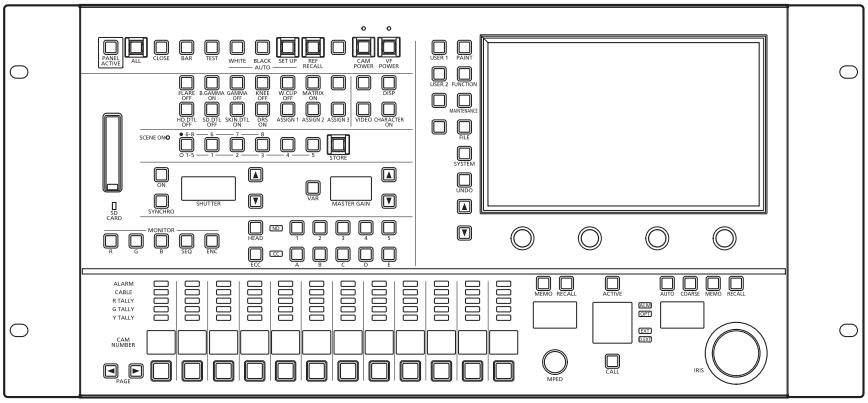
Panasonic

Operating Instructions

Master Setup Unit

Model No. AK-MSU1000G



Please carefully read this manual, and save this manual for future use.
Before using this product, be sure to read “Read this first!” (pages 2 to 4) .

W0616MN8042 -PS

ENGLISH
VQT5M31A-8 (E)

Read this first!

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK).
NO USER SERVICEABLE PARTS INSIDE.
REFER TO SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:

- To reduce the risk of fire, do not expose this equipment to rain or moisture.
- To reduce the risk of fire, keep this equipment away from all liquids. Use and store only in locations which are not exposed to the risk of dripping or splashing liquids, and do not place any liquid containers on top of the equipment.

WARNING:

Always keep memory cards (optional accessory) out of the reach of babies and small children.

CAUTION:

- Keep the temperature inside the rack to between 0°C to 40°C (32°F to 104°F).
- Bolt the rack securely to the floor so that it will not topple over when the unit is drawn out.

CAUTION:

To reduce the risk of fire or electric shock and annoying interference, use the recommended accessories only.

indicates safety information.

FCC NOTICE(USA)

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

FCC Warning:

To assure continued FCC emission limit compliance, follow the attached installation instructions and the user must use only shielded interface cables when connecting to host computer or peripheral devices.
Also, any unauthorized changes or modifications to this equipment could void the user’s authority to operate this device.

FCC CAUTION:

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.

NOTIFICATION(Canada)

CAN ICES-003(A)/NMB-003(A)

indicates safety information.

IMPORTANT SAFETY INSTRUCTIONS

1) Read these instructions.
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this apparatus near water.
6) Clean only with dry cloth.
7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10) Protect the power cable from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11) Only use attachments/accessories specified by the manufacturer.
12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13) Unplug this apparatus during lightning storms or when unused for long periods of time.
14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

EMC NOTICE FOR THE PURCHASER/USER OF THE APPARATUS

1. Pre-requisite conditions to achieving compliance with the above standards

<1> Peripheral equipment to be connected to the apparatus and special connecting cables

- The purchaser/user is urged to use only equipment which has been recommended by us as peripheral equipment to be connected to the apparatus.
- The purchaser/user is urged to use only the connecting cables described below.

<2> For the connecting cables, use shielded cables which suit the intended purpose of the apparatus.

- Video signal connecting cables
  Use double shielded coaxial cables, which are designed for 75-ohm type high-frequency applications, for SDI (Serial Digital Interface).
  Coaxial cables, which are designed for 75-ohm type high-frequency applications, are recommended for analog video signals.
- Audio signal connecting cables
  If your apparatus supports AES/EBU serial digital audio signals, use cables designed for AES/EBU.
  Use shielded cables, which provide quality performance for high-frequency transmission applications, for analog audio signals.
- Other connecting cables (LAN, RS-422)
  Use shielded cables, which provide quality performance for high-frequency applications, as connecting cables.
- When connecting to the DVI signal terminal, use a cable with a ferrite core.
- If your apparatus is supplied with ferrite core(s), they must be attached on cable(s) following instructions in this manual.

2. Performance level

The performance level of the apparatus is equivalent to or better than the performance level required by these standards. However, the apparatus may be adversely affected by interference if it is being used in an EMC environment, such as an area where strong electromagnetic fields are generated (by the presence of signal transmission towers, cellular phones, etc.). In order to minimize the adverse effects of the interference on the apparatus in cases like this, it is recommended that the following steps be taken with the apparatus being affected and with its operating environment:

1. Place the apparatus at a distance from the source of the interference.
2. Change the direction of the apparatus.
3. Change the connection method used for the apparatus.
4. Connect the apparatus to another power outlet where the power is not shared by any other appliances.

Importer for UK:
Panasonic Connect UK,
a branch of Panasonic Connect Europe GmbH,
Maxis 2, Western Road, Bracknell, Berkshire, RG12 1RT

UK CA

Turkey Only
AEEE Yönetmeliğine Uygundur.
AEEE Complies with Directive of Turkey.

Note:
The rating plate (serial number plate) is on the bottom of the unit.

Manufactured by: Panasonic Connect Co., Ltd.
4-1-62 Minoshima, Hakata-ku, Fukuoka 812-8531, Japan
Importer: Panasonic Connect Europe GmbH
Authorized Representative in EU: Panasonic Testing Centre
Winsbergring 15, 22525 Hamburg, Germany

Disposal of Old Equipment
Only for European Union and countries with recycling systems
This symbol on the products, packaging, and/or accompanying documents means that used electrical and electronic products must not be mixed with general household waste.
For proper treatment, recovery and recycling of old products, please take them to applicable collection points in accordance with your national legislation.
By disposing of them correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment. For more information about collection and recycling, please contact your local authority, dealer or supplier.
Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

ІНФОРМАЦІЯ ПРО ПІДТВЕРДЖЕННЯ ВІДПОВІДНОСТІ ПРОДУКТУ

Виробник:	Panasonic Connect Co., Ltd.	Панасонік Коннект Ко., Лтд.
Адреса виробника:	Fukuoka Japan	Фукуока Японія
Країна походження:	Japan	Японія

Імпортер:	ТОВ “ПАНАСОНІК УКРАЇНА ЛТД”
Адреса імпортера:	вул. Васильківська, буд. 30, м. Київ, 03022, Україна

Примітки:

Термін служби виробу	7 років

Дату виготовлення можна визначити за комбінацією букв і цифр серійного номера, що розташований на маркувальній табличці виробу.

Приклад: X X XXXXXXX

X	Рік: остання цифра року (6 – 2016, 7 – 2017,…0 – 2020)
X	Місяць: A – Січень, B – Лютий… L – Грудень

■ The symbols on this product (including the accessories) represent the following. (Some symbols are not displayed on this unit.)

I	ON
⏻	Standby (OFF)
~	AC
⎓	DC
⧈	Class II equipment (The construction of the product is double-insulated.)

Table of Contents

Introduction

How to View This Manual

About trademarks and registered trademarks

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- Other names of companies or products in this manual are either registered trademarks or trademarks of their respective owners.

About copyright

Distributing, copying, disassembling, reverse compiling, reverse engineering and also exporting in violation of export laws of the software provided with this unit are expressly prohibited.

Illustrations and screen displays featured in the manual

- What is shown in the manual's illustrations and screen displays may differ from how it actually appears.
- The screenshots are used in accordance with the guidelines of Microsoft Corporation.

Abbreviations

The following abbreviations are used in this manual.

- The term memory card will be used below as a generic term for both SD and SDHC memory cards. SD or SDHC will be used in descriptions that refer to only one of the two card types.
- A studio handy camera is referred to as a camera in this manual.
- A camera control unit is referred to as a CCU in this manual.
- Master setup unit is referred to as an MSU in this manual.

For the purposes of this manual, the model numbers of the units are given as listed in the table below.

Model number of unit	Model number given in manual
AK-HC5000G	AK-HC5000
AK-HC5000GS	
AK-UC3000G	AK-UC3000
AK-UC3000GS	
AK-UC4000G	AK-UC4000
AK-UC4000GS	
AK-MSU1000G	AK-MSU1000
AK-UCU500	AK-UCU500
AK-UCU500S	
AK-UCU600	AK-UCU600
AK-UCU600S	

Overview

This unit is a master setup unit for controlling a studio handy camera (AK-HC5000; sold separately, AK-UC3000/AK-UC4000; sold separately) and a camera control unit (AK-UCU500/AK-UCU600; sold separately).

Use a dedicated optical fiber multi cable to connect a studio handy camera to a camera control unit and use an MSU cable or IP connection to connect this unit to the camera control unit.

When IP connections are used, up to 99 camera control units can be controlled.

Notice

Personal computer requirements

For the software supplied with the unit, use a personal computer specified on the following website.

https://pro-av.panasonic.net/

Disclaimer of warranty

IN NO EVENT SHALL Panasonic Connect Co., Ltd. BE LIABLE TO ANY PARTY OR ANY PERSON, EXCEPT FOR REPLACEMENT OR REASONABLE MAINTENANCE OF THE PRODUCT, FOR THE CASES, INCLUDING BUT NOT LIMITED TO BELOW:

- ANY DAMAGE AND LOSS, INCLUDING WITHOUT LIMITATION, DIRECT OR INDIRECT, SPECIAL, CONSEQUENTIAL OR EXEMPLARY, ARISING OUT OF OR RELATING TO THE PRODUCT;
- PERSONAL INJURY OR ANY DAMAGE CAUSED BY INAPPROPRIATE USE OR NEGLIGENT OPERATION OF THE USER;
- UNAUTHORIZED DISASSEMBLE, REPAIR OR MODIFICATION OF THE PRODUCT BY THE USER;
- INCONVENIENCE OR ANY LOSS ARISING WHEN IMAGES ARE NOT DISPLAYED, DUE TO ANY REASON OR CAUSE INCLUDING ANY FAILURE OR PROBLEM OF THE PRODUCT;
- ANY PROBLEM, CONSEQUENTIAL INCONVENIENCE, OR LOSS OR DAMAGE, ARISING OUT OF THE SYSTEM COMBINED BY THE DEVICES OF THIRD PARTY;
- ANY INCONVENIENCE, DAMAGES OR LOSSES RESULTING FROM ACCIDENTS CAUSED BY AN INADEQUATE INSTALLATION METHOD OR ANY FACTORS OTHER THAN A DEFECT IN THE PRODUCT ITSELF;
- LOSS OF REGISTERED DATA CAUSED BY ANY FAILURE;
- ANY DAMAGE OR CLAIMS DUE TO LOSS OR LEAKAGE OF IMAGE DATA OR SETTING DATA SAVED ON THIS UNIT OR ON A MEMORY CARD OR PERSONAL COMPUTER.

Network security

This unit also has functions which are used when it is connected to a network.

Using the unit when it is connected to a network may possibly give rise to the following.

- Leakage or disclosure of information transmitted via this unit
- Unauthorized use of this unit by a third person with malicious intent
- Interference or stoppage of this unit by a third person with malicious intent

It is your responsibility to take sufficient network security measures such as those described below to protect yourself against the above risks.

- Use this unit in a network secured by a firewall, etc.
- If this unit is used in a system with a personal computer connected, make sure that checks for and removal of computer viruses and malicious programs are implemented regularly.

Also observe the following points.

- Do not install the unit in a location where the unit, cables, and other parts may be easily damaged.

User authentication

In order to protect device settings from exposure on the network, when connecting to a network, please enable user authentication to restrict access as appropriate.

Restrictions on use

It is recommended that the remote operation panel and all devices to be used with the remote operation panel be connected to the same network segment.

Events related to settings of network devices may occur if devices are connected to different segments, so verify operation carefully before placing devices into service.

Memory cards

Memory cards used with the unit should conform to SD or SDHC standards.

Be sure to use the unit to format memory cards.

Memory cards with the following capacity can be used with the unit.

SD:	8 MB to 2 GB
SDHC:	4 GB to 32 GB

SDXC memory cards are not supported.

For the latest information not described in the Operating Instructions, refer to the following website.

https://pro-av.panasonic.net/

Observe the following points when using and storing this unit.

- Avoid high temperature and humidity.
- Avoid water droplets.
- Avoid static electricity.

Upgrade software

You can obtain the upgrade software from Service and Support on the following website.

https://pro-av.panasonic.net/

For the upgrade procedure, refer to the instructions included with the download file.

Software for peripheral equipment

Software updates will also become necessary for the peripheral equipment that is connected to this unit (cameras or CCUs).

For details, consult your dealer.

File types handled by the unit

Scene file	Data for creating the required image characteristics.
Reference file	The term reference file is a generic term for user files and factory files.
User file	A user file is system setting data composed of scene files and operation data. The user can record user files.
Factory file	A file that contains camera settings that were stored at the factory.
Lens file	Data for correcting specific lens characteristics.
MSU configuration file	MSU specific setting data.

Features

- This unit is a master setup unit for controlling a studio handy camera (AK-HC5000/AK-UC3000/AK-UC4000) and a camera control unit (AK-UCU500/AK-UCU600).
- Scene files, user files, and lens files can be saved to a memory card.
- The unit can be connected to six CCU (AK-UCU500/AK-UCU600) via a serial connection.
- Eliminate the need for individual MSU cables by connecting up to 99 CCUs via a network hub (100base-TX switching hub).
- The MSU is equipped with PoE+*1, eliminating the need for additional power supply cabling.
  Connecting the MSU to a network device that supports the PoE+ standard (IEEE802.3at compliant)*2 eliminates the need for power supply cabling on the MSU.

  NOTE

  - If you are using a PoE+ power supply device that requires software authentication, it may take some time for operation to become possible after power supply starts.
  - If both an external DC power supply and a PoE+ power supply are connected, the power supply from the external DC power supply will be used. If the external DC power supply is disconnected from a state where both power supplies were connected, the unit will restart automatically and the image will be interrupted.
  - Use a category 5e cable or higher for the PoE+ connection. The maximum cable length for the connection between the power supply device and the unit is 100 m (328.1 ft). Using a cable that is category 5 or lower may result in decreased power supply performance.
  - When a personal computer that supports Gigabit Ethernet and a PoE+ injector are connected via a straight LAN cable, the unit may not be recognized by the personal computer. In such cases, connect the unit to the personal computer via a cross cable (or cross connection).

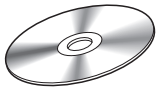
- The supplied Easy IP Setup Tool can be used to set the IP addresses of the unit and CCUs.
- The supplied MSU Setup Tool can be used to set the camera connections.

*1: Power over Ethernet Plus. Referred to as "PoE+" in this manual.
*2: For details on PoE+ power supply devices for which operation has been verified, consult your dealer or Panasonic Connect Co., Ltd. representative.

Accessories

- After unpacking the product, dispose of the packaging material appropriately.

CD-ROM……1



- Easy IP Setup Tool
- MSU Setup Tool

Precautions for Use

In addition to the safety precautions given in “Read this first!”, also observe the following instructions.

Handle carefully

- Do not drop the unit or expose it to strong impacts or vibrations.

Use the product in an ambient temperature of 0°C to 40°C (32°F to 104°F)

- Exposure to temperatures below 0°C (32°F) or above 40°C (104°F) could adversely affect Internal components.

Power off before connecting or disconnecting cables

- The unit is not equipped with a power switch. Turn off the DC 12 V power supply or PoE+ power supply device before connecting or disconnecting cables.

Avoid humidity and dust

- Avoid using the product in a very humid or dusty place because a lot of humidity and dust will cause damage to the internal components.

Cleaning

- Turn the power off and wipe the product with a dry cloth.
  To remove stubborn dirt, dip a cloth into a diluted solution of kitchen detergent (neutral detergent), wring it out well, and wipe the product gently. Then, wipe the product with a cloth dampened with water. Finally, wipe the product with a dry cloth.

NOTE

- Avoid using benzine, paint thinners and other volatile fluids.
- If a chemical cleaning cloth is to be used, carefully read through the precautions for its use.

Avoid open flames

- Do not place candles and other sources open flame near the unit.

Avoid exposure to water

- Make sure that the unit is not directly exposed to water. Exposure to water could damage it.

Disposal of the unit

- When the unit has reached the end of its service life and is to be disposed of, ask a qualified contractor to dispose of the unit properly in order to protect the environment.

LCD panels

- The pixels of the LCD panel are controlled to obtain high precision with 99.99% of the effective pixels. This leaves less than 0.01% of pixels that may not light or may remain on all the time. This is normal and will have no effect on the images you shoot.
- There may be some unevenness on the screen depending on the image displayed.
- Wiping or rubbing the LCD screen with a rough cloth may damage it.
- LCD response time and brightness vary with operating temperature.
- When the unit is left in a high-temperature and high-humidity location for prolonged periods, the LCD panel characteristics may change and result in uneven image quality.
- Due to the characteristics of LCD panels, prolonged display of bright still images or prolonged operation in high-temperature or high-humidity environments may result in residual images, luminance reduction, burn-in, banding, or panel defects and degradation that result in areas of permanently changed brightness.
  In addition, avoid prolonged continuous use in the following types of environments.
  - Confined areas with high temperature and humidity
  - Near the exhaust vent of air conditioning equipment, etc.

  Prolonged use involving the images and environments described above will accelerate deterioration of the LCD panel over time.
  To prevent deterioration over time and its related phenomena, we recommend the following.
  - Do not display bright still images for prolonged periods.
  - Lower the brightness.
  - Turn off the power of the unit (and the power of the CCU and hub) when the unit is not in use.

  Residual images will gradually disappear as different images are displayed.

PoE+ power supply

- If you are using a PoE+ power supply device that requires software authentication, it may take some time for operation to become possible after power supply starts.
- If both an external DC power supply and a PoE+ power supply are connected, the power supply from the external DC power supply will be used. If the external DC power supply is disconnected from a state where both power supplies were connected, the unit will restart automatically and the image will be interrupted.
- Use a category 5e cable or higher for the PoE+ connection. The maximum cable length for the connection between the power supply device and the unit is 100 m (328.1 ft). Using a cable that is category 5 or lower may result in decreased power supply performance.
- When a personal computer that supports Gigabit Ethernet and a PoE+ injector are connected via a straight LAN cable, the unit may not be recognized by the personal computer. In such cases, connect the unit to the personal computer via a cross cable (or cross connection).

Precautions for Installation

In addition to the safety precautions given in “Read this first!”, also observe the following instructions.

Be sure to ask your dealer to perform the installation and connection work for the unit.

Cable connections

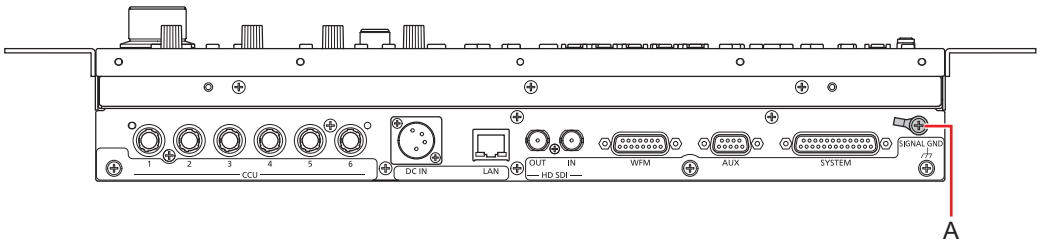
- Be sure to use dedicated MSU cables (Hirakawa Hewtech Corp. 20379-FG-SV-10 cables or equivalent).
- If the unit will not be used for an extended period of time, disconnect the MSU cables to save electricity.

PoE+ power supply

- Use a hub or power supply device that supports PoE+ (IEEE802.3at compliant).

Grounding

- Ground the system via the <SIGNAL GND> terminal on the unit.



A. <SIGNAL GND> terminal

Handle carefully

- Dropping the unit or subjecting it to a strong impact or vibration may cause a failure or accident.

Do not allow any foreign objects to enter inside the unit.

- Allowing water, metal items, food or drink, or other foreign objects to enter inside the unit may cause a fire or electric shock.

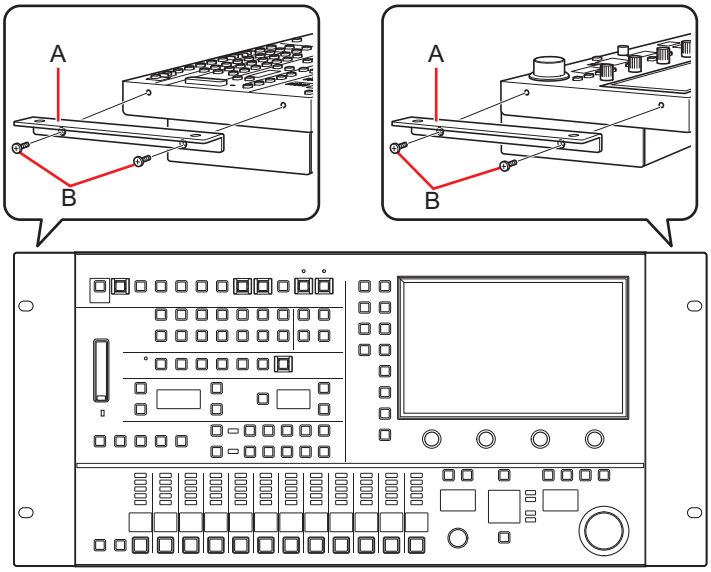
Installation location

- This unit is designed for indoor use only.
- Use the unit on a stable and horizontal surface that is sufficiently capable of supporting its weight.
- When the unit will be recessed into a panel or table, make sure that enough space is provided for ventilation and cables.
- Do not install the unit in a location where it and the cables can be easily damaged.
- Do not install the unit in a cold place where the temperature drops below 0°C (32°F) or in a hot place where the temperature rises above 40°C (104°F).
- Avoid installing the unit where it will be exposed to direct sunlight or near an outlet from which hot air is blown out.
- Installing the unit in a location with a lot of humidity, dust, or vibration may result in a failure.

Installing and removing rack mount brackets

The unit is shipped from the factory with the rack mount brackets installed.

The customer can remove the four screws that hold the rack mount brackets in place using a Phillips screwdriver.



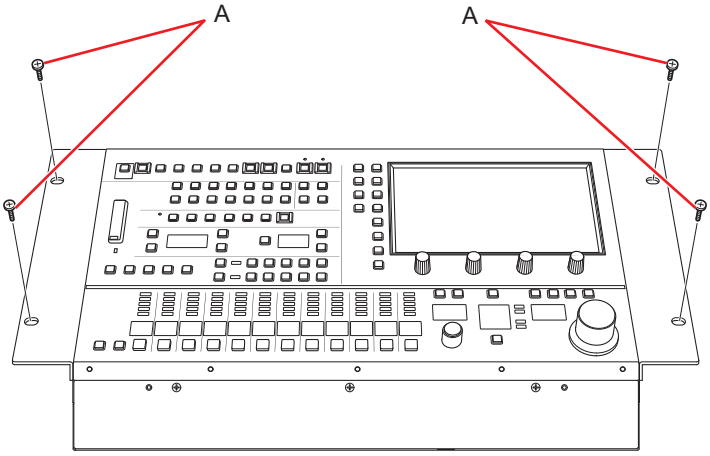
A. Rack mount bracket
B. Securing screws

- After detaching, store the rack mount brackets and the screws in a location easily accessible when required.
- The next time you use the rack mount brackets to secure the unit, tighten the four screws to a torque of 50 N•cm or more.

Rack installation (rack mounting)

Secure the unit to the rack using four securing screws.

- The securing screws are not supplied with the unit. Purchase screws that will fit the φ5 mm (3/16 inch) in diameter holes before rack mounting.
- The temperature in the rack must be between 0°C (32°F) and 40°C (104°F).



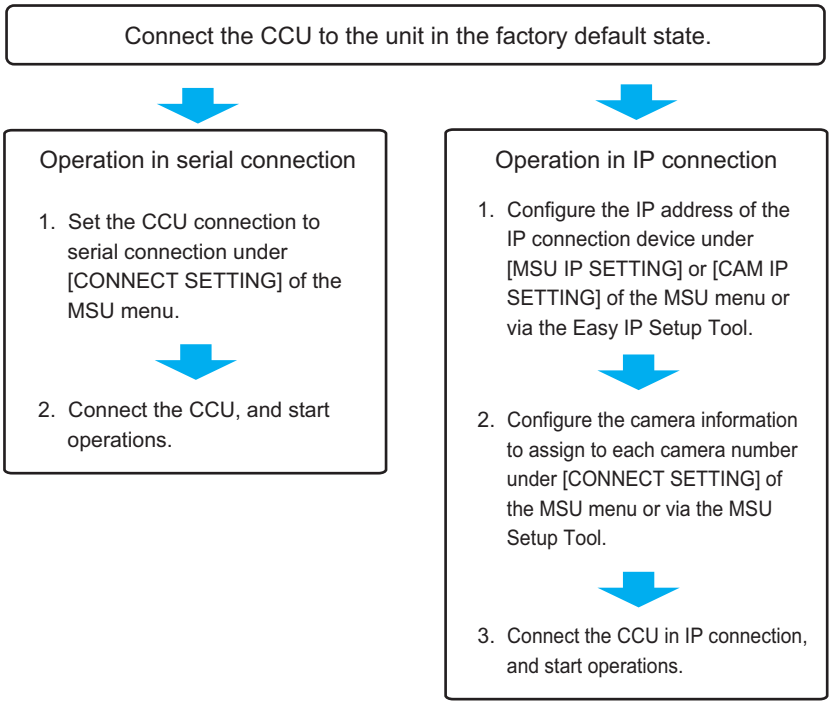
A. Securing screws (commercially available)

Connection

Operation Modes

Operation mode setting procedure

In the factory default state, connect the CCU to the unit and then set the operation mode.



NOTE

- Do not start Easy IP Setup Tool and MSU Setup Tool during operation. The MSU will be disconnected, which in turn may cause a problem with operation.

