be operated from the remote controller. It can be operated only from the menu switch of the CCU.
	1080I50	ENABLE, DISABLE	ENABLE	
	1080P29.SF	ENABLE, DISABLE	ENABLE	
	1080P25SF	ENABLE, DISABLE	ENABLE	
	720P59	ENABLE, DISABLE	ENABLE	
	720P50	ENABLE, DISABLE	ENABLE	
EXIT	-	-	-	Turns off the menu.

5.5.2 How to Change the Scanning Format

The scanning format can be changed according to the following procedure.

[When doing it from the remote controller]

1. Open the camera menu by the remote controller.
2. Keep selecting the NEXT PAGE and open the MENU PAGE6.
3. Select the item of REMOTE ENG MENU of the MENU PAGE6 and switches from OFF to ON.
   (When the REMOTE ENG MENU is turned on, the engineer menu comes to be opened.)
4. Keep selecting the NEXT_PAGE and open the ENGINEER PAGE4.
5. Select the SCAN FORMAT SELECT of the ENGINEER PAGE4 and open the SCAN MODE of the submenu.
6. Select the scanning format with the SCAN MODE. The following displays correspond to each format.

Display	Scanning format
1080I59.	1080/59.94i
1080I50	1080/50i
720P59.	720/59.94p
720P50	720/50p
1080P25SF	1080/25psF
1080P29.SF	1080/29.97psF

7. When the scanning format is selected, PUSH SET → START is displayed. And when it is selected again, the camera restarts and the scanning format is switched. For cancelling, please return to QUIT.
8. Turn the power OFF once and turn ON again.

⚠ CAUTION

Turn the power OFF the camera, otherwise it may be malfunctioning.

Notice

Once the menu is closed, the REMOTE ENG MENU of the MENU PAGE6 is automatically turned off.
When selecting the scanning format again, please perform the operation 1 - 3 again, and after the REMOTE ENG MENU is turned on, perform the operation 4 - 7.

Notice

Regarding how to operate the camera menu from the remote controller, please refer to the manual of each remote controller.

[When doing it from the CCU menu switch]

1. Set the CAM/BAR switch to BAR, and press and hold the menu switch until the WARNING lamp lights up.
   (By this operation, the engineer menu comes to be opened.)
2. Select the NEXT_PAGE and open the ENGINEER PAGE4.
3. Select the SCAN FORMAT SELECT of the ENGINEER PAGE4 and open the SCAN MODE of the submenu.
4. Select the scanning format with the SCAN MODE. The following displays correspond to each format.

Display	Scanning format
1080I59.	1080/59.94i
1080I50	1080/50i
720P59.	720/59.94p
720P50	720/50p
1080P25SF	1080/25psF
1080P29.SF	1080/29.97psF

5. When the scanning format is selected, PUSH SET → START is displayed. And when pressing the switch again, the camera restarts and the scanning format is switched. For cancelling, please return to QUIT.
6. Turn the power OFF once and turn ON again.

⚠ CAUTION

Turn the power OFF the camera, otherwise it may be malfunctioning.

Notice

Once the menu is closed, the engineering menu cannot be opened.
When changing the scanning format again, please perform the operation 1 to open the engineering menu and perform the operation 2 - 5.

⚠ CAUTION

When the slow shutter is triggered with the scan format in 1080/29.97psf or 1080/25psf mode, the vertical resolution will decrease.

6. SPECIFICATIONS

6.1 Rating

Items		Rating	Remarks
1	Scanning system	1080/59.94i, 1080/50i, 1080/29.97psF, 1080/25psF, 720/59.94p, 720/50p	1080psF is segmented frame.
2	Image sensor	2/3-inch 2.6Mega pixel CMOS	
3	Effective picture elements	1920 (H) × 1080 (V)	
4	Sensitivity	F12 typ.	Ruled by 1080/59.94i 2000lx Reflectance 89.9% IRIS value on our standard lens
5	Optical system	2/3-inch R, G, B 3MOS F1.4	
6	Lens mount	BTA S-1005B	
7	Optical filter (ND)	1: CLEAR / 2: 1/4ND / 3: 1/16ND / 4: 1/64ND	With filter servo
8	Electric color temperature correction	A: 3200K / B: 4300K / C: 6300K / D: 8000K	
9	Sampling frequency	74.1758MHz/74.25MHz	
10	Quantization bit	14bit	
11	Power	DC +11V to +16V (Maximum camera cable length: 15m) DC +12V to +16V (Maximum camera cable length: 50m)	When a lens that requires a measurable amount of power is mounted, the minimum voltage will increase.
12	Operating temperature range	- Camera head Operating temperature : -20°C to +45°C Storage temperature : -30°C to +60°C - CCU Operating temperature : -10°C to +45°C Storage temperature : -20°C to +60°C	
13	Operating humidity range	30% to 90%	No condensation
14	Dimensions	- Camera head : Approx. W100 × H123 × D80mm - CCU : Approx. W120 × H105 × D180mm	Excluding projection parts
15	Weight	- Camera head : Approx. 1.0kg - CCU : Approx. 1.5kg	Excluding options
16	Camera cable	Max: 30m (in the case of a ϕ 10 camera cable) Standard cable: 5m/15m/30m/50m	The cable length is to be fixed since some adjustment is required according to the length. To change the cable length after shipment, another adjustment is required.

6.2 Performance

Items		Rating	Remarks
1	S/N	64dB(NR ON) typ.	Ruled by 1080/59.94i Luminance signal with the cable length of 5m
2	Modulation	50% typ.	800TVL (27.5MHz in the 1080i format)
3	Limiting resolution	Horizontal : 1000TVL Vertical : 1000TVL	
4	GAIN	-6,-3,0, +3,+6,+9,+12,+18,+24,+30,+36,+42,+48,+54dB +60dB, +66dB, +72dB	
5	GAMMA	OFF, 0. 35, 0.40, 0.45	
6	Minimum illumination	0.0068 Lx (theoretical value, level 100%) 0.0015 Lx (theoretical value, level 50%)	Ruled by 1080/59.94i Iris; F1.4, +72dB gain increase
		0.00011 Lx (theoretical value, level 100%) 0.000024 Lx (theoretical value, level 50%)	Ruled by 1080/59.94i Iris; F1.4, +72dB gain increase, 2 seconds accumulation
7	Electronic shutter	1/100, 1/120, 1/250, 1/500,1/1000, 1/2000, 1/4000, 1/10000	Electronic shutter mode
		1/30, 1/15, 1/10, 1/8, 1/6, 1/5, 1/4, 1/3, 1/2, 1, 2s (59.94Hz mode) 1/25, 1/12, 1/10, 1/8, 1/6, 1/5, 1/4, 1/3, 1/2, 1, 2s (50Hz mode)	Sensor accumulation mode
8	Power consumption	Approx. 32.5W	HEAD : 9.7W CCU : 22.7W