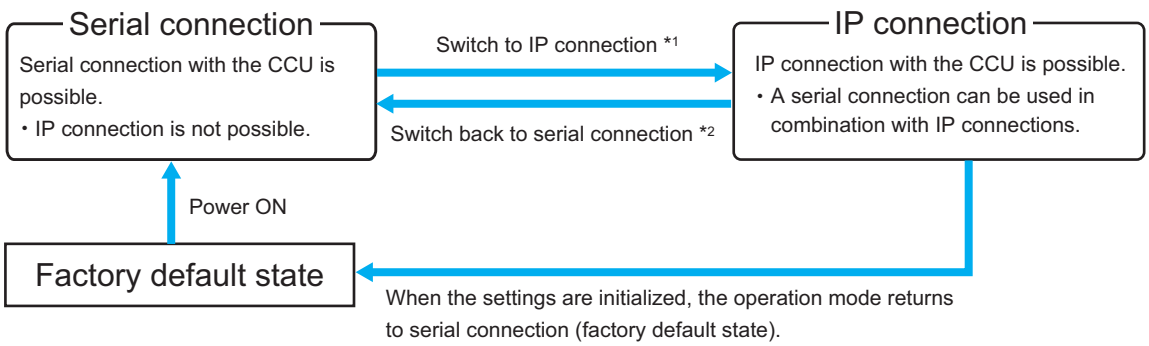
Switching between serial connection and IP connection

Switch between serial connection and IP connection via the [CONNECT SETTING] settings of the MSU menu or via the serial/LAN settings of the MSU Setup Tool.

➔ “3 CONNECT SETTING” (see page 99)
➔ “MSU Setup Tool” (see page 108)

When the settings are initialized, the operation mode returns to serial connection (factory default state).

➔ “INIT ALL” (see page 87)



*1: If an MSU configuration file that was saved to a memory card in IP connection is loaded in serial connection, the operation mode becomes IP connection.
*2: If an MSU configuration file that was saved to a memory card in serial connection is loaded in IP connection, the operation mode becomes serial connection.

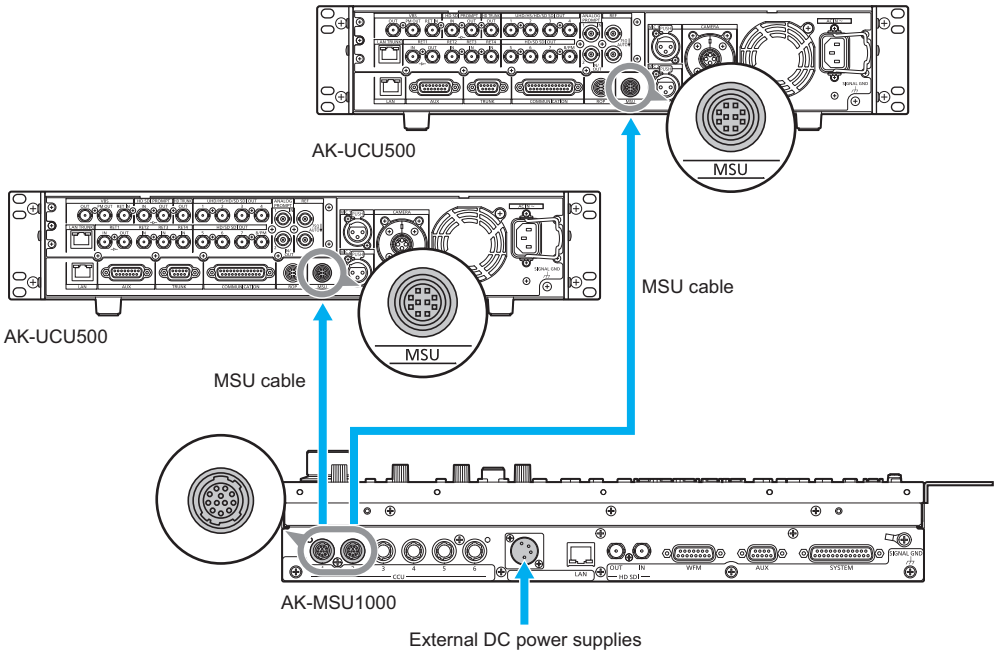
System Connection Configuration

The unit can be connected to a CCU via a serial connection or IP connection.

- Up to 99 CCUs can be controlled.
- Up to six CCUs can be connected via a serial connection.
- A configuration with six serial connection and 93 IP connections is possible.

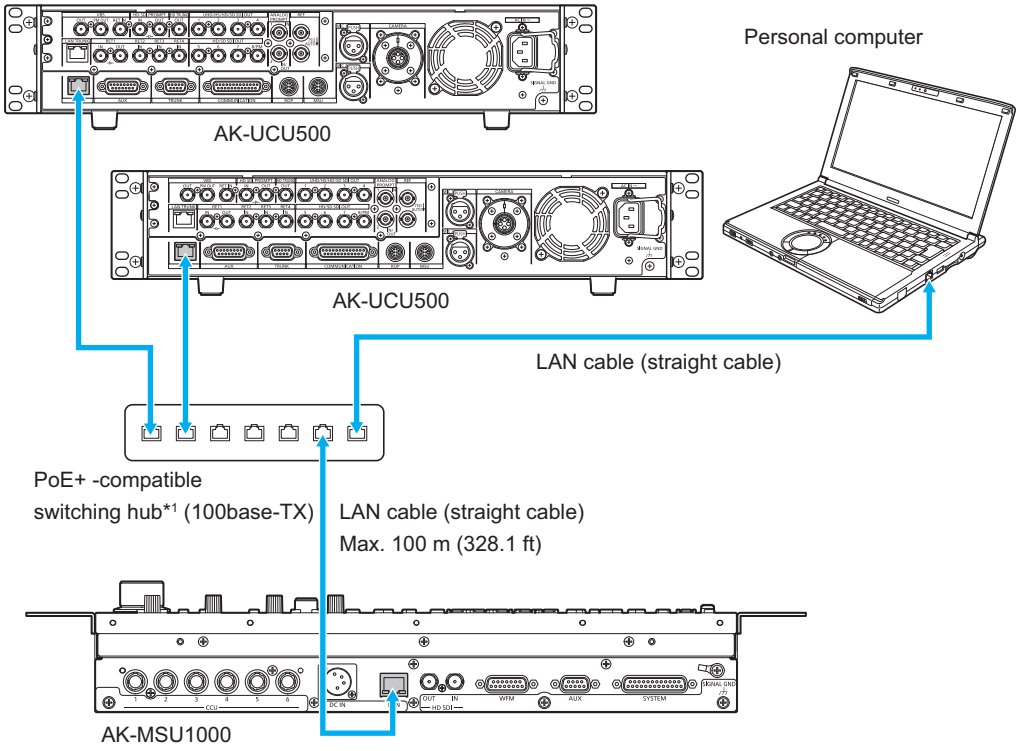
CCU connection examples

Serial connection



1. **Connect the <CCU> connector on this unit to the <MSU> connector on the CCU using a dedicated MSU cable (sold separately).**
2. **When you have finished connecting the equipment, turn on the main power of the CCU.**
   - If a camera is not connected, some of the control functions from the unit to the CCU will be limited.
   - Turn off the CCU before disconnecting the MSU cable.

IP connection example

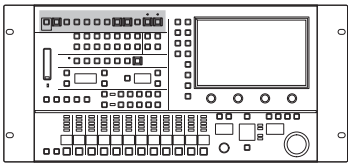


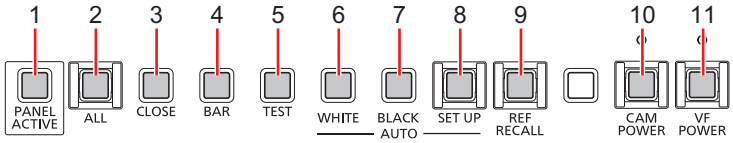
*1: The CCU does not support PoE+.

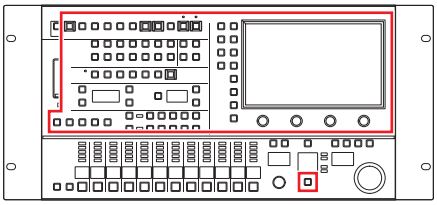
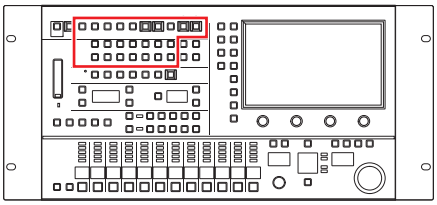
1. **Connect the <LAN> connector on this unit to the <LAN> connector on the CCU rear panel using a LAN cable (sold separately).**
   - The unit can be powered with PoE+. Use a switching hub with PoE+ support.
   - Use a straight cable (category 5e or higher) for the LAN cable*2 (Max. 100 m (328.1 ft))
     *2: STP (shielded twisted pair)
2. **When you have finished connecting the equipment, turn on the power of the CCU.**
   - If a camera is not connected, some of the control functions from the unit to the CCU will be limited.
   - Up to 99 CCUs (AK-UCU500/AK-UCU600) can be controlled from the unit.
   - To operate CCUs via an IP connection, you need to configure the [CONNECT SETTING] settings of the MSU menu or the MSU Setup Tool (supplied) settings. Before using MSU Setup Tool, connect the unit to the personal computer with a LAN cable.
     ➡ “3 CONNECT SETTING” (see page 99)
     ➡ “MSU Setup Tool” (see page 108)

Parts and their functions

Front panel 1

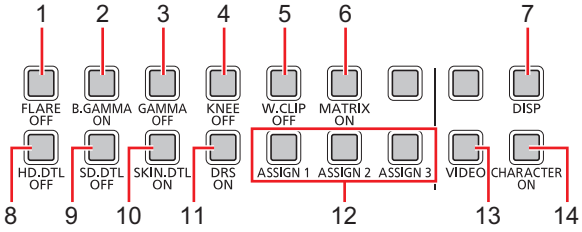


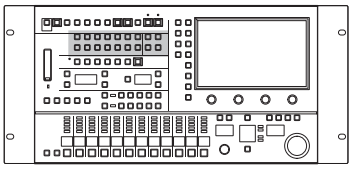


1	**[PANEL ACTIVE] button**	Use this button to lock (disable) the panel operation. When disabled, the LCD panel display will turn off. The [MASTER GAIN], and [SHUTTER] buttons at the top and bottom will also turn off. **Lock range**  **Status displays** On: Enabled Off: Disabled
2	**[ALL] button**	Use this button to enable the following button functions to control the cameras assigned to the camera selection buttons. **Affected area**  **Status displays** On: Enabled Off: Disabled
3	**[CLOSE] button**	Use this button to forcibly set the iris to CLOSE (closed). **Status displays** On: Forcibly sets the iris to CLOSE. Off: Cancels iris CLOSE.
4	**[BAR] button**	Use this button to output the CCU color bar signal from the camera video output on the CCU rear panel. To select a CCU color bar type, select [CCU] > [BARS HD] or [BARS SD] in the [SYSTEM] menu. ➔ “BARS HD” (see page 98) ➔ “BARS SD” (see page 98) **Status displays** On: CCU color bar On Off: Camera video

5	**[TEST] button**	Use this button to switch to the TEST signal when the video signal is a camera signal or a color bar signal. **Status displays** On: TEST signal On Off: Camera video
6	**[AUTO WHITE] button**	Use this button to perform auto white balance adjustment. **Status displays** On: Indicates that the auto white balance adjustment has started. Flashing: Warns that the automatic white balance adjustment ended without being completed. When highlights and lowlights are lost, white balance is returned to its previous value. When correct white balance cannot be obtained, adjustment stops at the last obtained value. Off: Indicates that the auto white balance has been adjusted correctly. ■ Press and hold the [AUTO WHITE] button during white balance adjustment (lamp on) cancels adjustment and turns the lamp off. ("BREAK" appears on the picture monitor (PM) of the CCU.) Then the white balance value returns to the value it had prior to auto white balance adjustment.
7	**[AUTO BLACK] button**	Use this button to perform auto black balance adjustment. **Status displays** On: Indicates that the auto black balance adjustment has started. Flashing: Warns that the automatic black balance adjustment ended without being completed. Auto black balance returns to the value it had prior to adjustment. Off: Indicates that the auto black balance has been adjusted correctly. ■ Press and hold the [AUTO BLACK] button during white balance adjustment (lamp on) cancels adjustment and turns the lamp off. ("BREAK" appears on the picture monitor (PM) of the CCU.) Then the black balance value returns to the value it had prior to auto black balance adjustment.
8	**[AUTO SET UP] button**	Use this button to start auto setup. The setup status is output to the picture monitor (PM). ➡ "Auto Setup" (see page 33)
9	**[REF RECALL] button**	Use this button to recall the reference setting information (reference file) for the camera. Assign the user file and factory file under [SYSTEM CAM] > [REF.CALL] of the [FUNCTION] menu. ➡ "REF.CALL" (see page 82) **Status displays** On: Recalling Off: Recall complete
10	**[CAM POWER] button/indicator**	Use this button to control camera power remotely. However, it will not function unless the CCU and the camera are turned on. Each press of the button turns the power of the camera on or off. **Status displays** On (green): The camera is turned on. On (indicator lit red): The camera is turned off. Flashing (indicator flashing red): The camera has been turned off from the unit. Off (indicator off): When the camera is not connected ■ When the camera is powered from an external DC power supply, the button lights green and the camera power supply cannot be remotely controlled from this unit.
11	**[VF POWER] button/indicator**	Use this button to control the viewfinder power remotely. When the camera is turned on by the unit, the viewfinder is also turned on. Each press of the button turns the power On (power on) and Off (power off). **Status displays** On (green): Both the camera and viewfinder are On. Off: The viewfinder has been turned off from the unit ■ On/off operation for the viewfinder cannot be performed if the power on the viewfinder is turned off.

Front panel 2

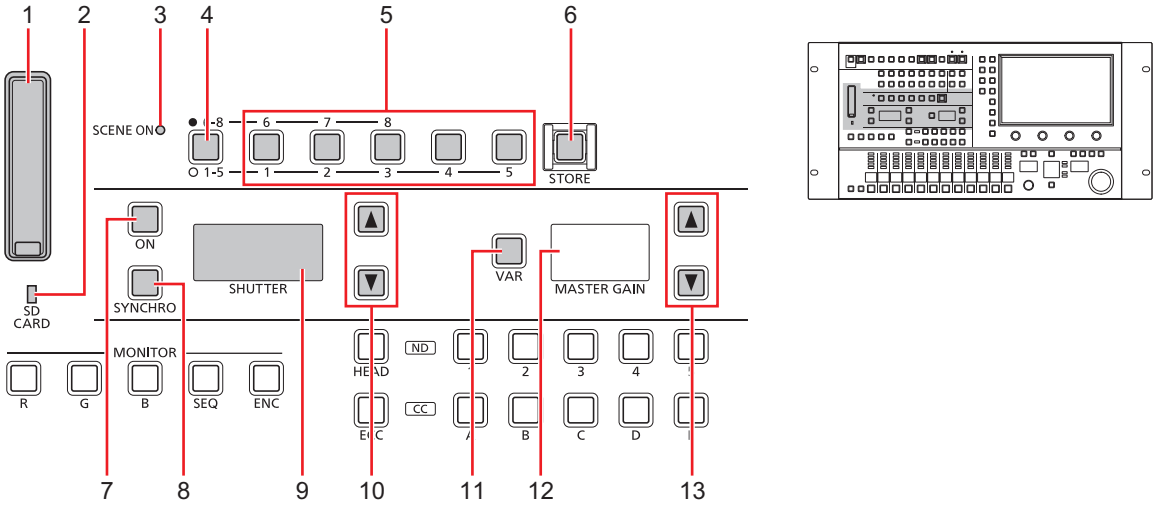




1	**[FLARE OFF] button**	Use this button to disable or enable the flare correction. **Status displays** On: OFF Off: ON
2	**[B.GAMMA ON] button**	Use this button to enable or disable the black gamma correction. **Status displays** On: ON Off: OFF • You can set whether to use the [B.GAMMA ON] button with either SDR or HDR in [MSU SETTING] > [B.GAM SW] of the [MAINTENANCE] menu. ➡ "B.GAM SW" (see page 87)
3	**[GAMMA OFF] button**	Use this button to disable or enable the gamma correction. **Status displays** On: OFF Off: ON
4	**[KNEE OFF] button**	Use this button to disable or enable the knee function. **Status displays** On: OFF Off: ON • You can set whether to use the [KNEE OFF] button with either SDR or HDR in [MSU SETTING] > [KNEE SW] of the [MAINTENANCE] menu. ➡ "KNEE SW" (see page 87)
5	**[W.CLIP OFF] button**	Use this button to disable or enable the white clip function. **Status displays** On: OFF Off: ON
6	**[MATRIX ON] button**	Use this button to enable the function to correct saturation and color phase according to the gain setting of each color component in matrix memory. **Status displays** On: ON Off: OFF
7	**[DISP] button**	Use this button to display the status information of the connected CCU and camera on the unit's <HD SDI OUT> connector. ➡ "Displaying and operating the status screen" (see page 44) **Status displays** On: Display Off: No display
8	**[HD.DTL OFF] button**	Use this button to disable or enable the HD detail effect. **Status displays** On: OFF Off: ON
9	**[SD.DTL OFF] button**	Use this button to disable or enable the SD detail effect. **Status displays** On: OFF Off: ON

10	**[SKIN DTL ON] button**	Use this button to apply coring to the detail enhancement of the skin tone areas in the video output to soften or increase the enhancement of skin tone details. **Status displays** On: ON Off: OFF
11	**[DRS ON] button**	Use this button to enable or disable the dynamic range stretcher. **Status displays** On: ON Off: OFF
12	**[ASSIGN 1], [ASSIGN 2], [ASSIGN 3] button**	Use these buttons to enable or disable the menu functions assigned to each button. **Status displays** On: ON Off: OFF ■ Set the functions assigned to each button under [MSU SETTING] > [ASSIGN1], [ASSIGN2], and [ASSIGN3] in the [MAINTENANCE] menu. ➔ "ASSIGN1" (see page 87)
13	**[VIDEO] button**	Use this button to switch the LCD panel display. The display will switch between menu display and display of the input video of the unit's <HD SDI IN> connector. **Status displays** On: Display the input video of the unit's <HD SDI IN> connector. Off: Display the menu screen.
14	**[CHARACTER ON] button**	Use this button to enable or disable status screen display on the CCU picture monitor (PM). **Status displays (button press method)** On (short press): Displays characters on the picture monitor (PM). Each short press changes the display data. Off (long press): Turns off the picture monitor (PM) character display.

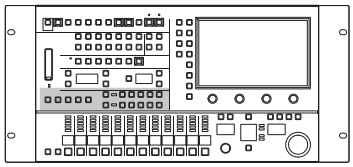
Front panel 3

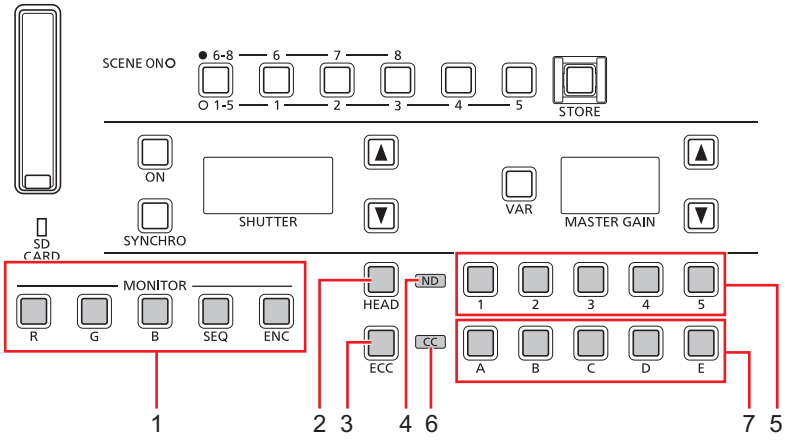


1	**Memory card slot**	Insert a memory card into this slot. You can save the settings of the unit and the scene files,user files, and other files to a memory card. ➡ "Memory cards" (see page 10)
2	**Memory card access indicator**	This indicator lights when data is read from or written to a memory card.
3	**[SCENE ON] indicator**	This indicator is lit when a scene file is selected. **Status displays** On: A scene file is selected. Off: A scene file is not selected.
4	**Scene file page switching button**	Use this button to switch between scene file pages 1 to 5 and 6 to 8. Buttons [1] to [5] and buttons [6] to [8] will light / turn off in sequence with each press of the button. **Status displays** On: Scene files [6] to [8] can be selected. Off: Scene files [1] to [5] can be selected.
5	**[1/6], [2/7], [3/8], [4], and [5] buttons (SCENE FILE)**	Use these buttons to recall the corresponding scene files as necessary. ➡ "Scene file" (see page 34) **Status displays** On: A scene file is selected. Off: A scene file is not selected.
6	**[STORE] button**	Use this button to register scene files. ➡ "Storing scene files" (see page 34) **Status displays** On: Scene files can be registered Off: During normal use
7	**[(SHUTTER) ON] button**	Turns the shutter on or off. **Status displays** On: ON Off: OFF
8	**[SYNCHRO] button**	Use this button switch between the shutter and sync shutter. **Status displays** On: Sync shutter Off: Step shutter
9	**[SHUTTER] display**	The display shows the shutter value.
10	**[SHUTTER] setting buttons**	Use the up and down buttons to select the shutter speed setting. ➡ "Shutter (SHUTTER)" (see page 39)
11	**[VAR] button**	Use this button to change the step of the [MASTER GAIN] value. **Status displays** On: Adjustment is in 0.1 dB steps. (±2.9 range) Off: Adjustment is in 1 dB steps.

12	**[MASTER GAIN] display**	This displays the combined value of the master gain (MASTER GAIN) adjustment value and the VAR value.
13	**[MASTER GAIN] setting buttons**	Use the up and down buttons to select the master gain (video input sensitivity) setting. Use these buttons for VAR adjustment when the [VAR] button is ON. ➔ “Master gain (MASTER GAIN)” (see page 38)

Front panel 4

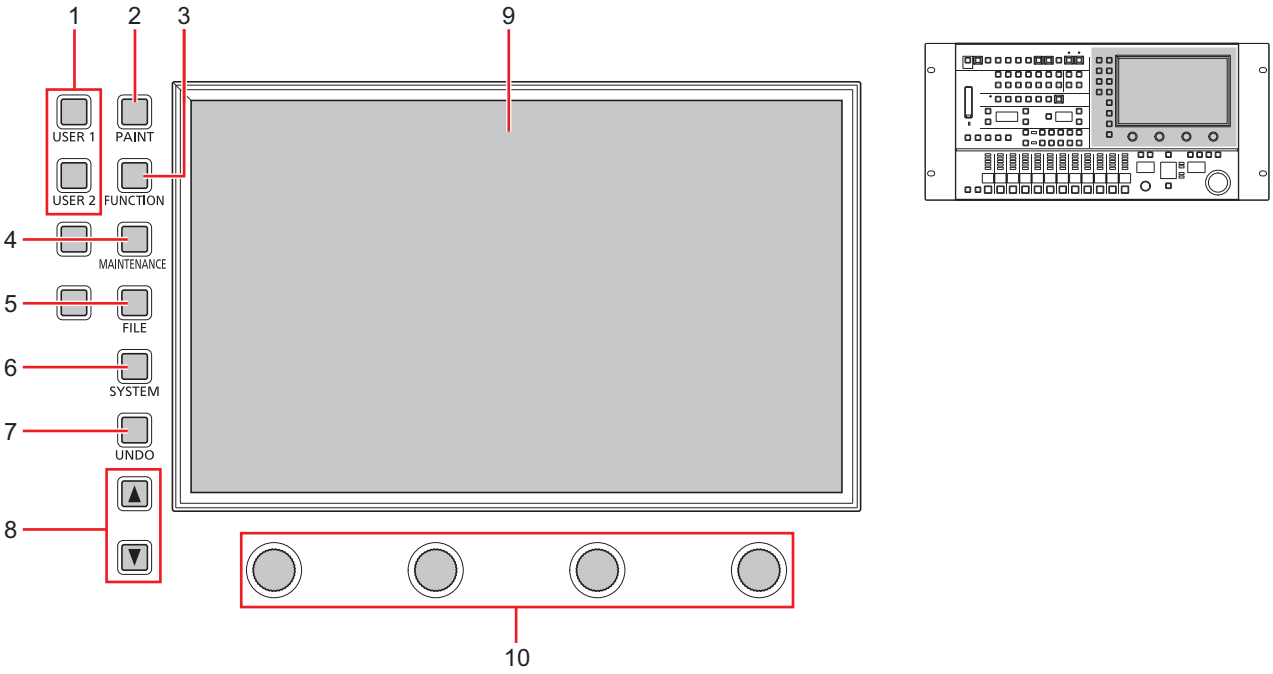




1	**[MONITOR R, G, B, SEQ, ENC] (monitor switching) buttons**	Use these buttons to switch the CCU's PM output signal according to MSU operations. ➡ "[MONITOR R, G, B, SEQ, ENC] (monitor switching) button operations" (see page 119)
2	**[HEAD] button**	Use this button to enable filter control on the camera side. The [HEAD] button also lights when the camera's [FILTER LOCAL] switch is pressed and lit. **Status displays** On: Filter control enabled on the camera side Off: Filter control enabled on the MSU (this unit) side
3	**[ECC] button**	When this button is lit, [ECC] > [TEMP SW] in the [PAINT] menu can be enabled or disabled. In addition, when this button is lit, the [A] and [B] (CC filter selection) buttons can be used for changing the [ECC] > [TEMP] setting in the [PAINT] menu. [A] button: DOWN [B] button: UP ➡ "Color temperature (ECC)" (see page 37) **Status displays** On: ECC operation ([TEMP SW] enabled) Off: CC filter operation ([TEMP SW] disabled)
4	**[ND] indicator**	This indicator indicates the ND filter setting status. **Status displays** Lit green: Standard position set in the MSU menu. Lit orange: Updated from the standard position set in the MSU menu. ■ The standard position of the ND filter can be set in [MSU SETTING] > [STD ND] in the [MAINTENANCE] menu. ➡ "STD ND" (see page 87)
5	**[1] to [5] (ND filter selection) buttons**	Use these buttons to select the ND filter. **When [HEAD] button off** Changes the ND filter setting. **When [HEAD] button lit** Only displays the ND filter position. (Switching is not possible.) ➡ "ND filter" (see page 35)
6	**[CC] indicator**	This indicator indicates the CC filter setting status. **Status displays** Lit green: Standard position set in the MSU menu. Lit orange: Updated from the standard position set in the MSU menu. ■ The standard position of the CC filter can be set in [MSU SETTING] > [STD CC] in the [MAINTENANCE] menu. ➡ "STD CC" (see page 87)

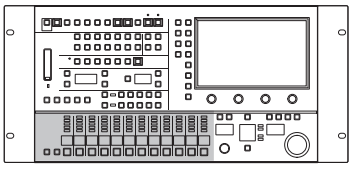
7	**[A] to [E] (CC filter selection) buttons**	Use these buttons to select the CC filter. In addition, when the [ECC] button is lit, the [A] and [B] (CC filter selection) buttons can be used for changing the [ECC] > [TEMP] setting in the [PAINT] menu. [A] button: DOWN [B] button: UP **When [HEAD] button off** Changes the CC filter setting. **When [HEAD] button lit** Only displays the CC filter position. (Switching is not possible.) ➡ "CC filter" (see page 36) **When [ECC] button lit** The [ECC] > [TEMP] value in the [PAINT] menu can be changed. ➡ "TEMP" (see page 57)

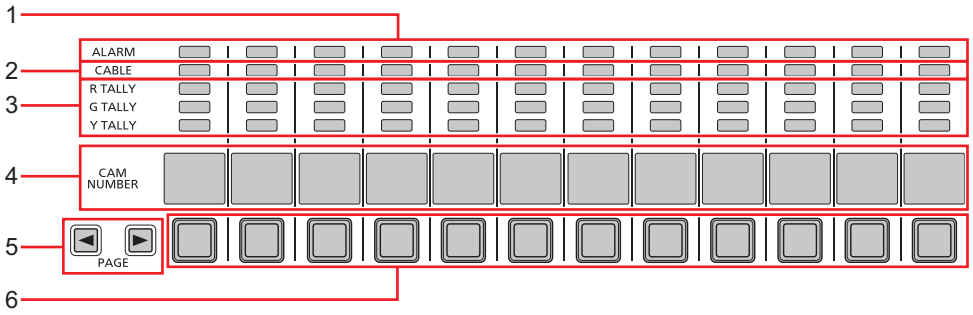
Front panel 5



1	**[USER 1, 2] button**	Use these buttons to display the functions assigned under [MSU SETTING] in the [MAINTENANCE] menu on the LCD panel. ➡ "3 MSU SETTING" (see page 85)
2	**[PAINT] button**	Use this button to display the [PAINT] menu. ➡ "PAINT" (see page 51)
3	**[FUNCTION] button**	Use this button to display the [FUNCTION] menu. ➡ "FUNCTION" (see page 81)
4	**[MAINTENANCE] button**	Use this button to display the [MAINTENANCE] menu. ➡ "MAINTENANCE" (see page 84)
5	**[FILE] button**	Use this button to display the [FILE] menu. ➡ "FILE" (see page 89)
6	**[SYSTEM] button**	Use this button to display the [SYSTEM] menu. ➡ "SYSTEM" (see page 96)
7	**[UNDO] button**	Use this button to restore the values controlled during the setting operation to the values prior to control. It is enabled when lit. The operation will be applied to the single menu item currently being controlled.
8	**Cursor movement buttons**	Use these buttons to move the cursor in the MSU menu screen one row up or down. The cursor will continue to move if you press and hold a button.
9	**LCD panel**	Displays the MSU menu and the images input to the <HD SDI IN> connector.
10	**Menu operation dials**	Use these dials to perform operations according to the menu items displayed on the LCD panel.