6.3 Output Signal

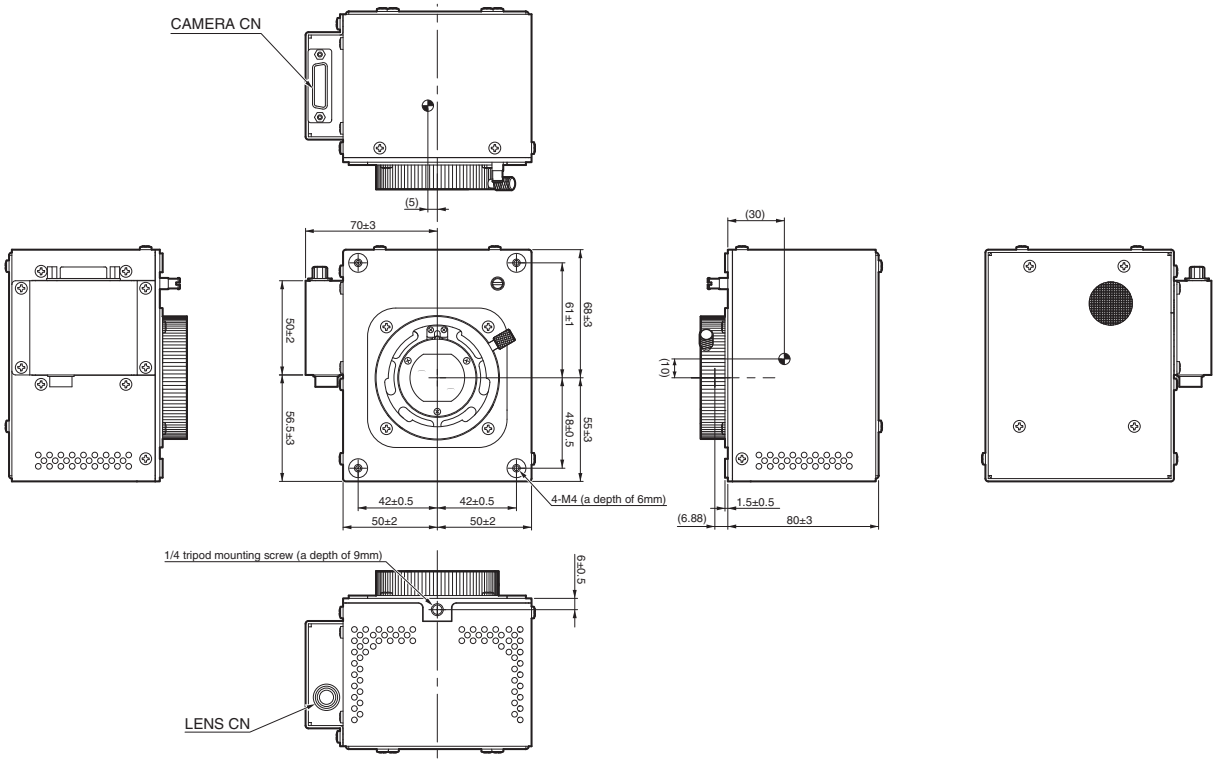
Items		Rating	Remarks
1	Digital video signal	HD-SDI × 2 systems (75Ω BNC connector)	SMPTE 292M-compliant Characters can be superimposed using the camera menu.
2	SYNC (Option)	HD-SDI × 2 systems (75Ω BNC connector)	Analog 75 Ω termination

6.4 Input Signal

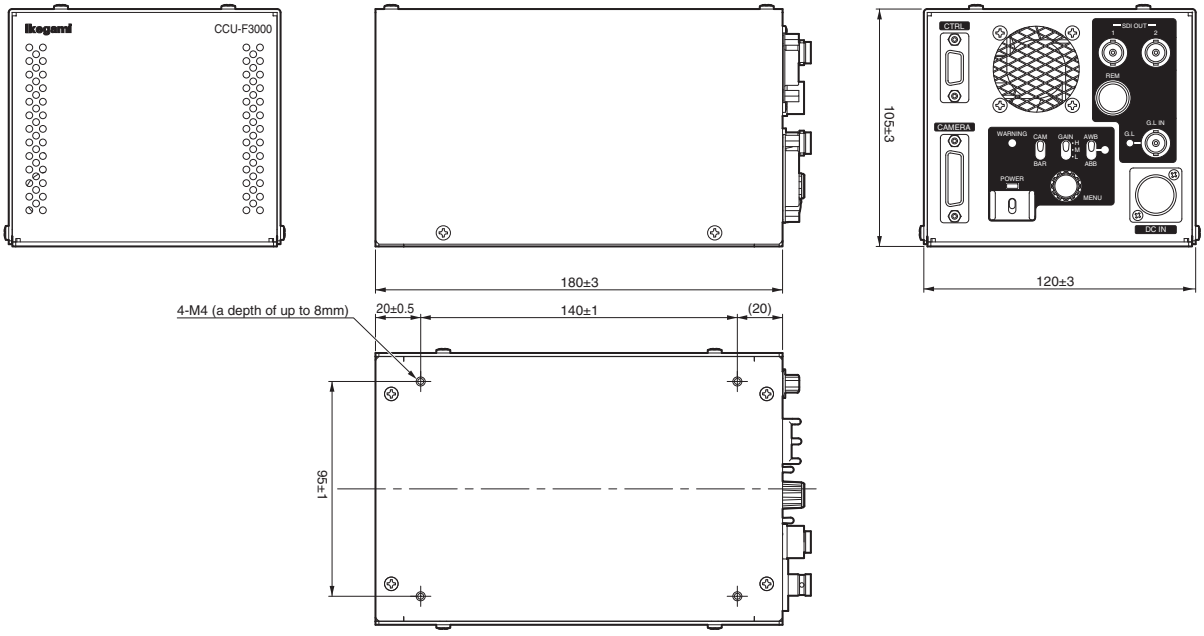
Items		Rating	Remarks
1	External synchronization signal	HDTV : PS 1Vp-p, SYNC 0.6Vp-p or SDTV : VBS 1Vp-p, BBS 0.3Vp-p	±6dB (75ΩBNC connector)

6.5 External Appearance

[HDL-F3000]



[CCU-F3000]

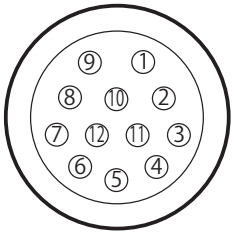


6.6 External Connectors

[CAMERA HEAD]

■ Lens Connector

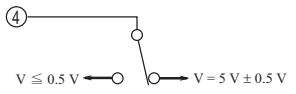
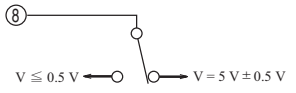
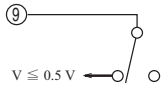
Receptacle



Insertion Side

Camera head side : HR10A-10R-12SC
Cable side : HR10A-10P-12PC (12 pin male plug)

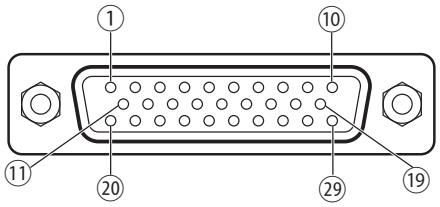
[BTA Mount]

Pin No	Name	Function	I/O	External Interface
①	(RET ON)	Unused		
②	(VTR TRIG)	Unused		
③	GND	Ground for lens	GND	
④	IRIS SERVO	IRIS forced-servo ON/OFF SERVO ON : + 5 V ± 0.5 V SERVO OFF : 0.5 V or less Zout = 1000 Ω	OUT	
⑤	IRIS CONT	Lens IRIS control output F 2.8 : 6.2 V ± 0.05 V F 16 : 3.4 V ± 0.05 V CLOSE : 2.5 V ± 0.2 V Zout = 5600 Ω	OUT	
⑥	+ 12V LENS	DC+12V output for LENS Normal operating range : DC + 10 V to + 20 V	OUT	
⑦	IRIS FOLLOW	Lens IRIS control output F 2.8 : 6.2 V ± 0.05 V F 16 : 3.4 V ± 0.05 V CLOSE : 2.5 V ± 0.2 V Zin = 95 kΩ	IN	
⑧	IRIS REM/AUTO	IRIS REMOTE/AUTO switching REMOTE : + 5 V ± 0.5 V AUTO : 0.5V or less Zout = 1000 Ω	OUT	
⑨	EXT ANS	Input and output of ANSWER signal sent from an external system IN : + 0.5 V or less OUT : OPEN Zin = 33 kΩ	IN	
⑩	(ZOOM FOLLOW)	Unused		
⑪	(FOCUS FOLLOW)	Unused		
	(LENS → CAMERA)	Unused		
⑫	(CAMERA → LENS)	Unused		

Numbers within parentheses are standard values in the conventional SDTV system of 2/3-inch camera lens.
IN : camera ← lens
OUT : camera → lens

■ CAMERA Connector

Receptacle



Camera head side : D02-29P-N-F0R
Screw lock assembly : Hexagon (long type): M2.6
Cable side : D02-29S-N-F0R