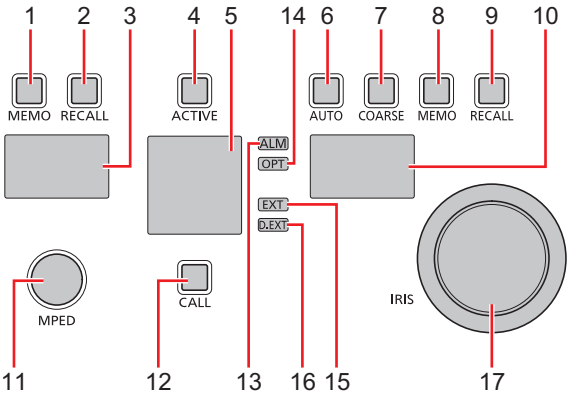
Front panel 6

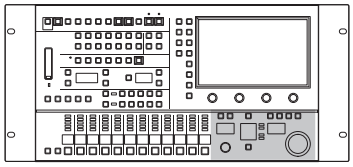


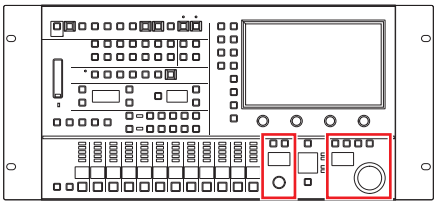


1	**[ALARM] indicators**	These are camera and CCU warning indicator lamps. Consult your dealer if a failure occurs. • These light to indicate when the camera and CCU optical reception level is not strong enough, when a data error has occurred in the CCU optical transmission/reception section, and when a fan error or temperature error has been occurred on the camera or CCU.
2	**[CABLE] indicators**	These are camera cable warning indicator lamps. These light when the camera and CCU are disconnected or when an optical transmission error occurs.
3	**[R, G, Y TALLY] indicators**	These display tally information. The top (R), middle (G), and bottom (Y) row indicators light when the red, green, and yellow tallies are turned on respectively.
4	**[CAM NUMBER] displays**	These display the camera numbers acquired from the CCUs.
5	**[PAGE] buttons**	Use these buttons to switch the camera number display in groups of 12. Long pressing the right [PAGE] button allows you to switch to specified camera number display pages directly. In such cases, the page numbers (P1, P2, etc.) will appear in the [CAM NUMBER] displays, allowing you to select a page number and display the corresponding camera numbers. (Example: Numbers 1 to 12 for P1, 13 to 24 for P2, etc.) • If the connection settings are not configured in the [CONNECT SETTING] menu, the pages will not be displayed. ("--" will be displayed.) • The LCD screen's menu display will turn off when cameras are switched.
6	**Camera selection buttons**	Use these buttons to select the cameras to be controlled by the MSU. The settings information of the selected cameras can be displayed in the LCD panel and configured. ➡ "Camera selection" (see page 43) When the [ALL] button is ON, you can select which cameras to designate for "ALL" control. The numbers for cameras being controlled will flash, while those for other cameras will be lit steadily. To remove a camera from the "ALL" designation, press the button to turn it off (i.e., unlit). **Status displays** On: Camera control is enabled. Off: Camera control is disabled.

Front panel 7

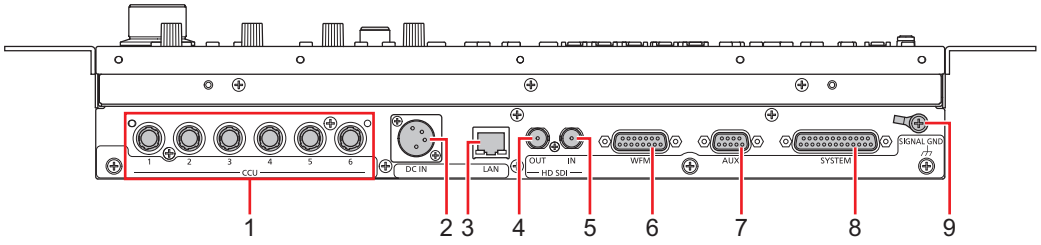




1	**[(MPED) MEMO] button**	Use this button to store the current master pedestal value. Press and hold the button to store the value.
2	**[(MPED) RECALL] button**	Use this button to recall the master pedestal value that was stored with the [(MPED) MEMO] button. ● This button does not function if a value is not stored.
3	**[MPED] display**	This display shows the master pedestal value.
4	**[ACTIVE] button**	Use this button to enable iris and master pedestal operations. **Lock range**  **Status displays** Off: IRIS and Master pedestal can be controlled. Lit red: Iris and master pedestal operations are disabled (locked).
5	**Camera number/tally display**	This display shows the camera number information and tally information.
6	**[AUTO] button**	Use this button to enable the auto iris function. For details on the auto iris function, see the following page. ➡ "Iris (IRIS)" (see page 41) **Status displays** On: Enables the auto iris function. Off: Enables manual adjustment of the iris using the [IRIS] dial.
7	**[COARSE] button**	Use this button to change the variable range of the iris in relation to the movement of of the [IRIS] dial. **Dial operation** On: Increase the change in the iris when the [IRIS] dial is moved. Off: Decrease the change in the iris when the [IRIS] dial is moved.
8	**[(IRIS) MEMO] button**	Use this button to store the current iris value. Press and hold the button to store the value.
9	**[(IRIS) RECALL] button**	Use this button to recall the iris value that was stored with the [(IRIS) MEMO] button. ● This button does not function if a value is not stored.
10	**[IRIS] display**	This display shows the current iris setting.
11	**[MPED] dial**	Use this dial to adjust the master pedestal level. Turn it right (clockwise) to increase the master pedestal. For details on adjusting the master pedestal, see the following page. ➡ "Master pedestal (MPED)" (see page 40)

12	**[CALL] button**	Press this button to call the camera operator. The call switch on the camera and CCU is lit while this button is pressed. Also, when the call switch is pressed on the camera or CCU, this switch lights and a buzzer sound is output. **Status displays** On: Indicates that the call switch on the camera or CCU is pressed. Off: Indicates that the call switch on the camera or CCU is not pressed.
13	**[ALM] indicator**	This is the camera and CCU warning indicator lamp. Consult your dealer if a failure occurs. ● The indicator lights red to indicate when the camera and CCU optical reception level is not strong enough, when a data error has occurred in the CCU optical transmission/reception section, and when a fan error or temperature error has been occurred on the camera or CCU.
14	**[OPT] indicator**	This is the camera cable warning indicator lamp. **Status displays** Flashing green: Warns that an optical transmission error has occurred. Lit red: Indicates that the camera is not connected to the CCU. Off: The camera cable is connected normally.
15	**[EXT] indicator**	This indicator lights to warn that the lens extender is set to something other than 1x. **Status displays** On: The lens extender is set to something other than 1x. Off: This indicates that the lens extender is not being used or that it is not available.
16	**[D.EXT] indicator**	This indicator lights to warn that the digital extender is set to something other than 1x. **Status displays** On: The digital extender is set to something other than 1x. Off: This indicates that the digital extender is not being used or that it is not available.
17	**[IRIS] dial**	The iris can be adjusted manually. For details on adjusting the iris, see the following page. ➡ "Iris (IRIS)" (see page 41) **Dial operation** Turn right (clockwise): Adjusts in the OPEN direction. Turn left (counterclockwise): Adjusts in the CLOSE direction.

Connectors



1	**<CCU (1 to 6)> connectors**	This connector is for serial connections to the CCU.
2	**<DC IN> connector**	This is an input connector for external DC power supply. Connect this to an external DC power supply. (10 V - 16 V DC)
3	**<LAN> connector**	Control the unit using IP control from an external device via this LAN connector (RJ45). Use the following cables for the connection. • When using a PoE+ Ethernet hub: LAN cable*1 (category 5e or higher, straight cable, up to 100 m (328.1 ft)) • When not using a PoE+ Ethernet hub: LAN cable*1 (category 5 or higher, straight cable, up to 100 m (328.1 ft))
4	**<HD SDI OUT> connector**	This connector outputs HD SDI signals.
5	**<HD SDI IN> connector**	This connector inputs HD SDI signals.
6	**<WFM> connector**	This connector is linked to the [MONITOR R, G, B, SEQ, ENC] (monitor switching) buttons and outputs the corresponding signals. LOW is output to the selected pin.
7	**<AUX> connector**	This connector is intended for future use.
8	**<SYSTEM> connector**	This is the interface connector for the VE function. When the external selection signal is input, the camera selection switch lights and becomes operable.
9	**<SIGNAL GND> terminal**	Connect this to the system ground.

*1: STP (shielded twisted pair) cable recommended.

About the <DC IN> connector

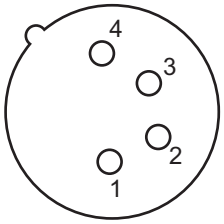
■ External DC power supplies

Verify that the external DC power supply complies with the unit's rated voltage before connecting it.
Use an external power supply whose output current is sufficiently higher than total current of all the connected devices.
You can calculate the total current of the connected devices using the following formula.
total power consumption ÷ voltage
An inrush current is generated when the unit is turned on. Insufficient power supply capacity when the unit is turned on may result in malfunctions.
We recommend using an external power supply that can ensure provision of power that is twice the total power consumption of the unit.
In addition, be sure to use a DC power cord that meets the requirements of your DC power supply.

- Check the pin arrays of the external DC power supply's DC output connector and the unit's <DC IN> connector, and be sure to connect with the correct polarities.
  Accidentally connecting a +12 V power supply to the GND terminal may result in fire or malfunction.

(Hirose Electric: HA16RA-4P (77))

Accepts DC 12 V inputs from an external power supply. The input voltage range is DC 10 V to 16 V.



Pin No.	Function
1	GND
2	NC
3	NC
4	+12 V

Adjustment and settings

Auto Setup

Starting auto setup

Before starting auto setup

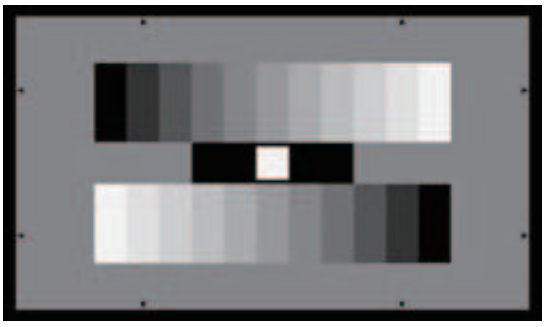
Choose [SYSTEM CAM] > [ASU MODE] in the [FUNCTION] menu to select "FULL" or "EASY" mode.

“ASU MODE” (see page 81)

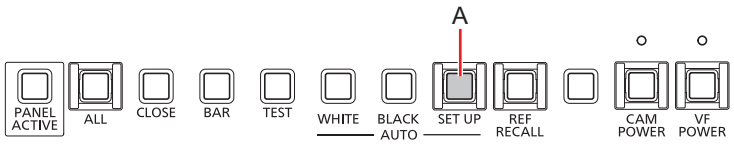
FULL	Standard setup based on an outdoor shooting chart
EASY	Easy setup based on an outdoor shooting chart

Align the position of the gray scale wedge with the angle of view in the vertical direction of the viewfinder. Be sure to correctly select the position from which you shoot the chart since some positions may not enable a satisfactory auto setup.

- **Recommended gray scale**



Starting auto setup



A. [AUTO SET UP] button

Operating procedure

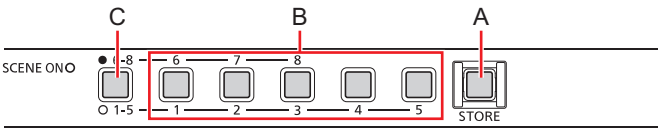
1. **Press the [AUTO SET UP] button (A).**
   The [AUTO SET UP] button flashes while the auto setup start preparation mode is established, and a square marker appears in the center of the camera viewfinder. Align the white at the center of the gray scale with this square marker. (To cancel setup, press and hold this button.)
2. **Press the [AUTO SET UP] button again (A).**
   The [AUTO SET UP] button lights as auto setup starts. (Holding down the [AUTO SET UP] button during the auto setup operation will abort auto setup.)
   The [AUTO SET UP] button goes off when auto setup ends successfully.
   - If the [AUTO SET UP] button flashes at approximately 1-second intervals, auto setup has ended without being completed. During the auto setup operation, the picture monitor (PM) displays characters to indicate operation status.
   - If auto setup is not completed, check the message on the picture monitor (PM) on the CCU.

Scene file

Storing and opening scene files

Storing scene files

You can register the data currently being operated as a scene file.



A. [STORE] button
B. [1/6] / [2/7] / [3/8] / [4] / [5] buttons
C. Scene file page switching button

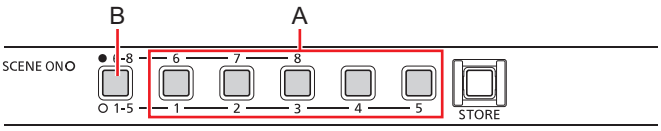
Operating procedure

1. **Press the [STORE] button (A).**
   The button lights.
2. **Press the desired scene number button (B).**
   The scene file page can be switched between [1] to [5] and [6] to [8] with the scene file page switching button (C).
   When a button is pressed, the scene file storage starts.
   The [STORE] button (A) turns off when storage ends.

NOTE

- If adjustments are made after opening a scene file and then the store operation is performed, the state at that point in time is stored in the scene file.

Opening a scene file



A. [1/6] / [2/7] / [3/8] / [4] / [5] buttons
B. Scene file page switching button

Operating procedure

1. **Press the desired scene number button (A).**
   The scene file page can be switched between [1] to [5] and [6] to [8] with the scene file page switching button (B).
   The pressed button lights and the scene file opens.
   To cancel opening of a scene file, press the button that is currently lit to turn it off.
   - The setting information that was temporarily saved before the scene file was opened is now restored, and the setting state prior to opening the scene file is also restored.
   - If another number button is pressed, the scene file registered to the pressed button is newly opened.

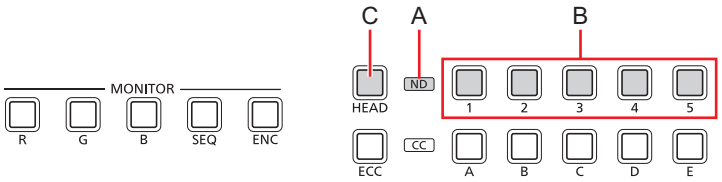
ND filter

Displaying and setting the ND filter

The adjustment value of the ND filter is displayed on the LCD panel.

When the setting value is changed from the standard position set under [MSU SETTING] > [STD ND] in the [MAINTENANCE] menu, the [ND] indicator (A) lights orange. (The standard position remains set while the indicator is green lit.)

“STD ND” (see page 87)



A. [ND] indicator
B. [1] to [5] (ND filter selection) buttons
C. [HEAD] button

Operating procedure

1. **Press the [1] to [5] (ND filter selection) buttons (B).**
   This allows you to change the ND filter setting value.
   - The setting cannot be changed while the [HEAD] button (C) is lit. Only position display is performed. (The [HEAD] button also lights when operating from the camera.)

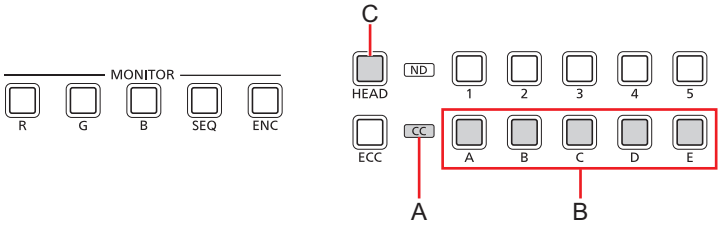
CC filter

Displaying and setting the CC filter

The adjustment value of the CC filter is displayed on the LCD panel.

When the setting value is changed from the standard position set under [MSU SETTING] > [STD CC] in the [MAINTENANCE] menu, the [CC] indicator (A) lights orange. (The standard position remains set while the indicator is green lit.)

“STD CC” (see page 87)



A. [CC] indicator
B. [A] to [E] (CC filter selection) buttons
C. [HEAD] button

Operating procedure

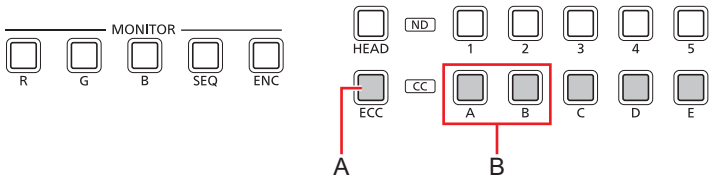
1. **Press the [A] to [E] (CC filter selection) buttons (B).**
   This allows you to change the CC filter setting value.
   - The setting cannot be changed while the [HEAD] button (C) is lit. Only position display is performed. (The [HEAD] button also lights when operating from the camera.)

Color temperature (ECC)

Setting the color temperature (ECC)

When the [ECC] button (A) is ON, you can select and change the color temperature under [ECC] > [TEMP] in the [PAINT] menu. You can verify the adjustment value on the status screen.

➔ “TEMP” (see page 57)



A. [ECC] button
B. [A], [B] (CC filter selection) buttons

Operating procedure

1. **Press the [ECC] button (A) to light the button.**
   - The mode is color temperature (ECC) while the [ECC] button is lit. When the [ECC] button is lit, the ECC function is enabled. (The function is disabled when the button is unlit.)
2. **Press the [A], [B] (CC filter selection) buttons (B).**
   This allows you to change the color temperature setting value.
   [A] button: DOWN
   [B] button: UP

Master gain (MASTER GAIN)

Displaying and setting the master gain (MASTER GAIN)

The adjustment value of the master gain (MASTER GAIN) is displayed on the [MASTER GAIN] display (A).

A. [MASTER GAIN] display
B. [MASTER GAIN] setting buttons
C. [VAR] button

Operating procedure

1. **Press the [MASTER GAIN] setting buttons (B)**
   This allows you to change the master gain setting value.
   - When the [VAR] button (C) is pressed to turn on the button, the master gain can make fine adjustments. (Range of ±2.9 in 0.1 dB steps)

Shutter (SHUTTER)

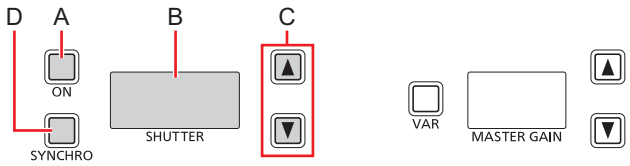
Displaying and setting the shutter (SHUTTER)

You can turn the shutter on or off by pressing the [(SHUTTER) ON] button (A). (The shutter is turned on when the button is lit.)

The shutter value is displayed in the [SHUTTER] display (B) and can be adjusted using the [SHUTTER] setting buttons (C).

Step shutter adjustment is enabled when the [SYNCHRO] button (D) is not lit, and sync shutter adjustment is enabled when the button is lit. Turn the [SYNCHRO] button (D) on or off (lit or not lit) to switch between step and sync shutter.

The current setting value is displayed in the [SHUTTER] display (B).



A. [(SHUTTER) ON] button
B. [SHUTTER] display
C. [SHUTTER] setting buttons
D. [SYNCHRO] button

Operating procedure

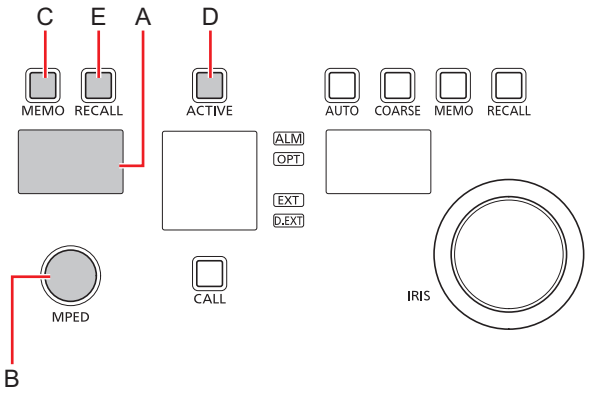
1. **Press the [(SHUTTER) ON] button (A) to turn on the button.**
   The shutter is enabled.
   To adjust the sync shutter, press the [SYNCHRO] button (D) to turn on the button.
2. **Press the [SHUTTER] setting buttons (C)**
   This allows you to change the shutter value.
   The shutter value can be adjusted even when the shutter is turned off. However, the value will not be applied until the shutter is turned on.
3. **Press the [(SHUTTER) ON] button (A) to turn off the button.**
   The shutter is disabled.

Master pedestal (MPED)

Displaying and setting the master pedestal (MPED)

The master pedestal (MPED) setting is displayed on the [MPED] display (A).

- Adjustment is possible while the [ACTIVE] button (D) is on.



A. [MPED] display
B. [MPED] dial
C. [(MPED) MEMO] button
D. [ACTIVE] button
E. [(MPED) RECALL] button

Operating procedure

1. **Turn the [MPED] dial (B).**
   The setting value is displayed on the [MPED] display (A).
2. **Press and hold the [(MPED) MEMO] button (C) for at least 1 second.**
   - The adjusted value is stored.
   - When you press the [(MPED) RECALL] button (E), the stored value is recalled.
   - The master pedestal and the R, G, and B pedestal can be adjusted independently. Changing the master pedestal setting does not change the R, G, and B pedestal settings values.

Iris (IRIS)

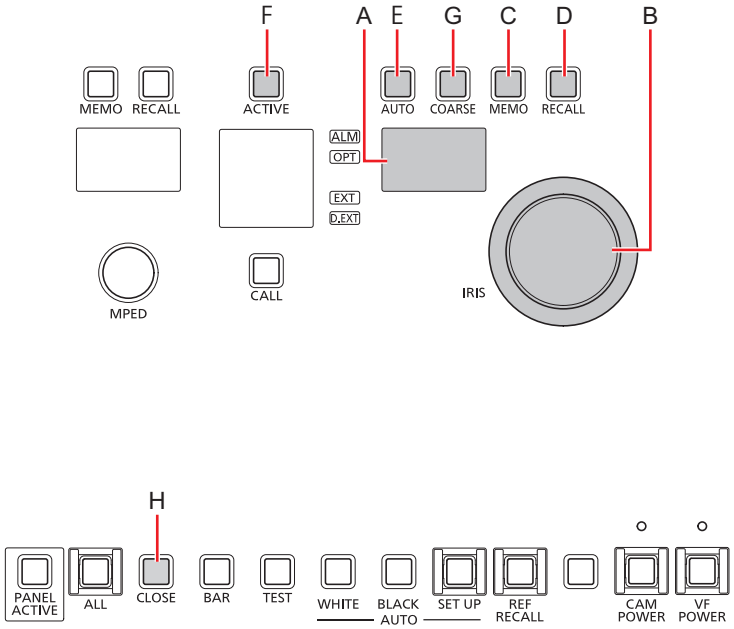
Displaying and setting the iris (IRIS)

Manual adjustment

The iris can be adjusted manually.

The iris value is displayed on the [IRIS] display (A).

- Adjustment is possible while the [AUTO] button (E) is off (AUTO is canceled).
- Adjustment is possible while the [ACTIVE] button (F) is on.
- Adjustment is possible while the [CLOSE] button (H) is off (iris force CLOSE is canceled).



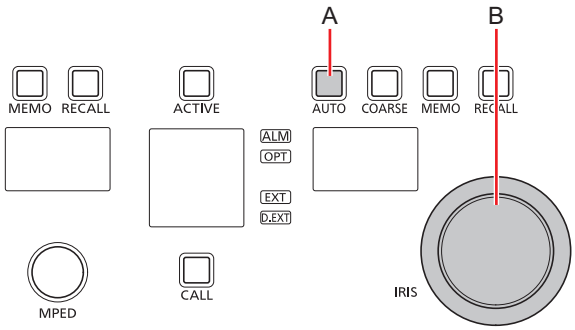
A. [IRIS] display
B. [IRIS] dial
C. [(IRIS) MEMO] button
D. [(IRIS) RECALL] button
E. [AUTO] button
F. [ACTIVE] button
G. [COARSE] button
H. [CLOSE] button

Operating procedure

1. **Adjust the iris level with the [IRIS] dial (B).**
   Turning to the left (counterclockwise) adjusts in the CLOSE direction, and turning to the right (clockwise) adjusts in the OPEN direction.
   - You can change the variable range for the iris by pressing the [COARSE] button (G).
     ➡ "[COARSE] button" (see page 30)
2. **Press and hold the [(IRIS) MEMO] button (C) for at least 1 second.**
   The adjusted value is stored.
   When you press the [(IRIS) RECALL] button (D), the stored value is recalled.

Automatic adjustment

Adjust the iris automatically. (Auto iris)



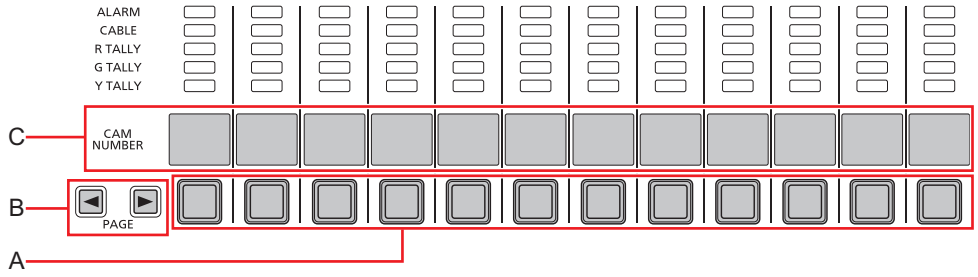
A. [AUTO] button
B. [IRIS] dial

Operating procedure

1. **Press the [AUTO] button (A) to turn on the button.**
   The auto iris turns on.
   - When the auto iris is on, the convergence level of the iris can be adjusted with the [IRIS] dial (B). Turning to the left (counterclockwise) adjusts in the CLOSE direction, and turning to the right (clockwise) adjusts in the OPEN direction.

Camera selection

Select the camera to be the target for control with the unit.



A. Camera selection button
B. [PAGE] button
C. [CAM NUMBER] display

Operating procedure

1. Press the camera selection button (A).

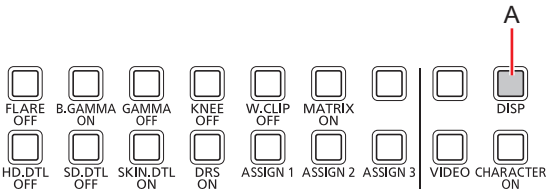
The number of the currently selected camera appears in the [CAM NUMBER] display (C).

- You can switch the camera number display pages by pressing the [PAGE] buttons (B).
  (12 cameras are assigned to each page.)
- Pressing and holding the right [PAGE] button allows you to switch the camera number display pages directly.
  The page numbers (P1, P2, etc.) are displayed in the [CAM NUMBER] displays. Select the page number to which you want to switch. The corresponding camera numbers appear.
  (Example: 1 to 12 appear for P1, 13 to 24 appear for P2.)
  However, if the connection settings are not configured in the [CONNECT SETTING] menu, the pages will not be displayed. ("--" will be displayed.)
  The LCD screen's menu display will turn off when cameras are switched.
- When the unit is first started up, all the cameras are unselected.

Status screen

Displaying and operating the status screen

You can output status information for the camera and CCU from the <HD SDI OUT> connector.

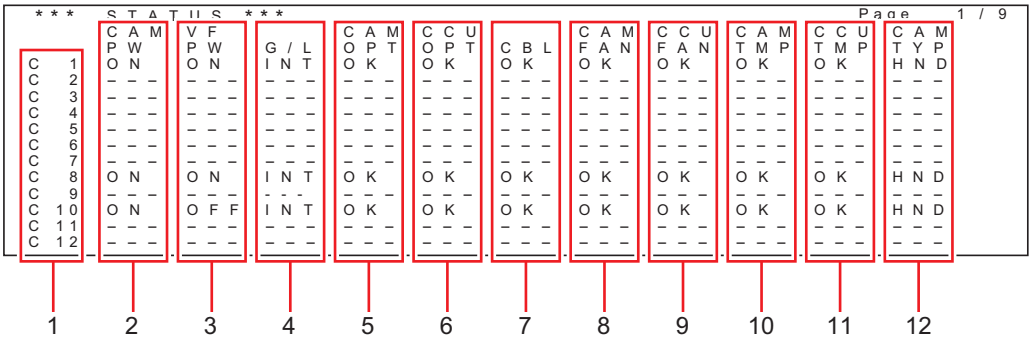


A. [DISP] button

Operating procedure

1. Press the [DISP] button (A)

Status screen appears on the picture monitor (PM) of the CCU.
The status screen page switches with each press.
To cancel the display, press and hold the [DISP] button (A).



1	**Camera number display**	Displays 12 camera numbers on a single screen. • The camera numbers are the numbers assigned by the CCU.
2	**CAM PW**	Displays the power supply status of the camera. ON: Power on OFF: Power off
3	**VF PW**	Displays the power supply status of the viewfinder. ON: Power on OFF: Power off
4	**G/L**	Displays the status of the genlock controlled by the CCU. INT: Internal lock enabled EXT: External lock enabled NG: Unlocked
5	**CAM OPT**	Displays the optical level status of the camera. Level 5: OK Level 4 to 3: WAR Level 2 to 1: NG
6	**CCU OPT**	Displays the optical level status of the CCU. Level 5: OK Level 4 to 3: WAR Level 2 to 1: NG
7	**CBL**	Displays the status of the optical cable controlled by the CCU. OK: Normal connection OPEN: Camera is not connected to CCU. SHT: Cable is shorted.
8	**CAM FAN**	Displays the fan status of the camera. OK: Normal NG: Error (e.g., fan stopped)
9	**CCU FAN**	Displays the fan status of the CCU. OK: Normal NG: Error (e.g., fan stopped)

10	**CAM TMP**	Displays the temperature status of the camera. OK: Normal NG: Error (e.g., temperature error)
11	**CCU TMP**	Displays the temperature status of the CCU. OK: Normal NG: Error (e.g., temperature error)
12	**CAM TYP**	Displays the camera type. STD: STDIO HND: HANDY B/U: BUILDUP CRN: CRANE

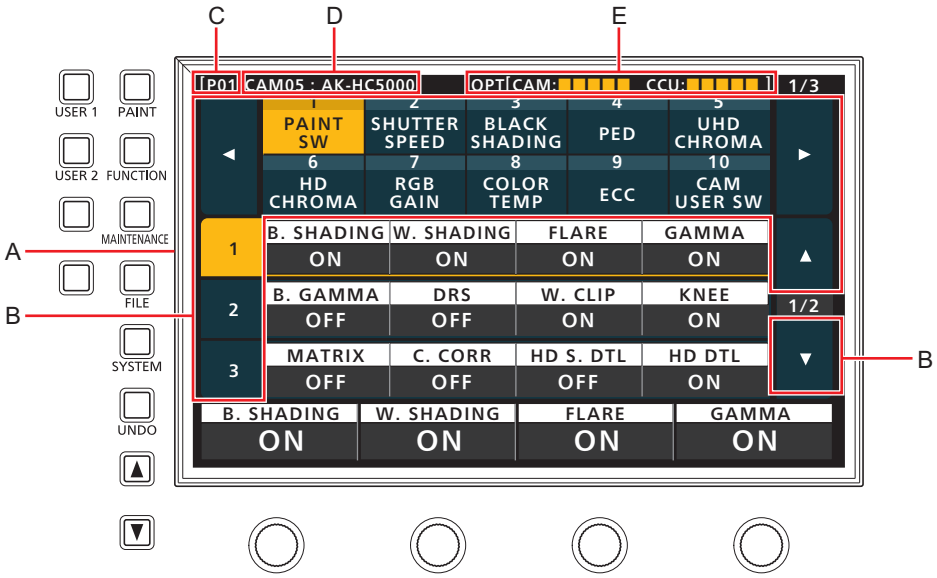
MSU menu

Displaying menus and the menu configuration

The LCD panel of the unit can be used to operate the MSU menu (MASTER SETUP UNIT MENU).

Follow the procedure below to display the MSU menu. The MSU menu is displayed on the LCD panel (A) of the unit.

- Touch panel operations can be performed within the touch operation areas (B).



A. LCD panel
B. Touch operation areas
C. Page number selected in the [CAM NUMBER] display
D. Number and name of currently selected camera
E. Optical level of currently selected camera

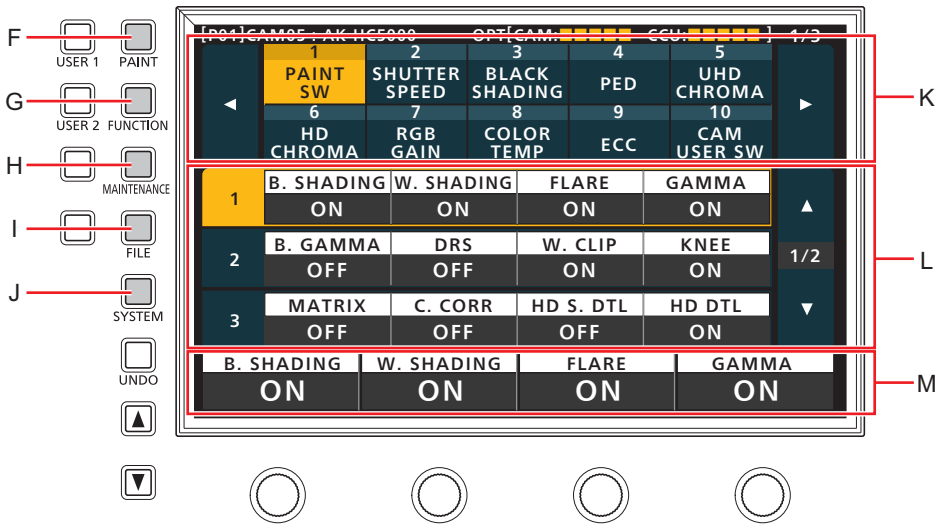
Operating procedure

1. Press the [PAINT] (F), [FUNCTION] (G), [MAINTENANCE] (H), [FILE] (I), or [SYSTEM] (J) button to select the menu group.

The corresponding group appears on the LCD panel (A). (This section describes the [PAINT] group as an example.)

- Pressing a selected button again will turn the menu display off.

➔ “Menu groups” (see page 50)

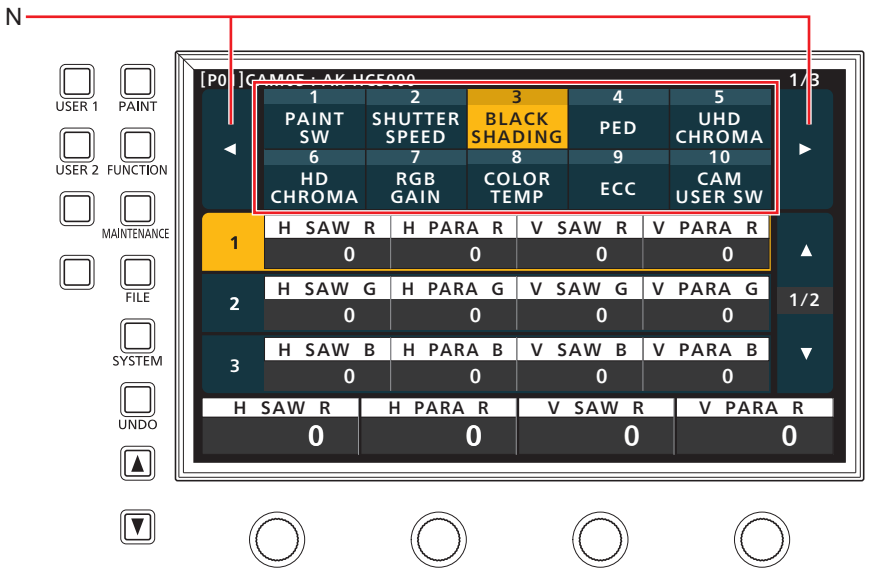


F. [PAINT] button
G. [FUNCTION] button
H. [MAINTENANCE] button
I. [FILE] button
J. [SYSTEM] button
K. Top section of screen
When you press the [PAINT], [FUNCTION], [MAINTENANCE], [FILE], [SYSTEM], [USER1] or [USER2] button, the corresponding menu appears.
L. Middle section of screen
Displays the setting items for the menu selected in the top section of the screen.
M. Bottom section of screen
Displays the setting items for the row selected with the cursor in the middle section of the screen.

2. Touch the screen to select the menu you want to configure.

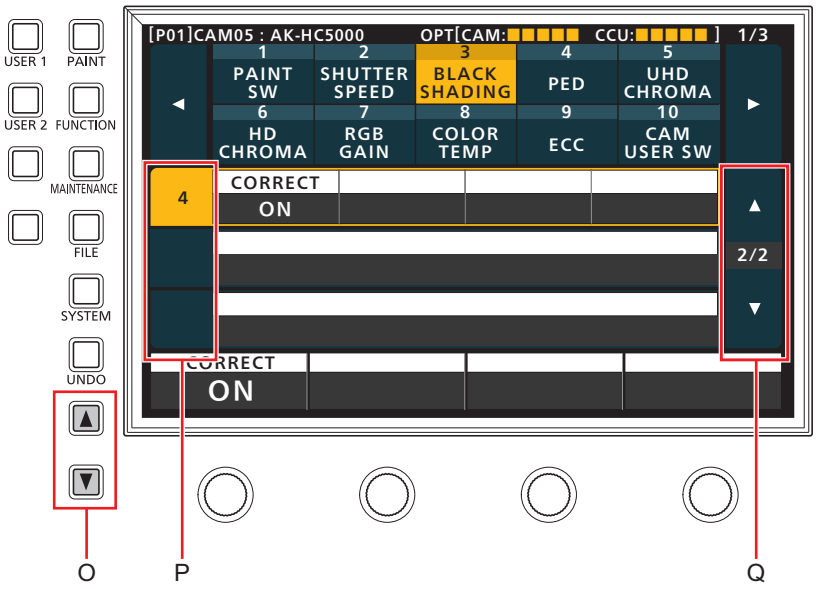
Select the target menu from the top section of the screen. (This section describes the [BLACK SHADING] as an example.)
The setting items appear in the middle section of the screen.

- You can switch the setting menu pages using the page switching buttons (left and right) (N).



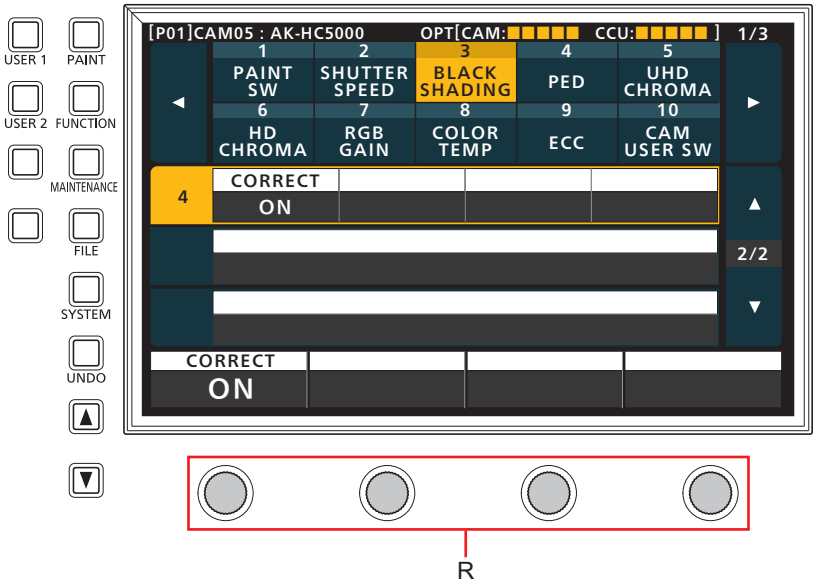
N. Page switching buttons (left and right)

3. **Select the item you want to configure in the middle section of the screen using the cursor movement buttons (O).**
   - You can also touch the row number (P) to select the items.
   - You can switch the setting item pages using the page switching buttons (up and down) (Q).



O. Cursor movement buttons
P. Row numbers
Q. Page switching buttons (up and down)

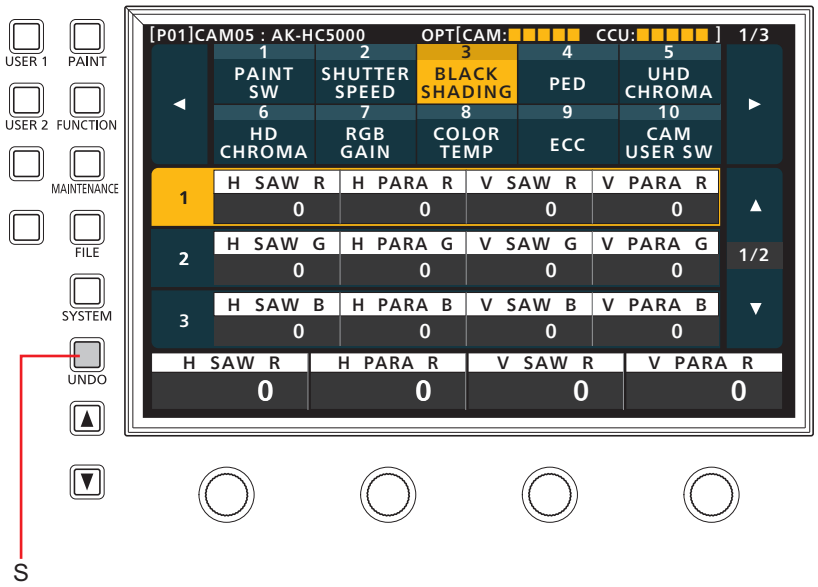
4. **Use the menu operation dial (R) to change the setting value.**
   Turn the dial at the same position as each item in the screen.



R. Menu operation dials

Other menu operations

Restoring the original setting values



S. [UNDO] button

Operating procedure

1. **Press the [UNDO] button (S).**
   Use this button to restore the values controlled during the setting operation to the values prior to control.
   - This operation is available when the [UNDO] button is lit.
   - The operation will be applied to the single menu item row currently being controlled.

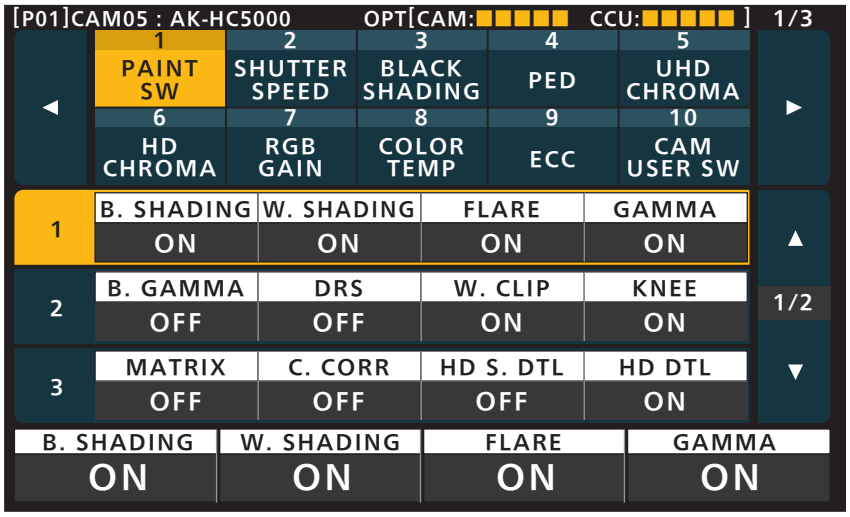
Menu groups

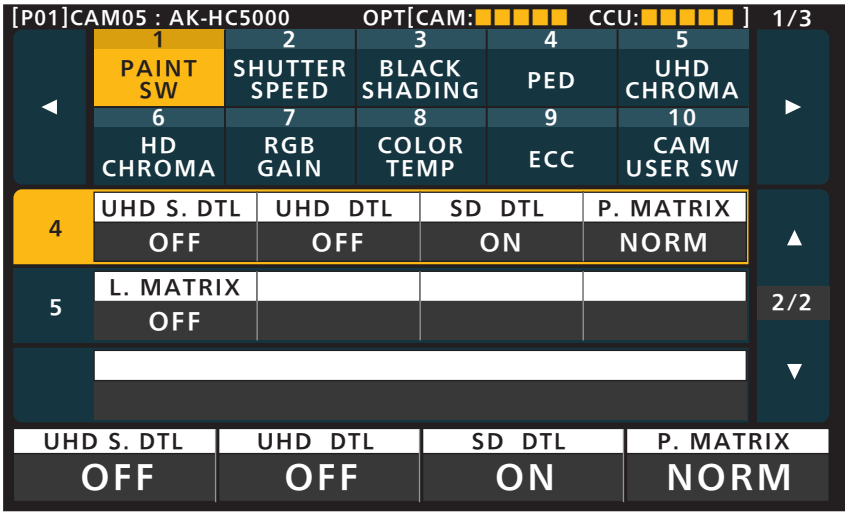
PAINT	1 PAINT SW	➔ “1 PAINT SW” (see page 51)
	2 SHUTTER SPEED	➔ “2 SHUTTER SPEED” (see page 53)
	3 BLACK SHADING	➔ “3 BLACK SHADING” (see page 54)
	4 PED	➔ “4 PED” (see page 55)
	5 UHD CHROMA	➔ “5 UHD CHROMA” (see page 56)
	6 HD CHROMA	➔ “6 HD CHROMA” (see page 56)
	7 RGB GAIN	➔ “7 RGB GAIN” (see page 57)
	8 COLOR TEMP	➔ “8 COLOR TEMP” (see page 57)
	9 ECC	➔ “9 ECC” (see page 58)
	10 CAM USER SW	➔ “10 CAM USER SW” (see page 59)
	11 WHITE SHADING	➔ “11 WHITE SHADING” (see page 60)
	12 FLARE	➔ “12 FLARE” (see page 61)
	13 GAMMA	➔ “13 GAMMA” (see page 62)
	14 BLACK GAMMA	➔ “14 BLACK GAMMA” (see page 63)
	15 KNEE	➔ “15 KNEE” (see page 63)
	16 WHITE CLIP	➔ “16 WHITE CLIP” (see page 64)
	17 DRS	➔ “17 DRS” (see page 64)
	18 UHD DTL	➔ “18 UHD DTL” (see page 65)
	19 HD DTL	➔ “19 HD DTL” (see page 67)
	20 SD DTL	➔ “20 SD DTL” (see page 69)
	21 UHD SKIN	➔ “21 UHD SKIN” (see page 70)
	22 HD SKIN	➔ “22 HD SKIN” (see page 72)
	23 LINEAR MATRIX	➔ “23 LINEAR MATRIX” (see page 74)
	24 COLOR CORRE	➔ “24 COLOR CORRE” (see page 75)
	25 SKIN CORRE	➔ “25 SKIN CORRE” (see page 77)
	26 DNR	➔ “26 DNR” (see page 77)
	27 SHUTTER SELECT	➔ “27 SHUTTER SELECT” (see page 78)
	28 HDR-PAINT	➔ “28 HDR-PAINT” (see page 79)
FUNCTION	1 SYSTEM CAM	➔ “1 SYSTEM CAM” (see page 81)
	2 AUTO IRIS	➔ “2 AUTO IRIS” (see page 83)
MAINTENANCE	1 CCU MENU	➔ “1 CCU MENU” (see page 84)
	2 CAMERA MENU	➔ “2 CAMERA MENU” (see page 84)
	3 MSU SETTING	➔ “3 MSU SETTING” (see page 85)
FILE	1 LENS.F EDIT	➔ “1 LENS.F EDIT” (see page 89)
	2 SD CARD STORE	➔ “2 SD CARD STORE” (see page 92)
	3 SD CARD LOAD	➔ “3 SD CARD LOAD” (see page 93)
	4 REF. STORE	➔ “4 REF. STORE” (see page 95)
	5 REF. ALL STORE	➔ “5 REF. ALL STORE” (see page 95)
SYSTEM	1 CAMERA	➔ “1 CAMERA” (see page 96)
	2 CCU	➔ “2 CCU” (see page 97)
	3 CONNECT SETTING	➔ “3 CONNECT SETTING” (see page 99)
	4 CAM IP SETTING	➔ “4 CAM IP SETTING” (see page 101)
	5 MSU IP SETTING	➔ “5 MSU IP SETTING” (see page 102)

PAINT

1 PAINT SW

The setting values will vary depending on the connected camera.