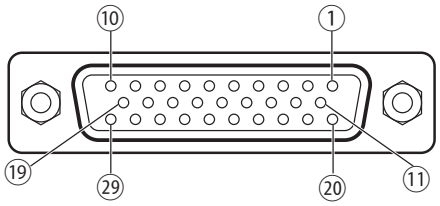
Pin No	Name	Function	I/O	Notes
①	(MIC-H)	Unused		
②	(MIC-C)	Unused		
③	IRIS ANSWER	Answer on the IRIS location from the lens	OUT	DC: 2V to 7V
④	(VF VID)	Unused		
⑤	(VF VIDEO RET)	Unused		
⑥	UP DATE CTRL	Data update control of the camera head	IN	0V or 5V
⑦	(CABLE SENS)	Unused		
⑧	(CABLE SENS RET)	Unused		
⑨	+12V	+12V power supply (UNREG)	IN	+10V to +16V (2A MAX)
⑩	+12V	+12V power supply (UNREG)	IN	+10V to +16V (2A MAX)
⑪	(+12V SENS)	Unused		
⑫	GND REF	Normally unused. Used for options. Reference GND for IRIS control output on the head side	IN	GND potential on the CCU side
⑬	+12V RET GND	GND for power supply	IN	GND for power supply 2A MAX
⑭	+12V RET GND	GND for power supply	IN	GND for power supply 2A MAX
⑮	CABLE SHIELD	Cable shield		
⑯	COMMAND SHIELD	Command signal line shield		
⑰	COMMAND(+)	Head control command	IN/OUT	RS-422 level
⑱	COMMAND(-)	Head control command	IN/OUT	RS-422 level
⑲	VD	Vertical synchronization signal	IN	0 to 5V pulse
⑳		Unused		
㉑	R VID	R ch video signal	OUT	75Ω COAX
㉒	R VID RET	GND for R ch video signal	OUT	COAX GND
㉓		Unused		
㉔	B VID	Bch video signal	OUT	75Ω COAX
㉕	B VID RET	GND for B ch video signal	OUT	COAX GND
㉖	IRIS CTRL	IRIS control from the CCU	IN	
㉗	G VID	G ch video signal	OUT	75Ω COAX
㉘	G VID RET	GND for G ch video signal	OUT	COAX GND
㉙	HD&TIMING	Horizontal synchronization I/O (two-way)	IN/OUT	0 to 5V, 0 to -5V complex pulse

IN : camera ← CCU
OUT : camera → CCU

[CCU]

■ CAMERA Connector

Receptacle



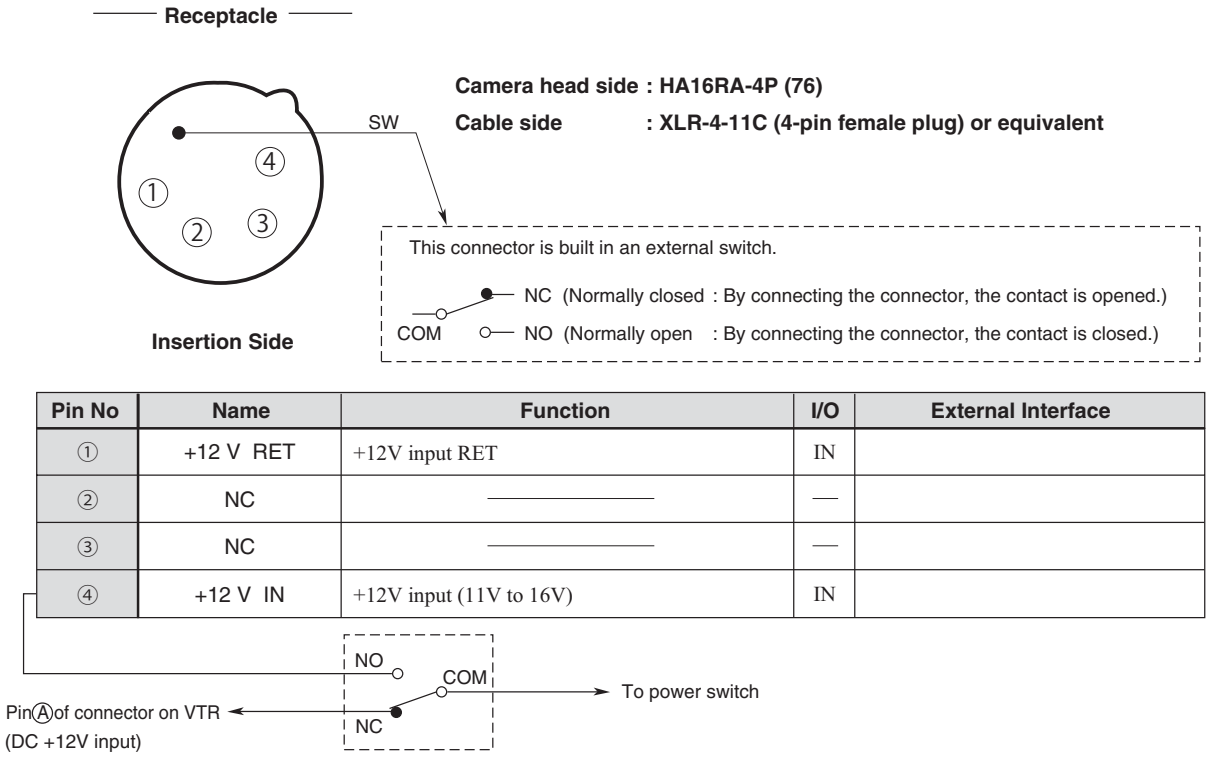
CCU side : D02-29S-N-F0R
Screw lock assembly : Hexagon (long type): M2.6
Cable side : D02-29P-N-F0R

Pin No	Name	Function	I/O	Notes
①	(MIC-H)	Unused		
②	(MIC-C)	Unused		
③	IRIS ANSWER	Answer on the IRIS location from the lens	IN	DC: 2V to 7V
④	(VF VID)	Unused		
⑤	(VF VIDEO RET)	Unused		
⑥	UP DATE CTRL	Data update control of the camera head	OUT	0V or 5V
⑦	(CABLE SENS)	Unused		
⑧	(CABLE SENS RET)	Unused		
⑨	+12V	+12V power supply (UNREG)	OUT	+10V to +16V (2A MAX)
⑩	+12V	+12V power supply (UNREG)	OUT	+10V to +16V (2A MAX)
⑪	(+12V SENS)	Unused		
⑫	GND REF	Normally unused. Used for options. Reference GND for IRIS control output on the head side	OUT	GND potential on the CCU side
⑬	+12V RET GND	GND for power supply	OUT	GND for power supply 2A MAX
⑭	+12V RET GND	GND for power supply	OUT	GND for power supply 2A MAX
⑮	CABLE SHIELD	Cable shield		
⑯	COMMAND SHIELD	Command signal line shield		
⑰	COMMAND(+)	Head control command	IN/OUT	RS-422 level
⑱	COMMAND(-)	Head control command	IN/OUT	RS-422 level
⑲	VD	Vertical synchronization signal	OUT	0 to 5V pulse
⑳		Unused		
㉑	R VID	R ch video signal	IN	75Ω COAX
㉒	R VID RET	GND for R ch video signal	IN	COAX GND
㉓		Unused		
㉔	B VID	B ch video signal	IN	75Ω COAX
㉕	B VID RET	GND for B ch video signal	IN	COAX GND
㉖	IRIS CTRL	IRIS control from the CCU	OUT	
㉗	G VID	G ch video signal	IN	75Ω COAX
㉘	G VID RET	GND for G ch video signal	IN	COAX GND
㉙	HD&TIMING	Horizontal synchronization I/O (two-way)	IN/OUT	0 to 5V, 0 to -5V complex pulse

IN : camera → CCU
OUT : camera ← CCU

■ DC-IN Connector

Used to connect external power supply.

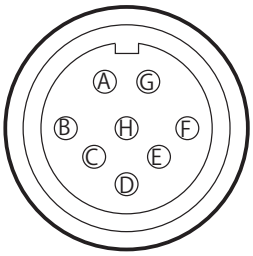


Pin No	Name	Function	I/O	External Interface
①	+12 V RET	+12V input RET	IN	
②	NC	———	—	
③	NC	———	—	
④	+12 V IN	+12V input (11V to 16V)	IN	

■ REMOTE Connector

Used to connect an external remote controller.