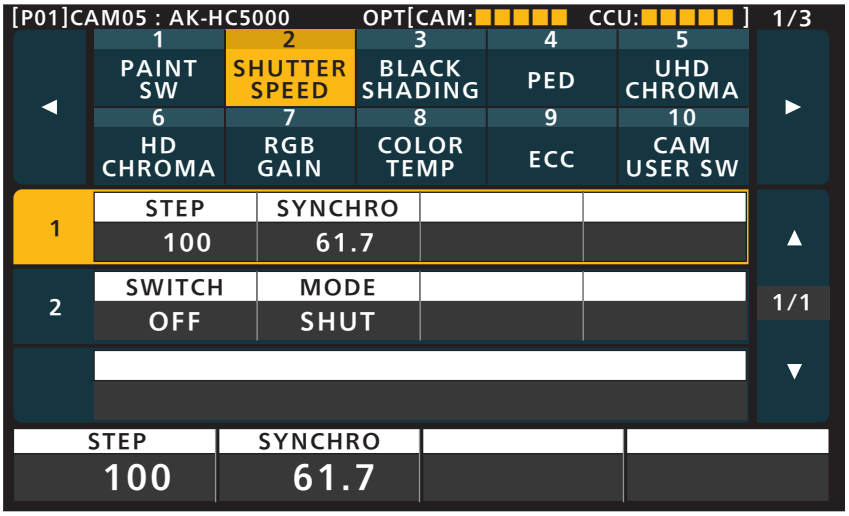




Item	Setting details
B.SHADING	Enables or disables black shading (sawtooth waveform or parabolic waveform).
W.SHADING	Enables or disables white shading (sawtooth waveform or parabolic waveform).
FLARE	Enables or disables the flare.
GAMMA	Enables or disables the gamma.
B.GAMMA	Enables or disables the black gamma.
DRS	Enables or disables the dynamic range stretcher function. When this is enabled, contrast is adjusted automatically.
W.CLIP	Enables or disables the white clip function.
KNEE	Enables or disables the knee.
MATRIX	Enables or disables the matrix (linear matrix / 12-axis color correction).
C.CORR	Enables or disables 12-axis color correction.
HD S.DTL	Enables or disables the HD skin tone detail.
HD DTL	Enables or disables the HD detail.
UHD S.DTL	Enables or disables the UHD skin tone detail.
UHD DTL	Enables or disables the UHD detail.
SD DTL	Enables or disables the SD detail.
P.MATRIX	Sets the preset matrix.
L.MATRIX	Enables or disables the linear matrix.

2 SHUTTER SPEED

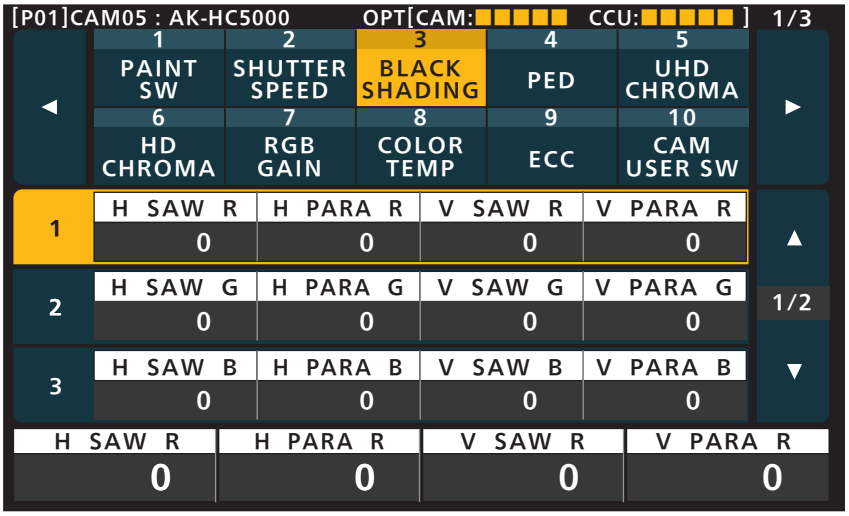
The setting values will vary depending on the connected camera.

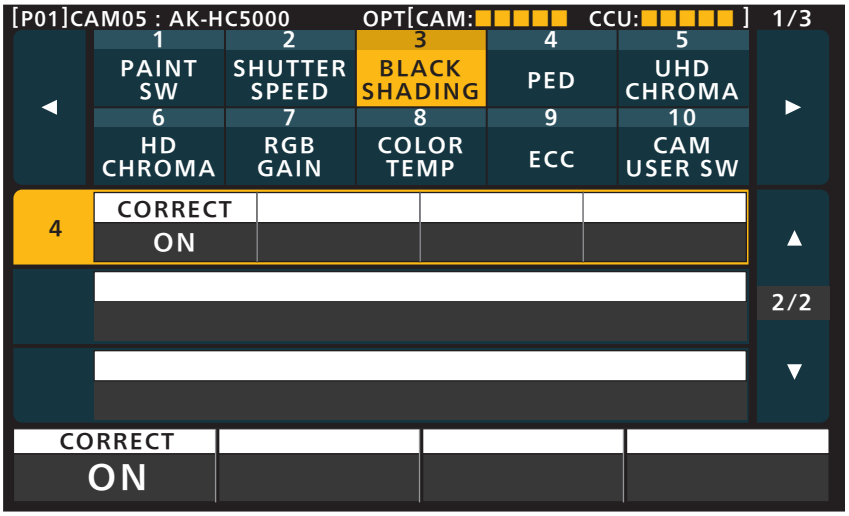


Item	Setting details
STEP	Sets the shutter speed for when [MODE] is set to "SHUT".
SYNCHRO	Sets the shutter speed for when [MODE] is set to "SYNC".
SWITCH	Enables or disables the shutter function.
MODE	Selects the shutter operation mode. **SHUT** The shutter speed set in [STEP] is used. **SYNC** The shutter speed set in [SYNCHRO] is used.

3 BLACK SHADING

The setting values will vary depending on the connected camera.

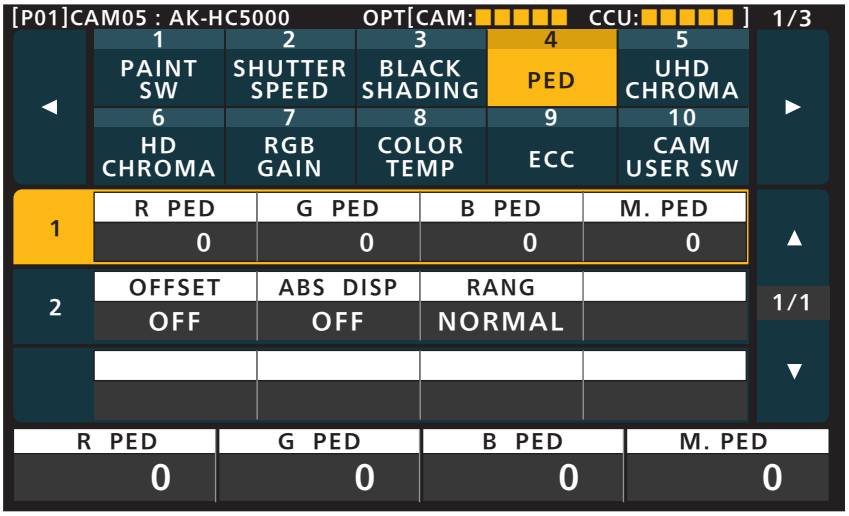




Item	Setting details
H SAW R	Adjusts the black shading gain for R, G, and Bch in the horizontal direction using a sawtooth waveform.
H SAW G	
H SAW B	
H PARA R	Adjusts the black shading gain for R, G, and Bch in the horizontal direction using a parabolic waveform.
H PARA G	
H PARA B	
V SAW R	Adjusts the black shading gain for R, G, and Bch in the vertical direction using a sawtooth waveform.
V SAW G	
V SAW B	
V PARA R	Adjusts the black shading gain for R, G, and Bch in the vertical direction using a parabolic waveform.
V PARA G	
V PARA B	
CORRECT	Enables or disables black shading (sawtooth waveform or parabolic waveform) correction.

4 PED

The setting values will vary depending on the connected camera.



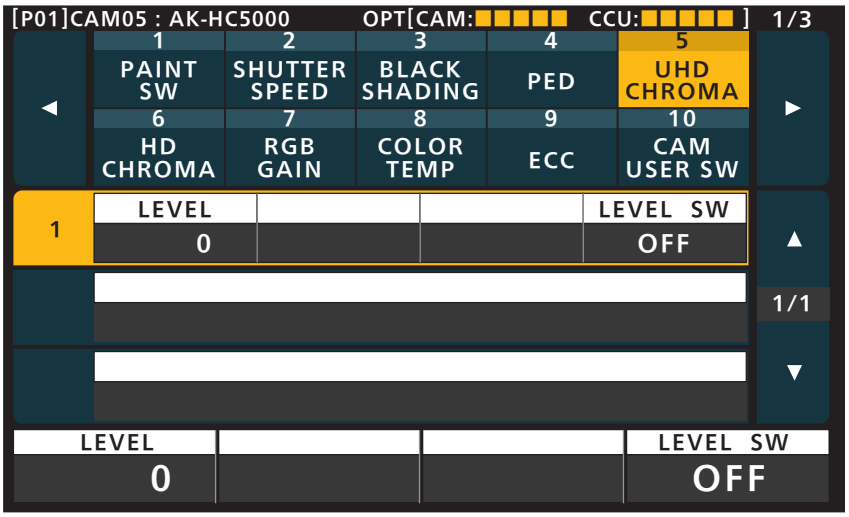
Item	Setting details
R PED	Sets the red correction level for the master pedestal.
G PED	Sets the green correction level for the master pedestal.
B PED	Sets the blue correction level for the master pedestal.
M.PED	Indicates set master pedestal value. (Display only. Settings cannot be changed.)
OFFSET	Sets whether to retain the Rch, Gch, and Bch pedestal levels when the auto black balance is adjusted. **ON** The values set in [R PED], [G PED], and [B PED] are retained. **OFF** The [R PED], [G PED], and [B PED] values are set to "0".
ABS DISP	Sets the master pedestal display setting. ● When this is set to "ON" and the [R PED], [G PED], [B PED] values are changed, the [UNDO] button will be lit but its operation will be disabled. **ON** Absolute values **OFF** Relative values
RANG	Sets the amount of variability for the master pedestal. **NORMAL** Normal amount of variability **WIDE** Twice the normal amount of variability

5 UHD CHROMA

The control destination differs depending on the unit configuration.

- When the camera is an AK-UC4000
  The control is performed for the camera.
- When the camera is other than the above
  The control is performed for the CCU.

The setting values will vary depending on the connected camera.



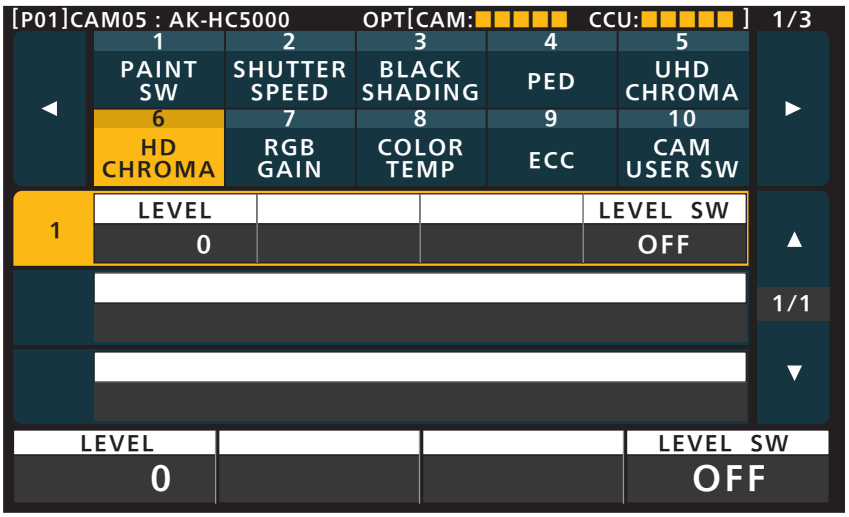
Item	Setting details
LEVEL	Adjusts the chroma gain.
LEVEL SW	Enables or disables the chroma gain adjustment.

6 HD CHROMA

The control destination differs depending on the unit configuration.

- When the camera is an AK-UC4000
  The control is performed for the camera.
- When the camera is other than the above
  When the system format is set to UHD, the control is performed for the CCU. Otherwise, the control is performed for the camera.

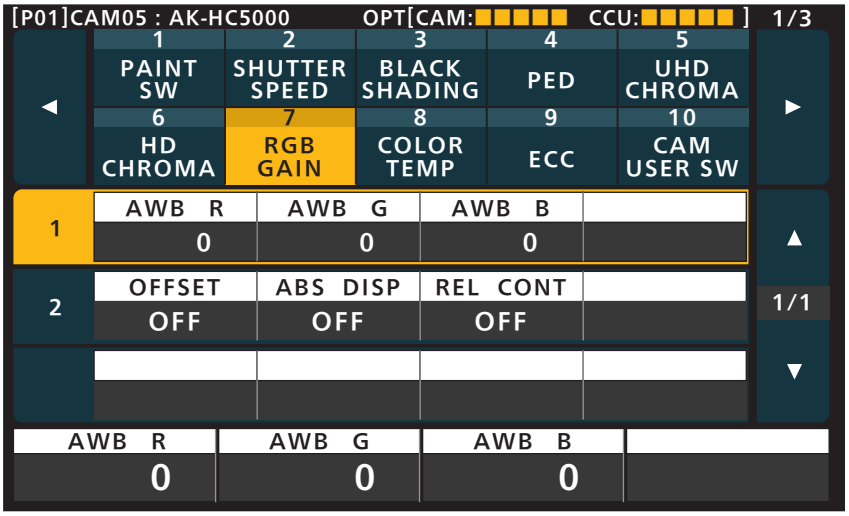
The setting values will vary depending on the connected camera.



Item	Setting details
LEVEL	Adjusts the chroma gain.
LEVEL SW	Enables or disables the chroma gain adjustment.

7 RGB GAIN

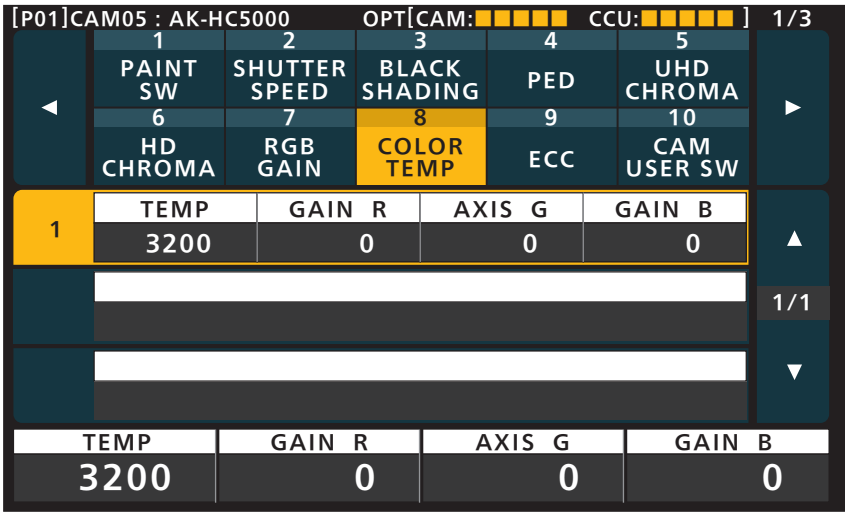
The setting values will vary depending on the connected camera.



Item	Setting details
AWB R	Sets the red correction level for the gain.
AWB G	Sets the green correction level for the gain.
AWB B	Sets the blue correction level for the gain.
OFFSET	Sets whether to retain the Rch, Gch, and Bch gain levels when the auto white balance is adjusted. **ON** The values set in [AWB R], [AWB G], and [AWB B] are retained. **OFF** The [AWB R], [AWB G], and [AWB B] values are set to "0".
ABS DISP	Sets whether to display the absolute value for the RGB gain. ● When this is set to "ON" and the [AWB R], [AWB G], [AWB B] values are changed, the [UNDO] button will be lit but its operation will be disabled.
REL CONT	Enables or disables relative value control for the Gch gain.

8 COLOR TEMP

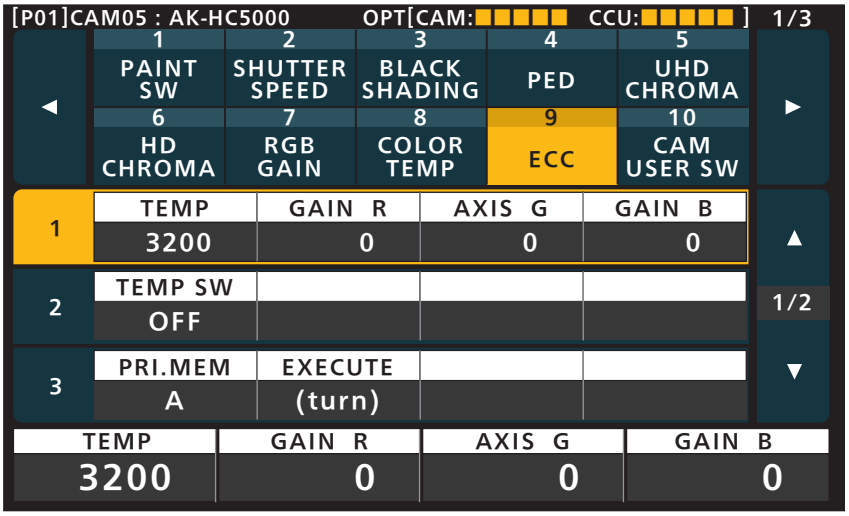
The setting values will vary depending on the connected camera.

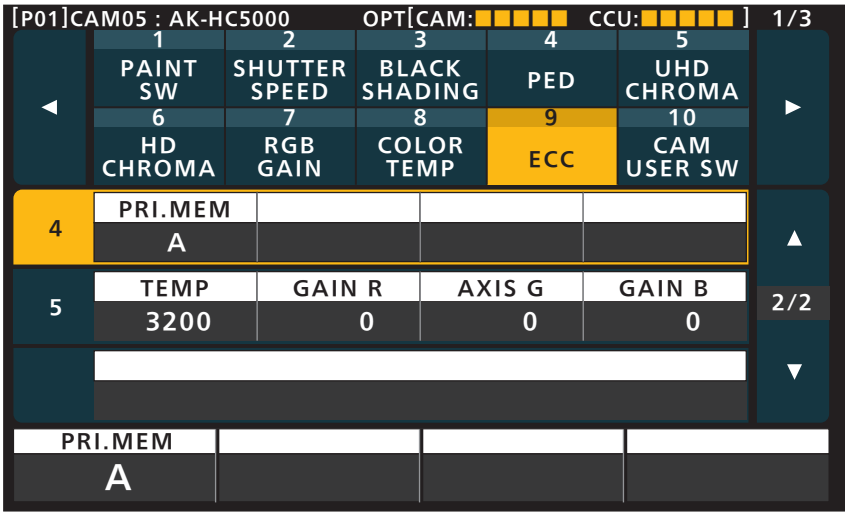


Item	Setting details
TEMP	Set color temperature settings.
GAIN R	Sets the red correction level for the color temperature.
AXIS G	Sets the green correction level for the color temperature.
GAIN B	Sets the blue correction level for the color temperature.

9 ECC

The setting values will vary depending on the connected camera.

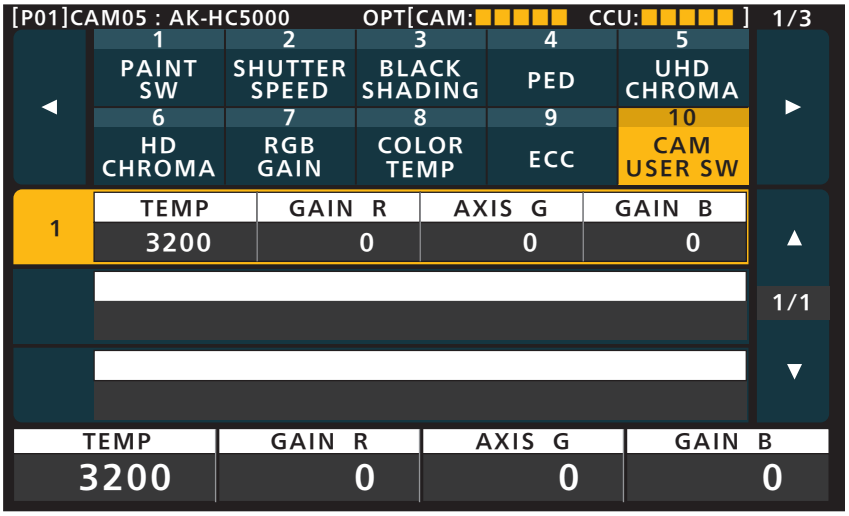




Item	Setting details
TEMP	Sets the color temperature when [TEMP SW] is set to "ON". An arrow will appear on the right if the value is too high or low.
GAIN R	Sets the red correction level for the color temperature.
AXIS G	Sets the green correction level for the color temperature.
GAIN B	Sets the blue correction level for the color temperature.
TEMP SW	Turn this on when adjusting the color temperature manually.
PRI.MEM	Allows you to save the [COLOR TEMP], [GAIN R], [AXIS G], and [GAIN B] setting values to one of the ROP's five memory presets ([A] to [E]).
EXECUTE	
PRI.MEM	Selects memory presets ([A] to [E]) that were saved to the ROP. The selected memory presets will appear below. The settings cannot be changed.
TEMP	Displays the setting values saved to the memory presets selected with [PRI.MEM].
GAIN R	
AXIS G	
GAIN B	

10 CAM USER SW

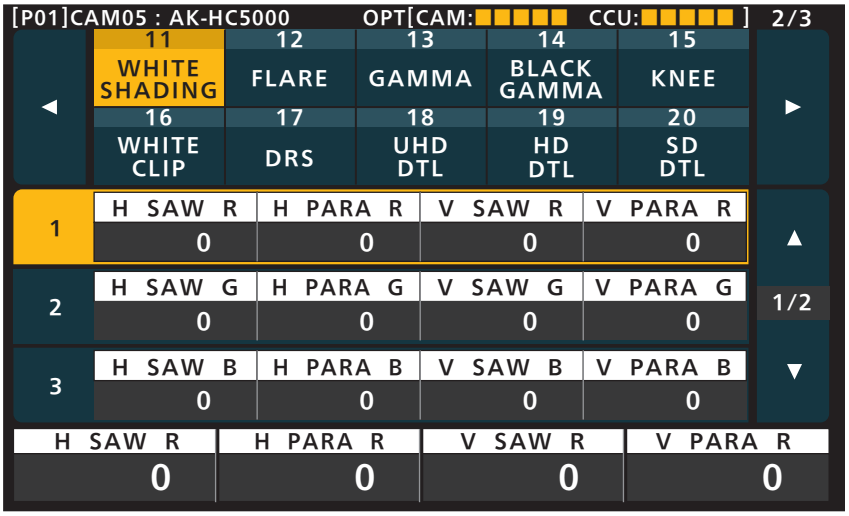
The setting values will vary depending on the connected camera.

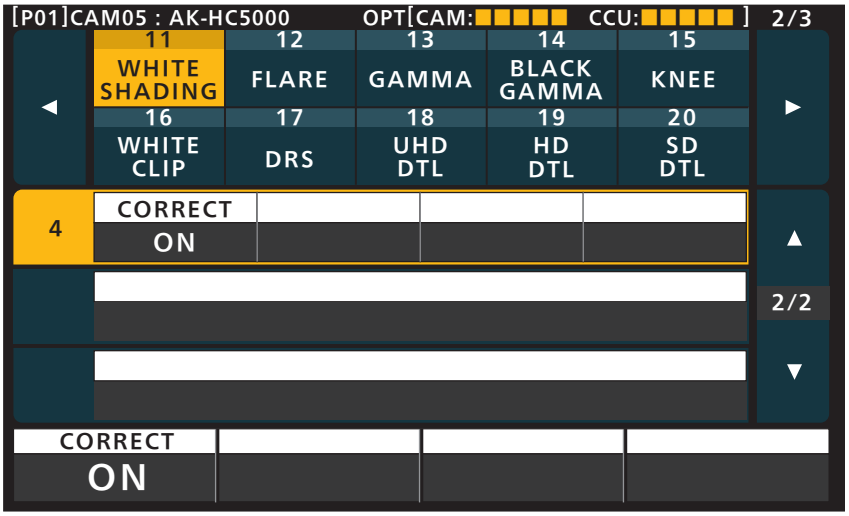


Item	Setting details
TEMP	Sets the color temperature for when "C.TEMP" is assigned to the [USER 1], [USER 2], [USER 3], or [USER 4] button on the camera and the function is enabled.
GAIN R	Sets the red correction level for the color temperature.
AXIS G	Sets the green correction level for the color temperature.
GAIN B	Sets the blue correction level for the color temperature.

11 WHITE SHADING

The setting values will vary depending on the connected camera.

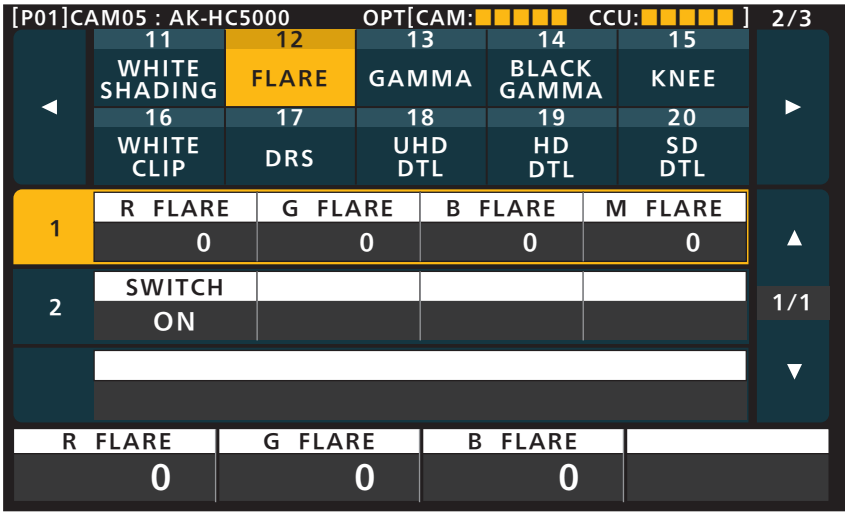




Item	Setting details
H SAW R	Adjusts the white shading gain for R, G, and Bch in the horizontal direction using a sawtooth waveform.
H SAW G	
H SAW B	
H PARA R	Adjusts the white shading gain for R, G, and Bch in the horizontal direction using a parabolic waveform.
H PARA G	
H PARA B	
V SAW R	Adjusts the white shading gain for R, G, and Bch in the vertical direction using a sawtooth waveform.
V SAW G	
V SAW B	
V PARA R	Adjusts the white shading gain for R, G, and Bch in the vertical direction using a parabolic waveform.
V PARA G	
V PARA B	
CORRECT	Enables or disables white shading (sawtooth waveform or parabolic waveform) correction.

12 FLARE

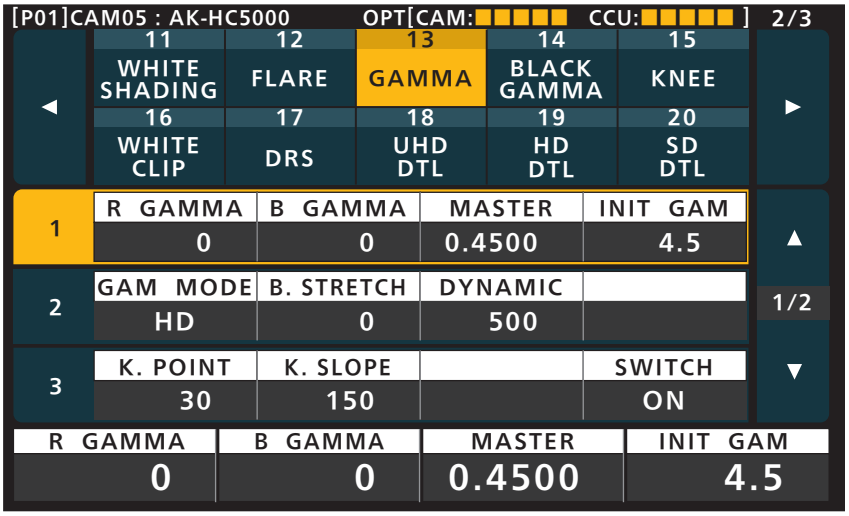
The setting values will vary depending on the connected camera.

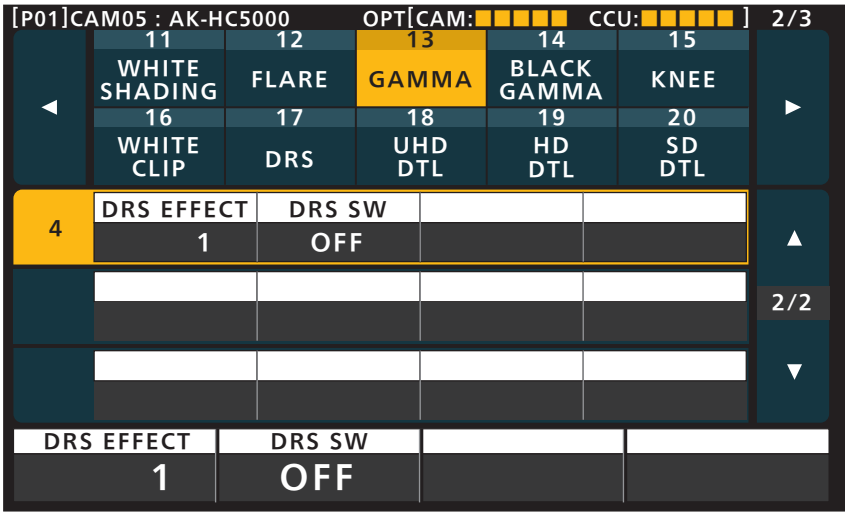


Item	Setting details
R FLARE	Adjusts the Rch flare.
G FLARE	Adjusts the Gch flare.
B FLARE	Adjusts the Bch flare.
M FLARE	Adjusts the master flare.
SWITCH	Enables or disables flare correction.

13 GAMMA

The setting values will vary depending on the connected camera.

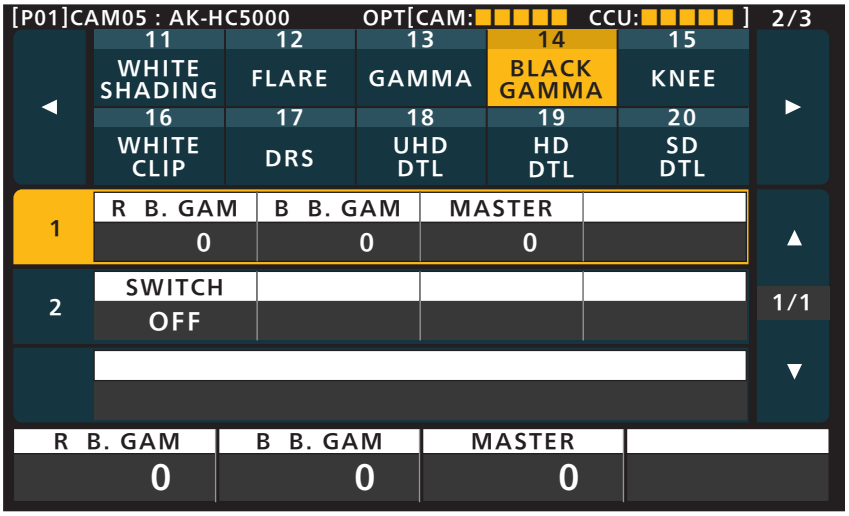




Item	Setting details
R GAMMA	Adjusts the red gamma characteristic for the master gamma.
B GAMMA	Adjusts the blue gamma characteristic for the master gamma.
MASTER	Adjusts the gamma characteristic.
INIT GAM	Sets the rising slope for the gamma.
GAM MODE	Sets the gamma characteristic type.
B.STRETCH	Sets the gamma stretch position for when [GAM MODE] is set to "FILM REC".
DYNAMIC	Sets the dynamic range for when [GAM MODE] is set to "FILM REC".
K.POINT	Sets the knee point for when [GAM MODE] is set to "VIDEO REC".
K.SLOPE	Sets the knee slope for when [GAM MODE] is set to "VIDEO REC".
SWITCH	Enables or disables gamma correction.
DRS EFFECT	Sets the compression level for high-brightness areas of the dynamic range stretcher function. Higher values increase the compression level for high-brightness areas.
DRS SW	Enables or disables the dynamic range stretcher function. When this is enabled, contrast is adjusted automatically.

14 BLACK GAMMA

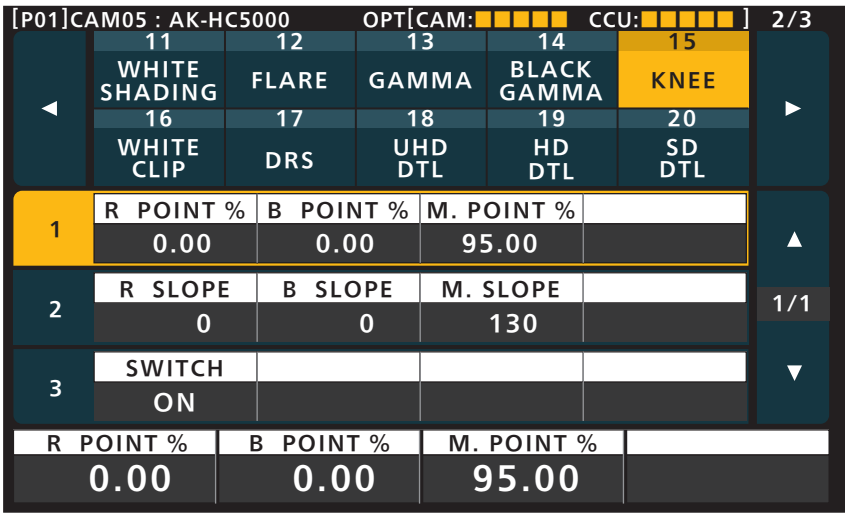
The setting values will vary depending on the connected camera.



Item	Setting details
R B.GAM	Adjusts the red gamma characteristic near black for the master gamma.
B B.GAM	Adjusts the blue gamma characteristic near black for the master gamma.
MASTER	Adjusts the gamma characteristic near black.
SWITCH	Enables or disables the black gamma. ● This setting is not available when [DRS] of [PAINT SW] is set to "ON".

15 KNEE

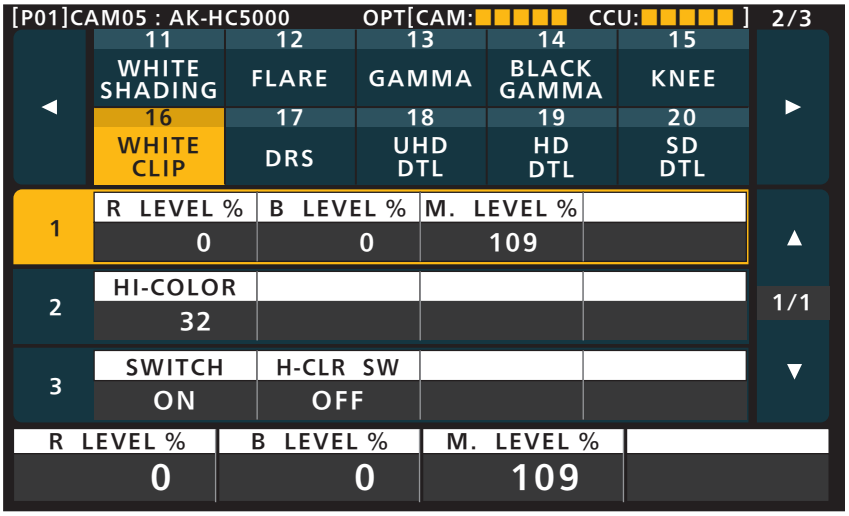
The setting values will vary depending on the connected camera.



Item	Setting details
R POINT %	Adjusts the red knee point for [M.POINT].
B POINT %	Adjusts the blue knee point for [M.POINT].
M.POINT %	Sets the knee point position.
R SLOPE	Adjusts the red knee slope for [M.SLOPE].
B SLOPE	Adjusts the blue knee slope for [M.SLOPE].
M.SLOPE	Set the knee slope.
SWITCH	Enables or disables the knee function.

16 WHITE CLIP

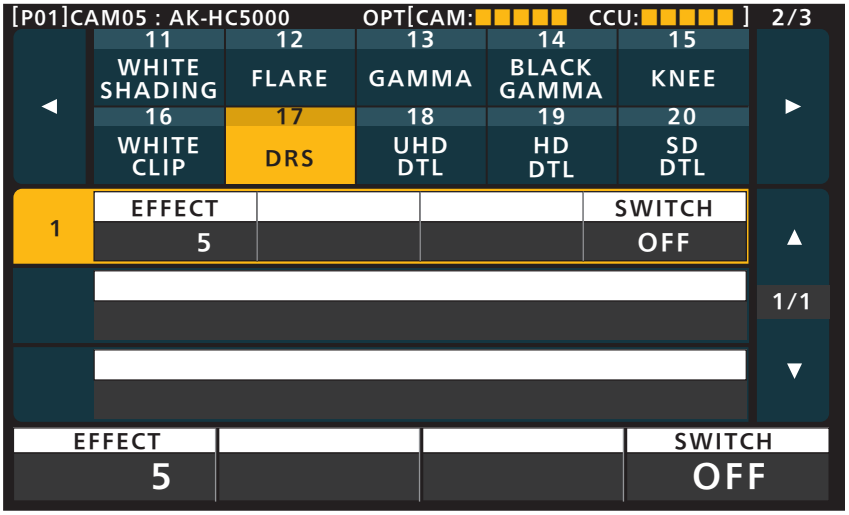
The setting values will vary depending on the connected camera.



Item	Setting details
R LEVEL %	Adjusts red for [M.LEVEL].
B LEVEL %	Adjusts blue for [M.LEVEL].
M.LEVEL %	Set the white clip level.
HI-COLOR	Sets the level for the mode that expands dynamic range for colors.
SWITCH	Enables or disables the white clip function.
H-CLR SW	Sets whether to improve color reproducibility for high-brightness areas.

17 DRS

The setting values will vary depending on the connected camera.



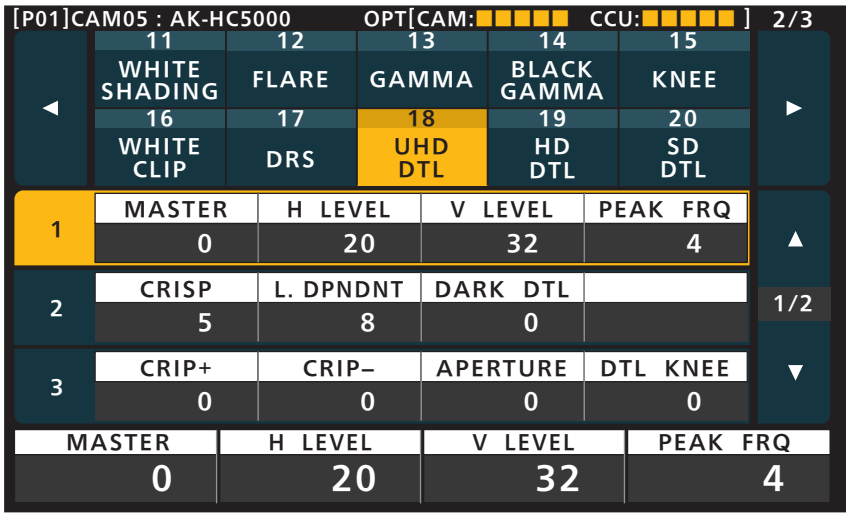
Item	Setting details
EFFECT	Sets the compression level for high-brightness areas of the dynamic range stretcher function. Higher values increase the compression level for high-brightness areas.
SWITCH	Enables or disables the dynamic range stretcher function. When this is enabled, contrast is adjusted automatically.

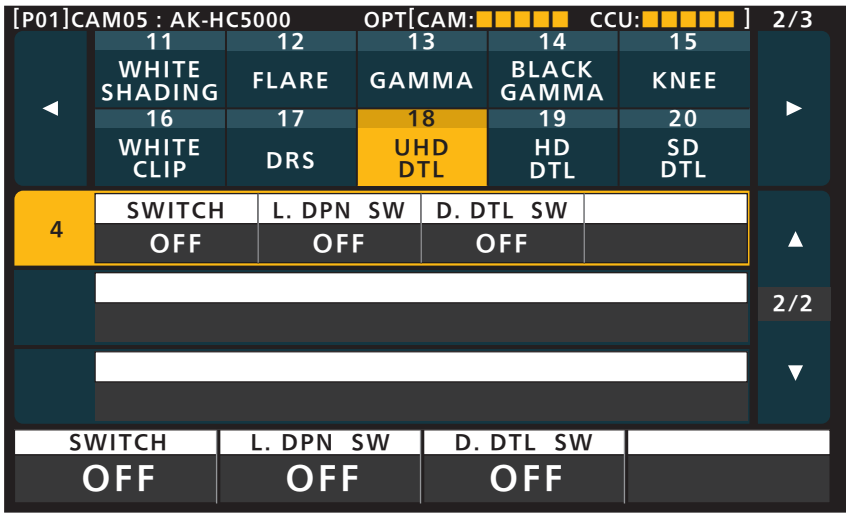
18 UHD DTL

The control destination differs depending on the unit configuration.

- When the camera is an AK-UC4000
  The control is performed for the camera.
- When the camera is other than the above
  The control is performed for the CCU.

The setting values will vary depending on the connected camera.





Item	Setting details
MASTER	Adjusts the level of master detail.
H LEVEL	Adjusts the level of horizontal detail.
V LEVEL	Adjusts the level of vertical detail.
PEAK FRQ	Selects the contour correction frequency band (boost frequency or peak frequency). Changes the contour width.
CRISP	Set the noise elimination level for the detail signals.
L.DPNDNT	Removes dark details. ● Cannot be set simultaneously with [DARK DTL].
DARK DTL	Set the level of dark detail enhancement. ● Cannot be set simultaneously with [L.DPNDNT].
CLIP+	Adjusts detail clipping to minimize scintillation resulting from excessive detail application.
CLIP-	This limits the length of the undershoot portion of the detail edge component.
APERTURE	Adjusts the knee aperture level.
DTL KNEE	Adjusts the knee detail component.
SWITCH	Enables or disables the UHD detail effect.
L.DPN SW	Removes dark details.

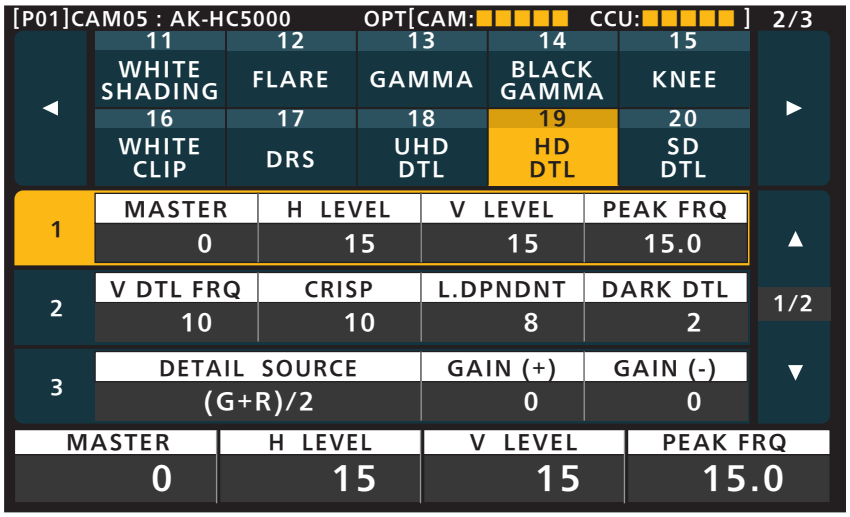
Item	Setting details
D.DTL SW	Enhances dark details.

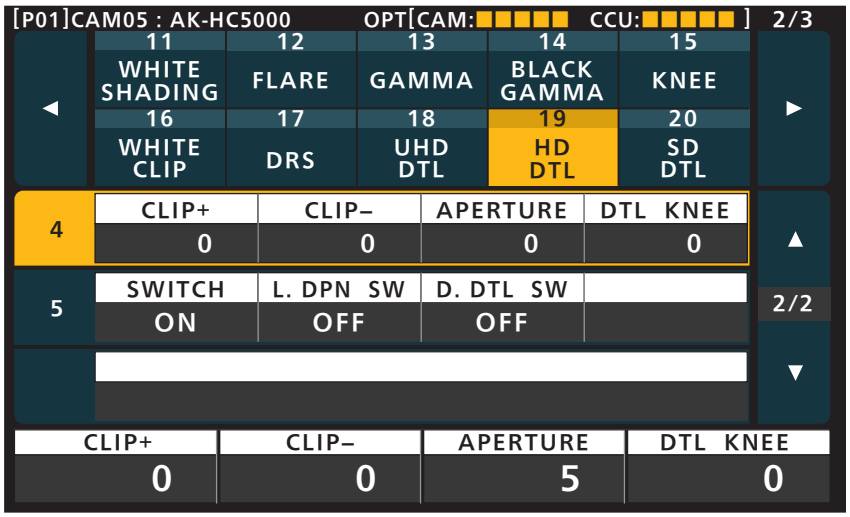
19 HD DTL

The control destination differs depending on the unit configuration.

- When the camera is an AK-UC4000
  The control is performed for the camera.
- When the camera is other than the above
  When the system format is set to UHD, the control is performed for the CCU. Otherwise, the control is performed for the camera.

The setting values will vary depending on the connected camera.





Item	Setting details
MASTER	Adjusts the level of master detail.
H LEVEL	Adjusts the level of horizontal detail.
V LEVEL	Adjusts the level of vertical detail.
PEAK FRQ	Sets the peak frequency for the horizontal detail.
V DTL FRQ	Set the V DETAIL frequency.
CRISP	Set the noise elimination level for the detail signals
L.DPNDNT	Set the level of dark detail removal.
DARK DTL	Set the level of dark detail enhancement.
DETAIL SOURCE	Selects the source signals for creating the detail components.
GAIN (+)	Changes the detail gain level in the + (up) direction
GAIN (-)	Changes the detail gain level in the - (down) direction
CLIP+	Adjusts detail clipping to minimize scintillation resulting from excessive detail application.
CLIP-	This limits the length of the undershoot portion of the detail edge component.
APERTURE	Adjusts the knee aperture level.

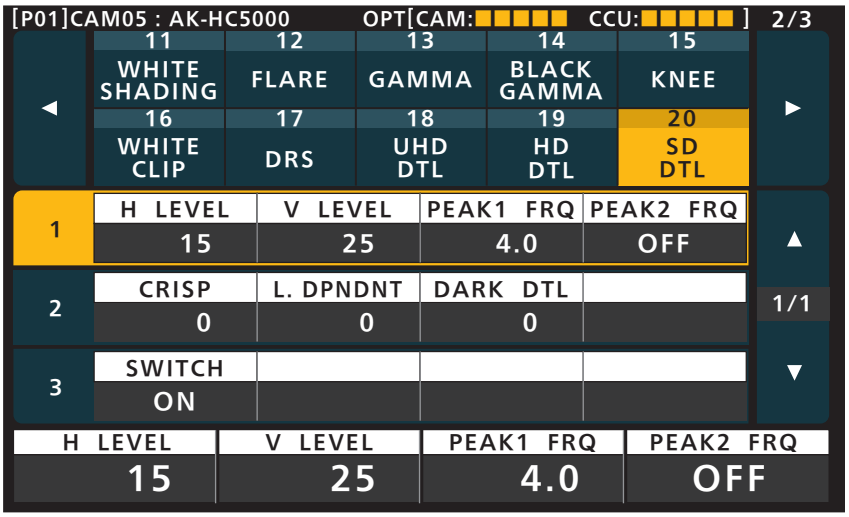
Item	Setting details
DTL KNEE	Adjusts the knee detail component.
SWITCH	Enables or disables the HD detail effect.
L.DPN SW	Removes dark details.
D.DTL SW	Enhances dark details.

20 SD DTL

The control destination differs depending on the unit configuration.

- When the camera is an AK-UC4000
  The fixed value is displayed. The setting cannot be changed.
- When the camera is other than the above
  The control is performed for the CCU. Otherwise, the control is performed for the camera.

The setting values will vary depending on the connected camera.



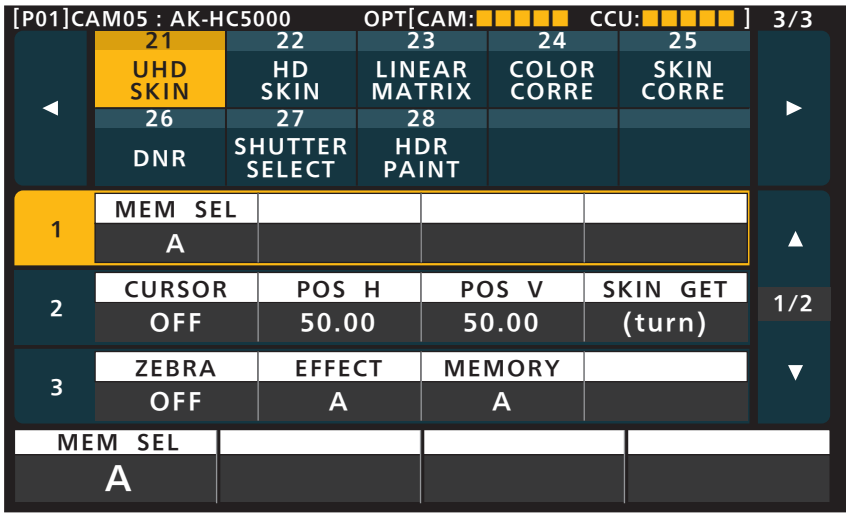
Item	Setting details
H LEVEL	Adjusts the level of horizontal detail.
V LEVEL	Adjusts the level of vertical detail.
PEAK1 FRQ	Selects the contour correction frequency band (boost frequency or peak frequency). Changes the contour width.
PEAK2 FRQ	Selects the contour correction frequency band (boost frequency or peak frequency). Changes the contour width.
CRISP	Set the noise elimination level for the detail signals
L.DPNDNT	Set the level of dark detail removal.
DARK DTL	Set the level of dark detail enhancement.
SWITCH	Enables or disables the SD detail effect.

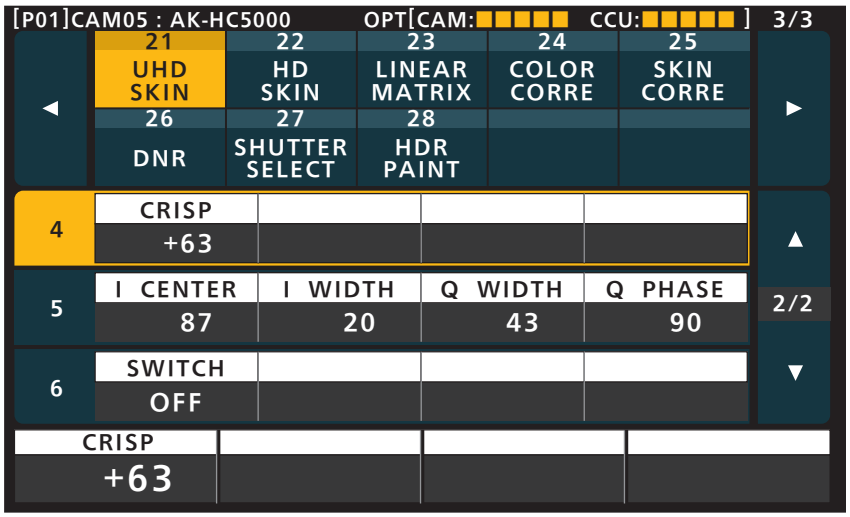
21 UHD SKIN

The control destination differs depending on the unit configuration.

- When the camera is an AK-UC4000
  The control is performed for the camera.
- When the camera is other than the above
  The control is performed for the CCU.

The setting values will vary depending on the connected camera.





Item	Setting details
MEM SEL	Changes memory for saving the skin tone detail setting values(CRISP, PHASE, WIDTH and SATURATION).
CURSOR	Enables or disables the position cursor that obtains the saturation and color phase information for controlling skin tone detail effects.
POS H	Sets horizontal cursor position.
POS V	Sets vertical cursor position.
SKIN GET	Automatically acquire saturation and hue information from the cursor position.
ZEBRA	Sets whether to add a zebra pattern to the Y signals of the PM output to make areas subject to skin tone detail effects easily identifiable.
EFFECT	Selects the memory to which skin tone detail effects will be added
MEMORY	Selects the memory to which skin tone detail effects will be added.
CRISP	Removes very faint noise components from detail components in skin tone areas.
I CENTER	Sets the center position (area to which skin tone is applied) on the I axis.
I WIDTH	Sets the width of the area to which skin tone is applied on the I axis using the [I CENTER] setting as the center.
Q WIDTH	Expands the width of skin tone areas in a range from 0 to 255.
Q PHASE	Changes the color phase of skin tone areas in a range from 0 to 359 on a vector display.