Receptacle



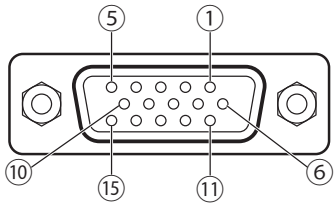
Insertion Side

Camera head side : PRC 05-R8F
Cable side : PRC 05-PB8M (8-pin male plug)

Pin No	Name	Function	I/O	External Interface
Ⓐ	HED (+)	Digital data output (+) from camera to remote controller	OUT	
Ⓑ	HED (-)	Digital data output (-) from camera to remote controller	OUT	
Ⓒ	HEC (+)	Digital data output (+) from remote controller to camera	IN	
Ⓓ	HEC (-)	Digital data output (-) from remote controller to camera	IN	
Ⓔ	+ 12 V (REM)	DC +12V power supply to remote controller	OUT	
Ⓕ	+ 12 V RET (REM)	Ground for DC +12V power supply	RET	
Ⓖ	(REM LISTEN)	Unused		
Ⓗ	(REM TALK)	Unused		

■ CTRL Connector

Receptacle



CCU side : D02-M15SG-N-F0
Screw lock assembly : Hexagon (long type): M2.6
Cable side : D02-15P-N-F0R

Pin No	Name	Function	I/O	Logic H: Open／L: GND	Notes
①	ND CTRL 1	ND filter control input	IN	1:H/2:L/3:H/4:L	
②	ND CTRL 2		IN	1:H/2:H/3:L/4:L	
③	ND ANS 1	ND filter position output	OUT	1:H/2:L/3:H/4:L	
④	ND ANS 2		OUT	1:H/2:H/3:L/4:L	
⑤	ECC CTRL1	ECC filter control input or ECC filter position output	IN/ OUT	A:H/B:L/C:H/D:L	Switching between input and output is supported by the camera menu. A:3200K B:4300K C:6300K D:8000K
⑥	ECC CTRL2			A:H/B:H/C:L/D:L	
⑦	FILT ENABLE	Filter control enable input	IN	Disable:H/Enable:L	The control input for the ND filter and ECC filter is accepted only when “Enable” is set.
⑧	IRIS CTRL	IRIS control voltage input	IN	VR closed end: 2Vdc ±0.1V VR open end: 7Vdc ±0.1V Output impedance: 1kΩ or below	Auto: The automatic iris is in operation, and ± 1 stop variable is available by the IRIS CTRL input. Manual: The manual iris is in operation, and all the range can be controlled by the IRIS CTRL input.
⑨	IRIS A/M CTRL	IRIS Auto/Manual control input	IN	Manual:H/Auto:L	
⑩	IRIS A/M ANS	IRIS Auto/Manual position output	OUT	Manual:H/Auto:L	
⑪	IRIS ENABLE	IRIS control enable input		Disable:H/Enable:L	The control input for the iris and auto/manual is accepted only when “Enable” is set. At this time, the iris control from our remote controller is not accepted.
⑫	D.ZOOM CTRL	Digital zoom control input	IN	Low magnification end; 5Vdc ± 0.1V High magnification end; 0Vdc ± 0.1V Output impedance; 1KΩ below	
⑬	D.ZOOM FOLLOW	Digital zoom position output	OUT	Low magnification end; 5Vdc ± 0.1V High magnification end; 0Vdc ± 0.1V Output impedance; 1KΩ below	
⑭	D.ZOOM ENABLE	Digital zoom control enable input	IN	Disable:H/Enable:L	The digital ZOOM control input is accepted only when it is Enable.
⑮	GND	GND			

IN : CCU ← external system
OUT : CCU → external system

7. CHANGING INFORMATION

This chapter explains revision contents in case of design revision at the request of customers.
Read by comparing this information with the main part of the operation manual.

HDL-F3000
3MOS HDTV CAMERA

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