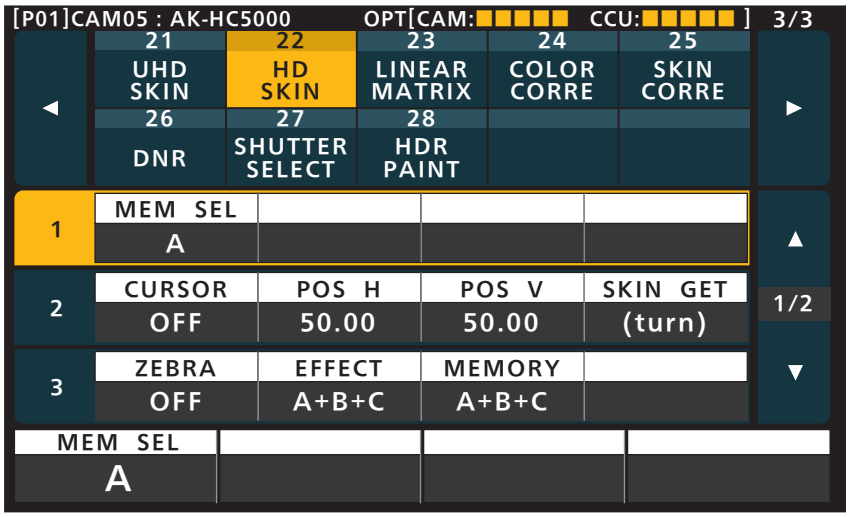
Item	Setting details
SWITCH	Enables or disables the skin tone detail function.

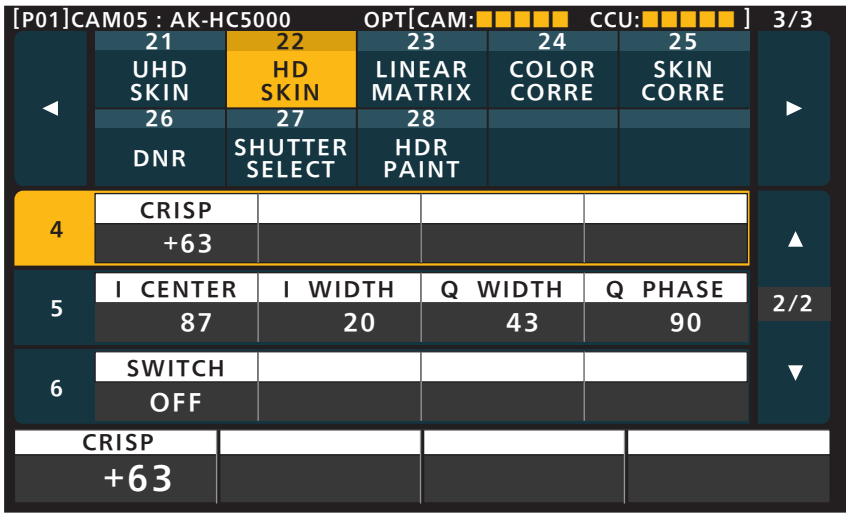
22 HD SKIN

The control destination differs depending on the unit configuration.

- When the camera is an AK-UC4000
  The control is performed for the camera.
- When the camera is other than the above
  When the system format is set to UHD, the control is performed for the CCU. Otherwise, the control is performed for the camera.

The setting values will vary depending on the connected camera.



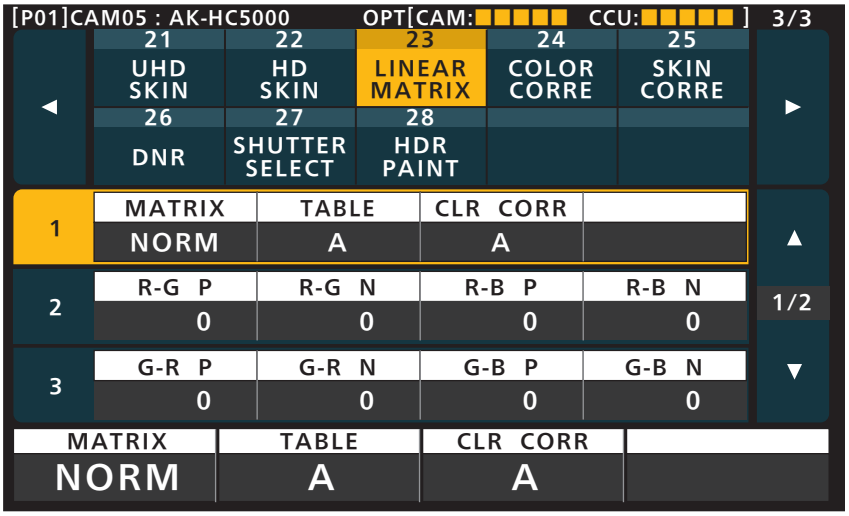


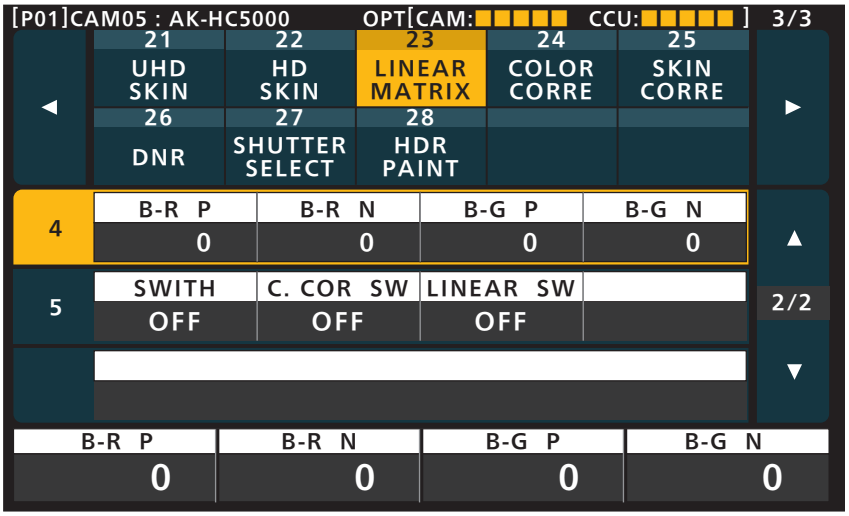
Item	Setting details
MEM SEL	Changes memory for saving the skin tone detail setting values(CRISP, PHASE, WIDTH and SATURATION).
CURSOR	Enables or disables the position cursor that obtains the saturation and color phase information for controlling skin tone detail effects.
POS H	Sets horizontal cursor position.
POS V	Sets vertical cursor position.
SKIN GET	Automatically acquire saturation and hue information from the cursor position.
ZEBRA	Sets whether to add a zebra pattern to the Y signals of the PM output to make areas subject to skin tone detail effects easily identifiable.
EFFECT	Selects the memory to which skin tone detail effects will be added.
MEMORY	Selects the memory to which skin tone detail effects will be added.
CRISP	Removes very faint noise components from detail components in skin tone areas.
I CENTER	Sets the center position (area to which skin tone is applied) on the I axis.
I WIDTH	Sets the width of the area to which skin tone is applied on the I axis using the [I CENTER] setting as the center.
Q WIDTH	Expands the width of skin tone areas in a range from 0 to 255.
Q PHASE	Changes the color phase of skin tone areas in a range from 0 to 359 on a vector display.

Item	Setting details
SWITCH	Enables or disables the skin tone detail function.

23 LINEAR MATRIX

The setting values will vary depending on the connected camera.

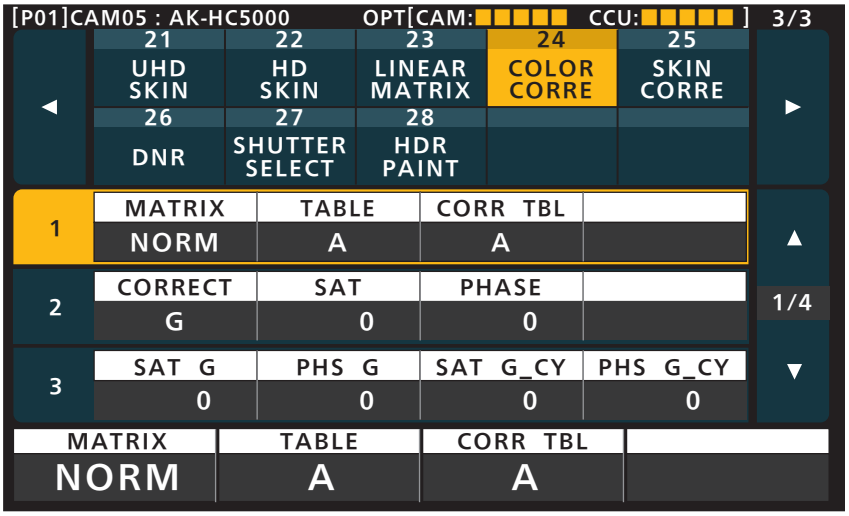


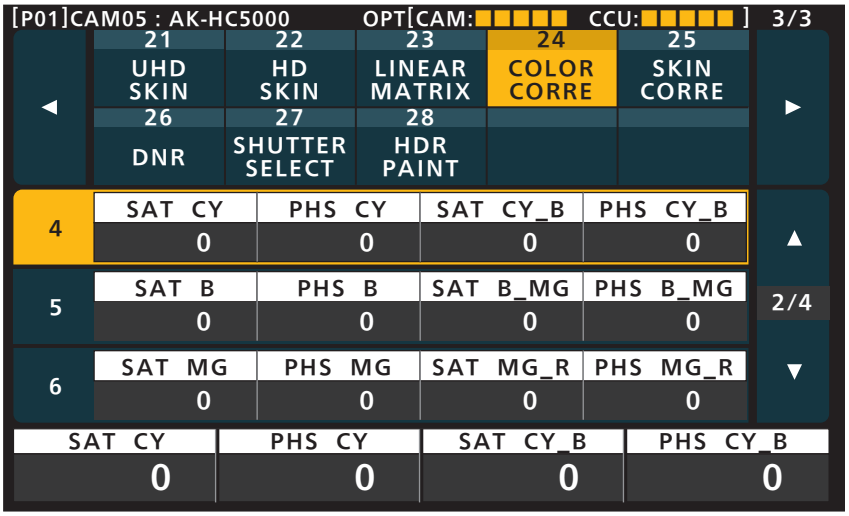


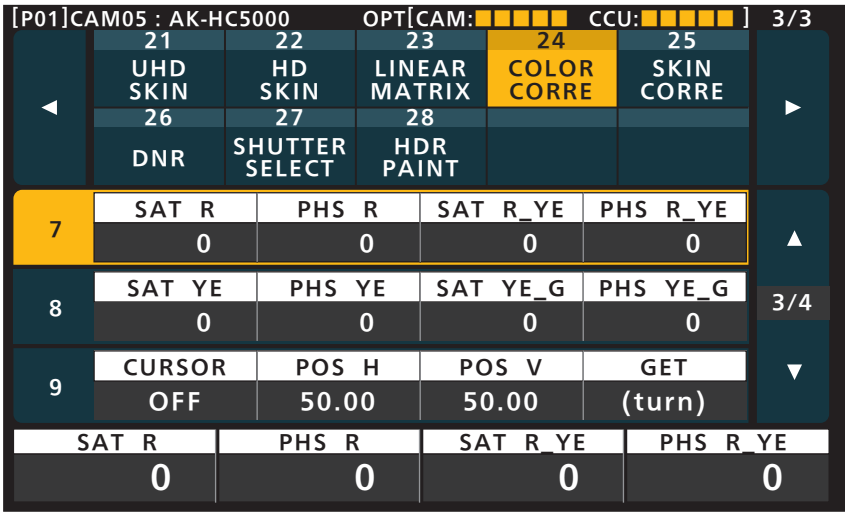
Item	Setting details
MATRIX	Sets the preset matrix.
TABLE	Selects the linear matrix table.
CLR CORR	Selects the color correction table.
R-G P	Adjusts the linear matrix between red and green. Not available when [MATRIX] is set to "OFF".
R-G N	
R-B P	Adjusts the linear matrix between red and blue. Not available when [MATRIX] is set to "OFF".
R-B N	
G-R P	Adjusts the linear matrix between green and red. Not available when [MATRIX] is set to "OFF".
G-R N	
G-B P	Adjusts the linear matrix between green and blue. Not available when [MATRIX] is set to "OFF".
G-B N	
B-R P	Adjusts the linear matrix between blue and red. Not available when [MATRIX] is set to "OFF".
B-R N	
B-G P	Adjusts the linear matrix between blue and green. Not available when [MATRIX] is set to "OFF".
B-G N	
SWITCH	Enables or disables the matrix function.
C.COR SW	Enables or disables the 12-axis color correction function.
LINEAR SW	Enables or disables the linear matrix function.

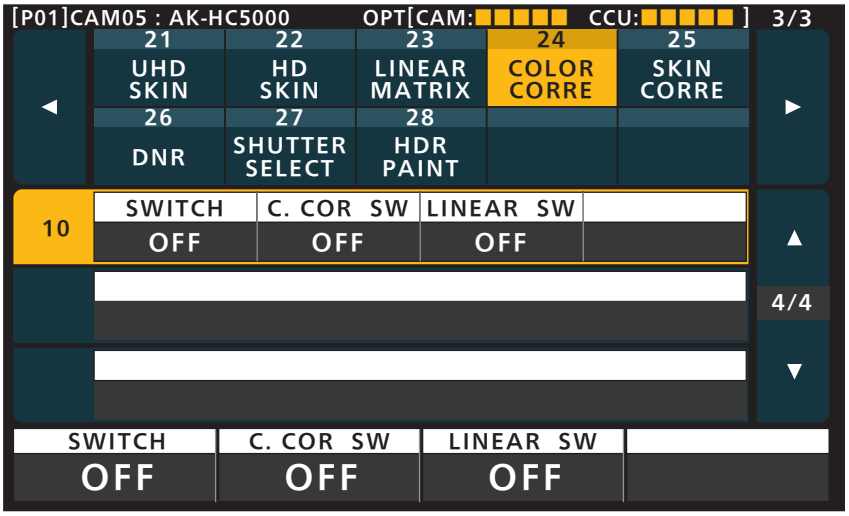
24 COLOR CORRE

The setting values will vary depending on the connected camera.







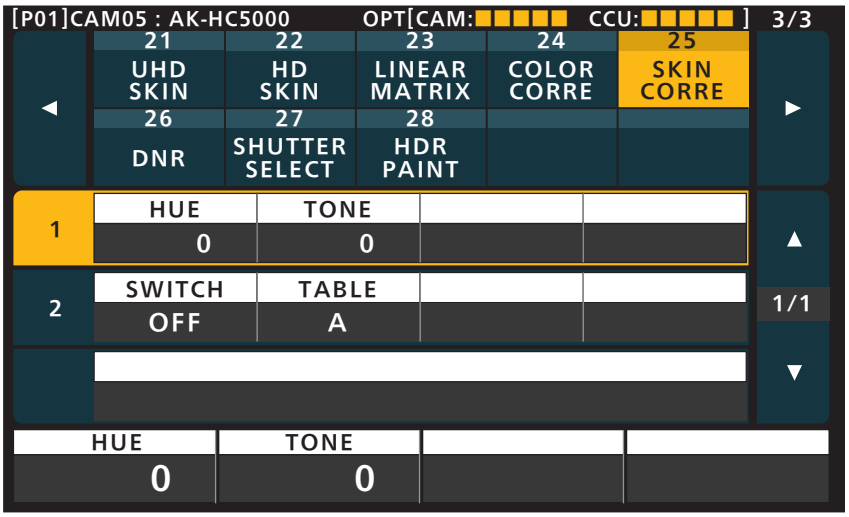


Item	Setting details
MATRIX	Enables or disables the linear matrix function.
TABLE	Selects the linear matrix table.
CORR TBL	Selects the color correction table.
CORRECT	Selects the color component in 12 AXIS matrix memory to adjust.
SAT	Adjusts the saturation of the color component selected in [CORRECT].
PHASE	Adjusts the hue of the color component selected in [CORRECT].
SAT G	Adjusts the color saturation of color components in 12 AXIS matrix memory. • When [CORRECT] is set to "OFF", the adjustment effects will not be applied.
SAT G_CY	
SAT CY	
SAT CY_B	
SAT B	
SAT B_MG	
SAT MG	
SAT MG_R	
SAT R	
SAT R_YE	
SAT YE	
SAT YE_G	
PHS G	Adjusts the color phase of color components in 12 AXIS matrix memory. • When [CORRECT] is set to "OFF", the adjustment effects will not be applied.
PHS G_CY	
PHS CY	
PHS CY_B	
PHS B	
PHS B_MG	
PHS MG	
PHS MG_R	
PHS R	
PHS R_YE	
PHS YE	
PHS YE_G	
CURSOR	Set whether to display the box cursor on the camera output image.
POS H	Adjusts the horizontal position of the cursor.
POS V	Adjusts the vertical position of the cursor.

Item	Setting details
GET	Automatically obtains color information from the cursor position, and applies the information of the axis for which you want to match colors to [CORRECT].
SWITCH	Enables or disables the matrix function.
C.COR SW	Enables or disables the 12-axis color correction function.
LINEAR SW	Enables or disables the linear matrix function.

25 SKIN CORRE

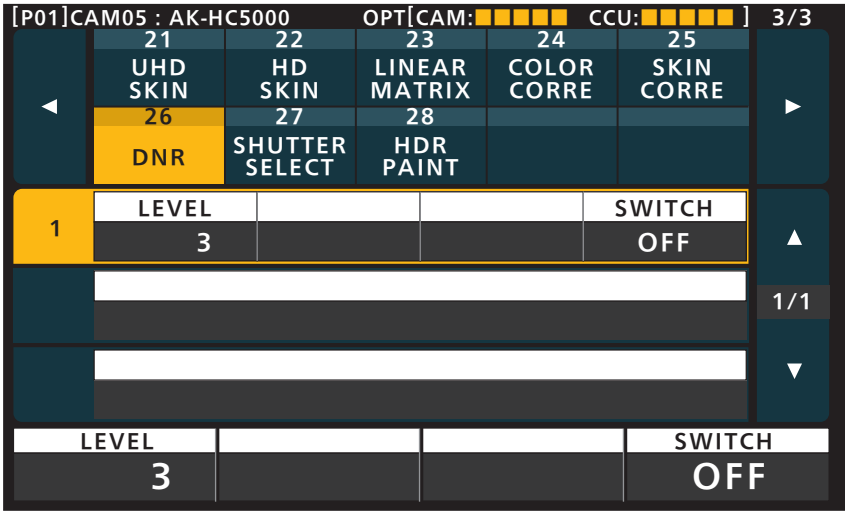
The setting values will vary depending on the connected camera.



Item	Setting details
HUE	Finely adjusts the hue of the skin area.
TONE	Finely adjusts the tone of the skin area.
SWITCH	Enables or disables the fine adjustment function for near skin tone color.
TABLE	Selects the skin area table.

26 DNR

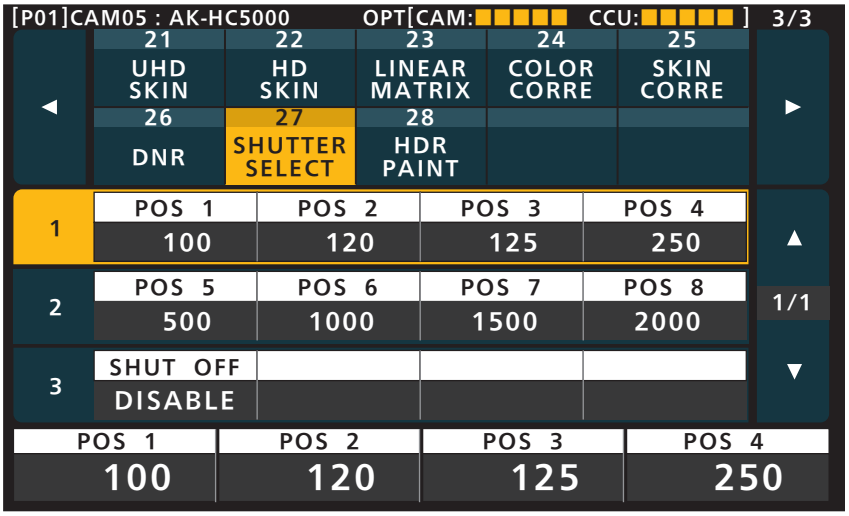
The setting values will vary depending on the connected camera.



Item	Setting details
LEVEL	Sets the level for the noise reduction.
SWITCH	Enables/disables the noise reduction function.

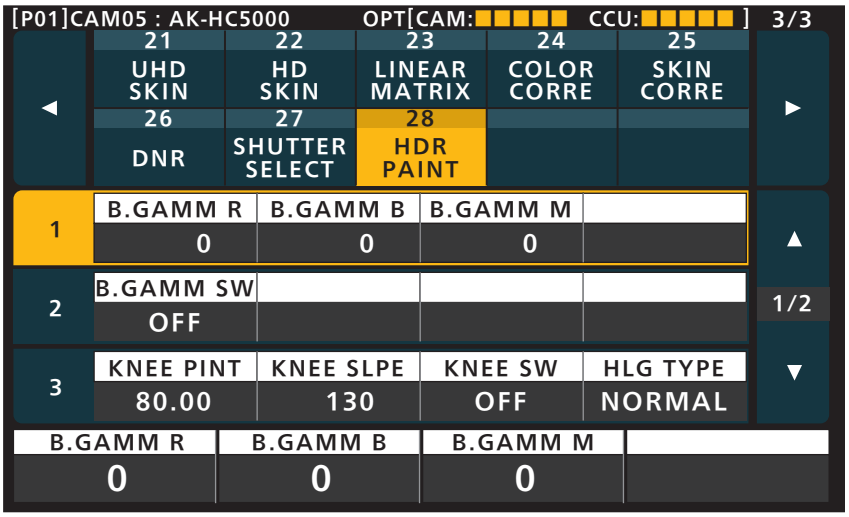
27 SHUTTER SELECT

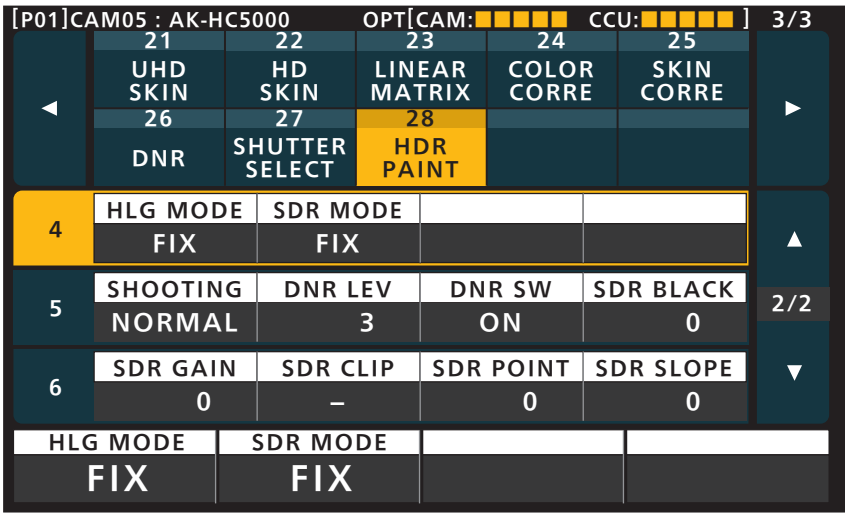
The setting values will vary depending on the connected camera.



Item	Setting details
POS 1	Sets the shutter speed for [POS 1] to [POS 8].
POS 2	
POS 3	
POS 4	
POS 5	
POS 6	
POS 7	
POS 8	
SHUT OFF	Selects whether to include shutter OFF when switching the shutter position.

28 HDR-PAINT





Item	Setting details
B.GAMMA R	Adjusts the red gamma characteristic near black for the master gamma.
B.GAMMA B	Adjusts the blue gamma characteristic near black for the master gamma.
B.GAMMA M	Adjusts the gamma characteristic near black.
B.GAMMA SW	Enables or disables the black gamma when "HDR" is set in [B.GAM SW] of [MSU SETTING].
KNEE PINT	Sets the knee point for when [GAM MODE] is set to "VIDEO REC".
KNEE SLPE	Sets the knee slope for when [GAM MODE] is set to "VIDEO REC".
KNEE SW	Enables or disables the knee function when "HDR" is set in [KNEE SW] of [MSU SETTING].
HLG TYPE	Sets the HLG type.
HLG MODE	Sets the HLG mode.
SDR MODE	Sets the SDR mode.
SHOOTING	Sets the shooting mode.
DNR LEV	Sets the level for the noise reduction.
DNR SW	Enables/disables the noise reduction function.
SDR BLACK	Adjusts the black level offset of the SDR video. • This is enabled when connected with an AK-UC4000. (When connected with a different camera, "-" is displayed.)
SDR GAIN	Sets the SDR gain.
SDR CLIP	Sets the SDR clip. • This is enabled when connected with a camera other than an AK-UC4000. (When connected with an AK-UC4000, "-" is displayed.)

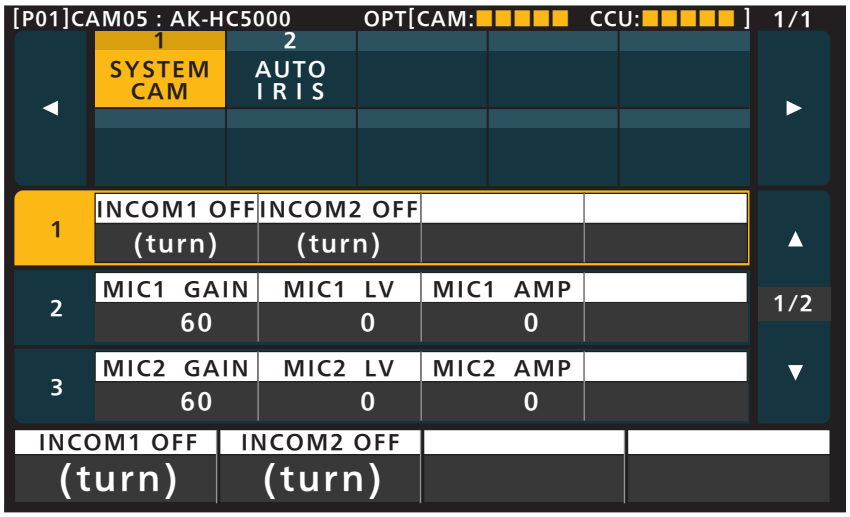
Item	Setting details
SDR POINT	Sets the SDR point. ● This is enabled when connected with an AK-UC4000. (When connected with a different camera, "-" is displayed.)
SDR SLOPE	Sets the SDR slope. ● This is enabled when connected with an AK-UC4000. (When connected with a different camera, "-" is displayed.)

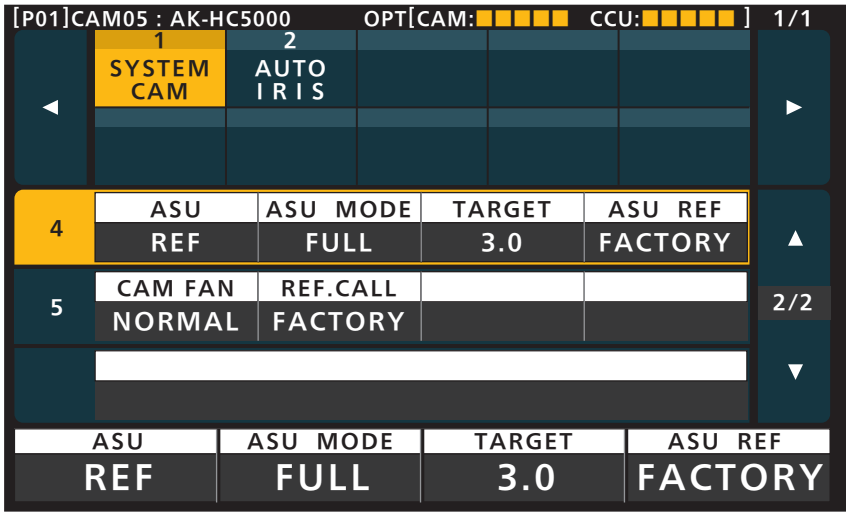
FUNCTION

"1 SYSTEM CAM" (see page 81)
"2 AUTO IRIS" (see page 83)

1 SYSTEM CAM

The setting values will vary depending on the connected camera.



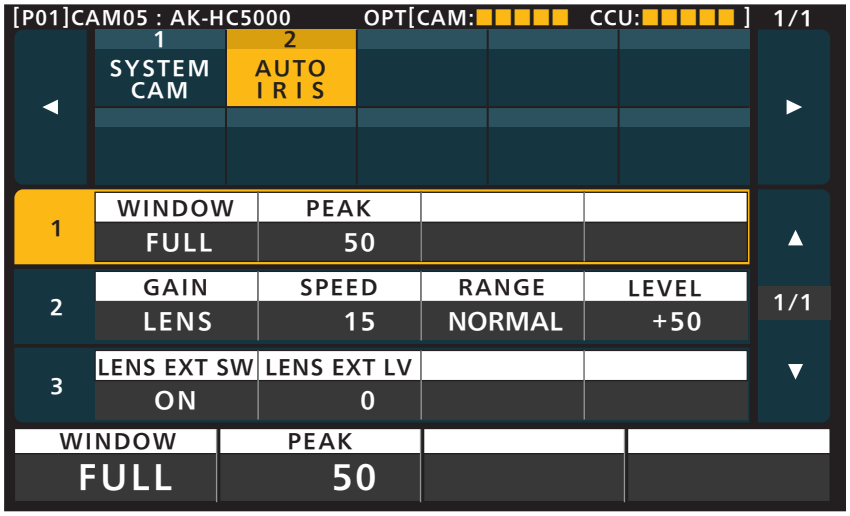


Item	Setting details
INCOM1 OFF	Sets TALK for INCOM1 to OFF.
INCOM2 OFF	Sets TALK for INCOM2 to OFF.
MIC1 GAIN	Makes coarse adjustments of the MIC1 gain.
MIC1 LV	Adjusts the level for input to the camera's <MIC 1> connector.
MIC1 AMP	Makes fine adjustments of the MIC1 gain. (1 dB increments)
MIC2 GAIN	Makes coarse adjustments of the MIC2 gain.
MIC2 LV	Adjusts the level for input to the camera's <MIC 2> connector.
MIC2 AMP	Makes fine adjustments of the MIC2 gain. (1 dB increments)
ASU	Sets the operation of the ND/CC filter when auto setup is started. **REF** The filter stored in the reference file is used when operation starts. **CURRENT** Auto setup starts at the filter position made prior to startup.
ASU MODE	Selects the auto setup mode setting.

Item	Setting details
TARGET	Sets the position where the master pedestal is to be converged when auto setup is started.
ASU REF	Specifies the reference file used during auto setup.
CAM FAN	Sets the camera's cooling fan operation.
REF.CALL	Sets the reference file that is recalled when the [REF RECALL] button is pressed.

2 AUTO IRIS

The setting values will vary depending on the connected camera.



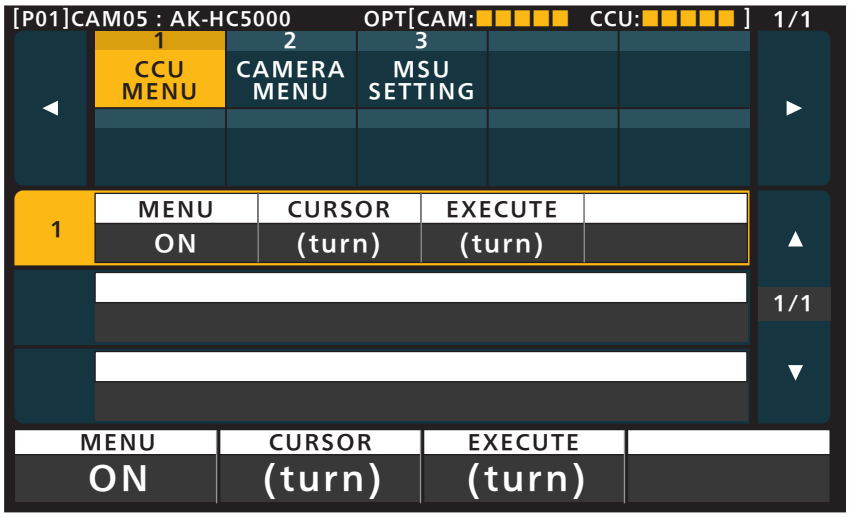
Item	Setting details
WINDOW	Set the photometry range.
PEAK	Set the ratio between the peak value and average value for auto iris photometry.
GAIN	Switch between adjusting the auto iris photometry speed via the iris gain volume or via menu operations. Set this to "LENS" under normal circumstances, and adjust using the lens iris volume.
SPEED	Set the auto iris speed.
RANGE	Set the auto iris level fine adjustment range for the [IRIS] dial.
LEVEL	Adjusts the target value (brightness) of the auto iris.
LENS EXT SW	Enable ALC correction when the lens extender is enabled.
LENS EXT LV	Set the ALC correction level when the lens extender is enabled.

MAINTENANCE

➡"1 CCU MENU" (see page 84)
➡"2 CAMERA MENU" (see page 84)
➡"3 MSU SETTING" (see page 85)

1 CCU MENU

The setting values will vary depending on the connected CCU.

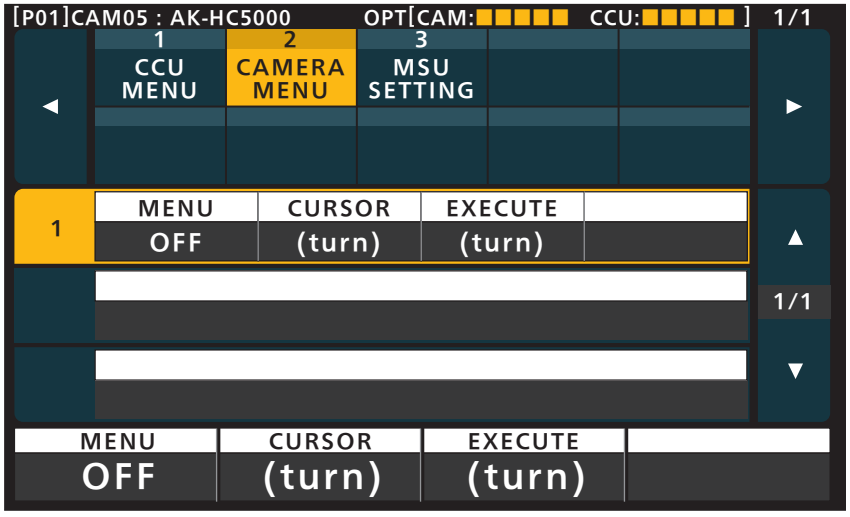


Item	Setting details
MENU	Turns the menu on or off.
CURSOR	Moves the menu cursor or changes setting values.
EXECUTE	Executes the selected process.

2 CAMERA MENU

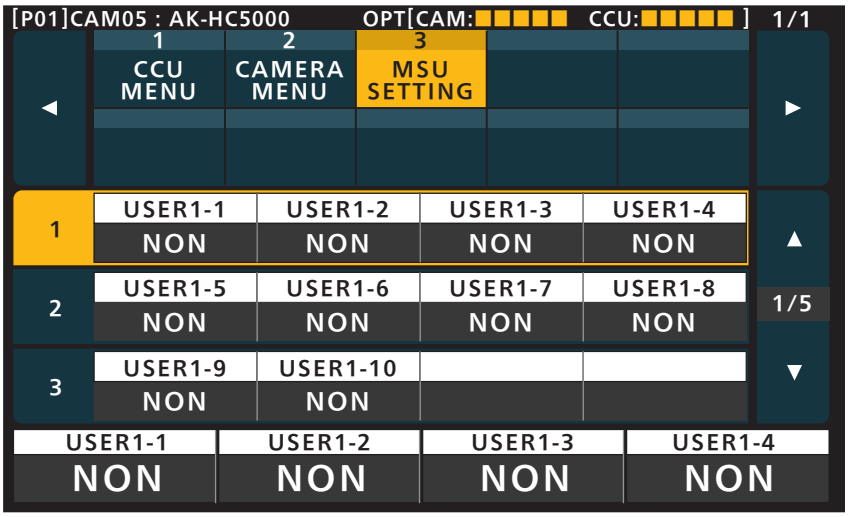
This function that will become available with future updates to the CCU.

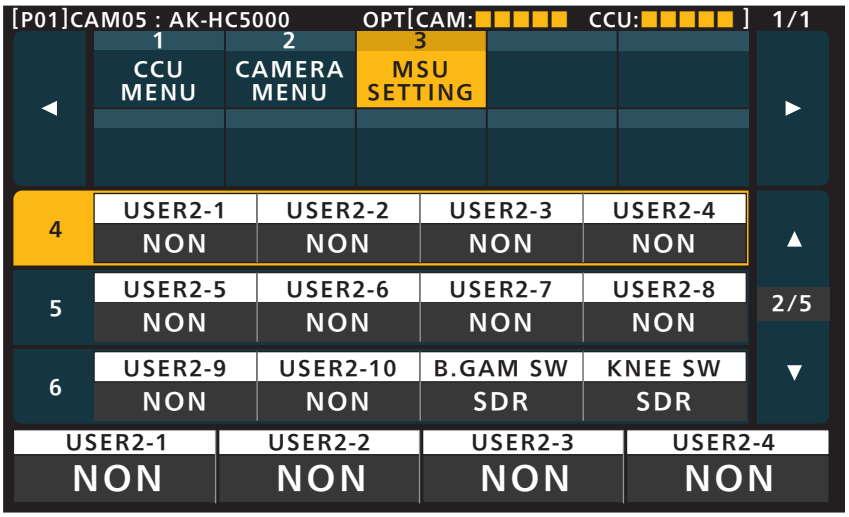
The setting values will vary depending on the connected camera.

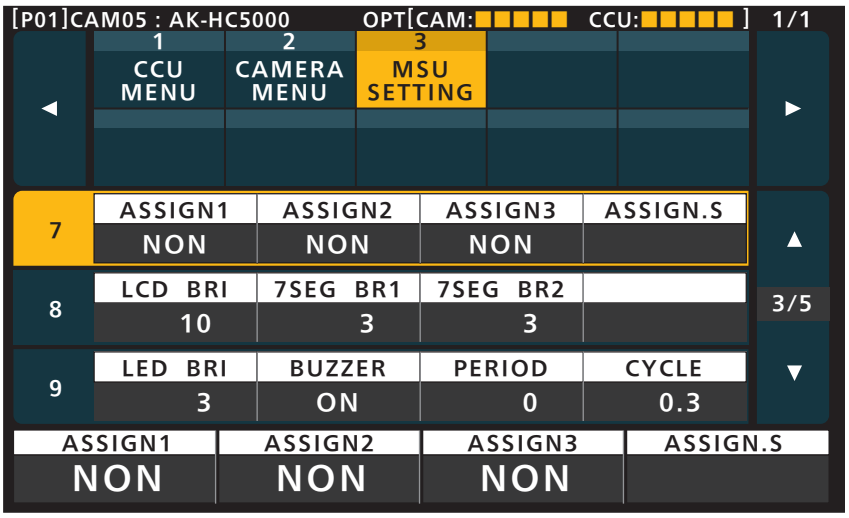


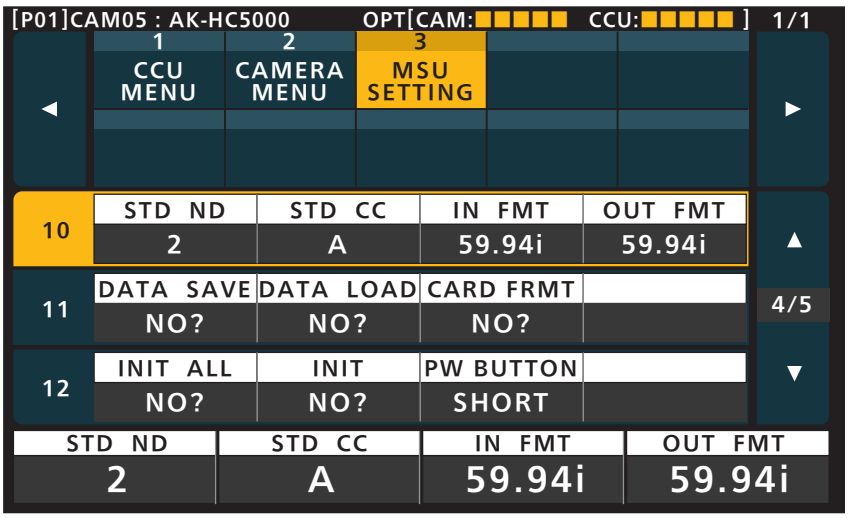
Item	Setting details
MENU	Turns the menu on or off.
CURSOR	Moves the menu cursor or changes setting values.
EXECUTE	Executes the selected process.

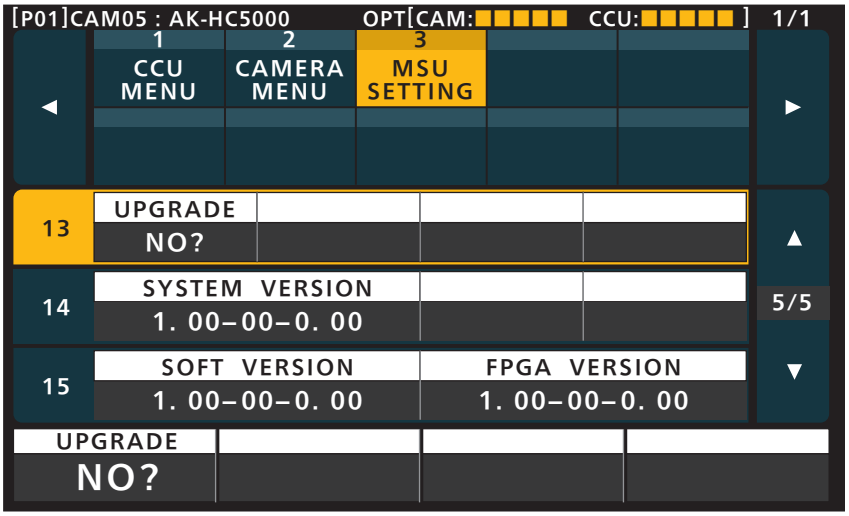
3 MSU SETTING











___ indicates factory default settings.

Item	Setting value	Setting details
USER1-1 to 1-10	NON PAINT SHUT B.SHD PED U.CHRM H.CHRM GAIN C.TEMP ECC TEMP U W.SHD FLARE GAMMA B.GAMMA KNEE W.CLIP DRS UHD DTL HD DTL SD DTL U.SKIN H.SKIN L.MTRX C.CORR S.CORR DNR S.SEL A.IRIS H.PAINT	Sets the functions to assign to the [USER1] or [USER2] button. The setting values represent the following functions. PAINT: PAINT SW SHUT: SHUTTER SPEED B.SHD: BLACK SHADING PED: PED U.CHRM: UHD CHROMA H.CHRM: HD CHROMA GAIN: RGB GAIN C.TEMP: COLOR TEMP ECC: ECC TEMP U: CAM USER SW W.SHD: WHITE SHADING FLARE: FLARE GAMMA: GAMMA B.GAMMA: BLACK GAMMA KNEE: KNEE W.CLIP: WHITE CLIP DRS: DRS UHD DTL: UHD DETAIL HD DTL: HD DETAIL SD DTL: SD DETAIL U.SKIN: UHD SKIN H.SKIN: HD SKIN L.MTRX: LINEAR MATRIX C.CORR: COLOR CORRECT S.CORR: SKIN CORRECT DNR: DNR S.SEL: SHUTTER SELECT A.IRIS: AUTO IRIS H.PAINT: HDR-PAINT
USER2-1 to 2-10		

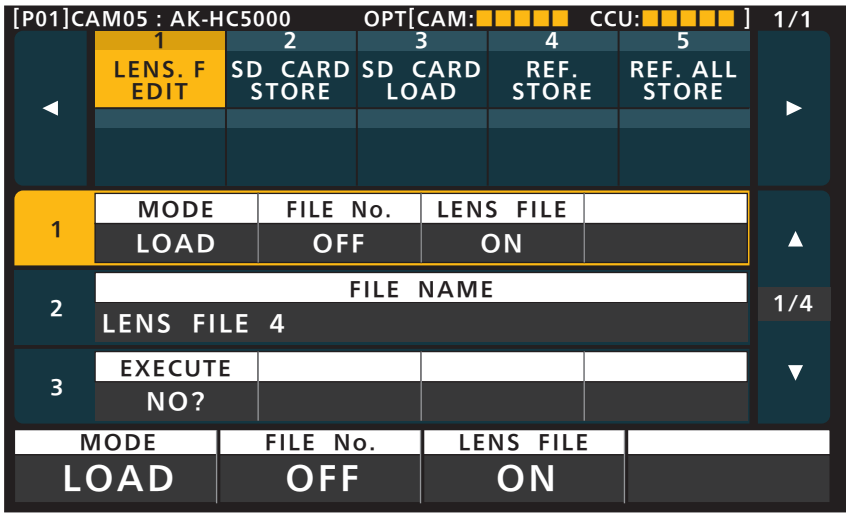
Item	Setting value	Setting details
B.GAM SW	SDR HDR	Sets whether to use the [B.GAMMA ON] button with either SDR or HDR. When "HDR" is set, you can enable or disable the black gamma in [B.GAM SW] of [HDR-PAINT].
KNEE SW	SDR HDR	Sets whether to use the [KNEE OFF] button with either SDR or HDR. When "HDR" is set, you can enable or disable the knee function in [KNEE SW] of [HDR-PAINT].
ASSIGN1 **ASSIGN2** **ASSIGN3**	NON B.SHD W.SHD UHD DTL UHD S.D L.MTX C.CORR 5600K ECC A to ECC E H.B.GAMMA H.KNEE	Sets the functions to assign to the [ASSIGN1] to [ASSIGN3] buttons. The setting values represent the following functions. B.SHD: BLACK SHADING W.SHD: WHITE SHADING UHD DTL: UHD DETAIL UHD S.D: UHD SKIN TONE DETAIL L.MTX: LINEAR MATRIX C.CORR: COLOR CORRECT 5600K: Sets ECC to ON, and sets the color temperature to 5600K. ECC A to ECC E: Sets the color temperature to the value saved to memory in the ECC menu. H.B.GAMMA: HDR-PAINT BLACK GAMMA H.KNEE: HDR-PAINT KNEE
ASSIGN.S	-	This menu is intended for future expansions.
LCD BRI	1 to 20	Sets the brightness of the LCD panel.
7SEG BR1	0 to 15	Sets the brightness of the panel's 7-segment display (group 1). This applies to the master gain display, shutter display, and camera selection number.
7SEG BR2	0 to 15	Sets the brightness of the panel's 7-segment display (group 2). This applies to the iris display and master pedestal display.
LED BRI	1 to 5	Set the brightness of the panel buttons.
BUZZER	OFF ON	Enable or disable the buzzer (beep/call tone).
PERIOD	0 to 5	[PERIOD] and [CYCLE] will be the time from which [CALL] was released for [CAMERA CCU]. PERIOD: Flashing duration (sec). CYCLE: Flashing cycle (For 1.0: 500 msec off → 500 msec lit (repeatedly)).
CYCLE	0.3 0.5 1.0	
STD ND	1 to 2 to 5	Sets the standard position of the ND filter.
STD CC	A to E	Sets the standard position of the CC filter.
IN FMT	59.94i 23.98psf 50i	Sets the frame rate for the SDI input of the <HD SDI IN> connector.
OUT FMT	59.94i 23.98psf 50i	Sets the frame rate for the SDI output of the <HD SDI OUT> connector.
DATA SAVE	NO? YES?	Save the unit's setting information. This applies to the following menus. [MSU SETTING][CONNECT SETTING][CAM IP SETTING][MSU IP SETTING] • After starting this process, do not turn off the unit or remove SD cards until the process is complete.
DATA LOAD	NO? YES?	Load the unit's setting information. This applies to the following menus. [MSU SETTING][CONNECT SETTING][CAM IP SETTING][MSU IP SETTING] • After starting this process, do not turn off the unit or remove SD cards until the process is complete.
CARD FRMT	NO? YES?	Format the SD card.
INIT ALL	NO? YES?	Return the unit's settings to the factory default values. This applies to the following menus. [MSU SETTING][CONNECT SETTING][CAM IP SETTING][MSU IP SETTING]
INIT	NO? YES?	Return the unit's settings to the default values. This applies to the following menus. [MSU SETTING]
POWER BUTTON	SHORT LONG	The method of operations for the [CAM POWER] and [VF POWER] buttons can be changed. SHORT: The power can be turned on or off when pressing the [CAM POWER] button or the [VF POWER] button. LONG: The power can be turned on or off when pressing and holding the [CAM POWER] button or the [VF POWER] button.

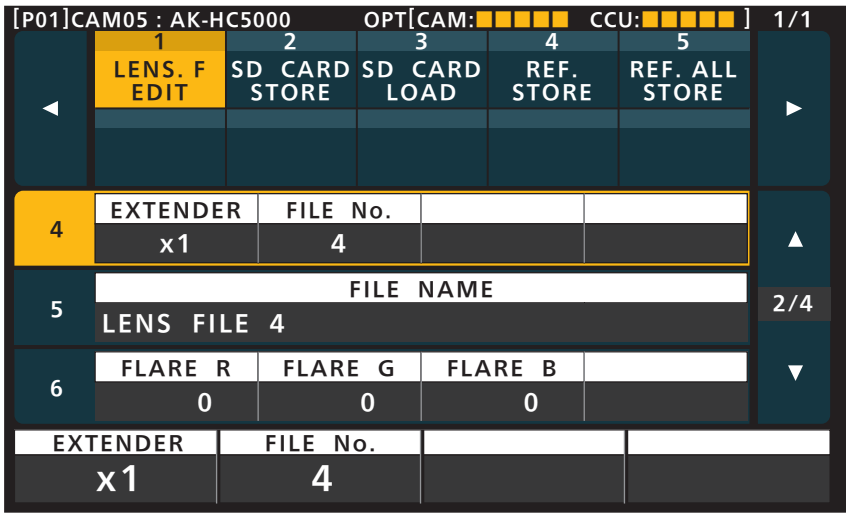
Item	Setting value	Setting details
UPGRADE	NO? YES?	Updates the software of the unit. • After starting this process, do not turn off the unit or remove SD cards until the process is complete.
SYSTEM VERSION	(Version display)	Displays the system version.
SOFT VERSION	(Version display)	Displays the software version.
FPGA VERSION	(Version display)	Displays the FPGA version.

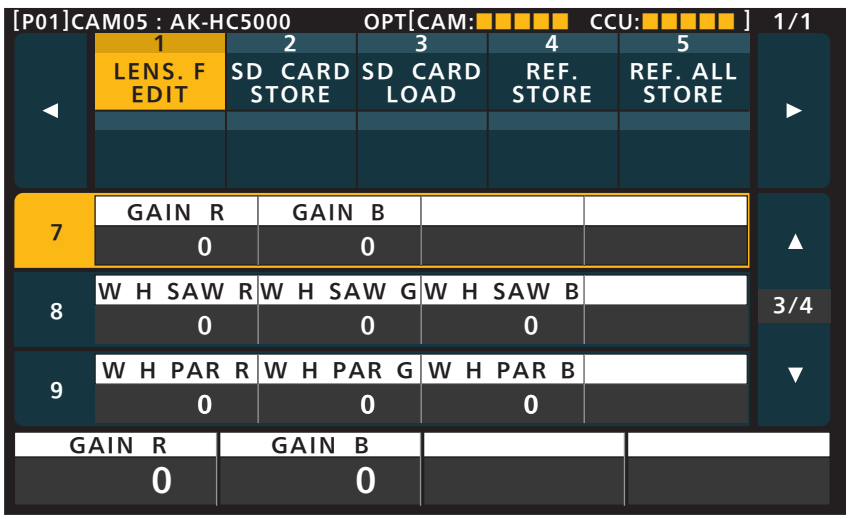
FILE

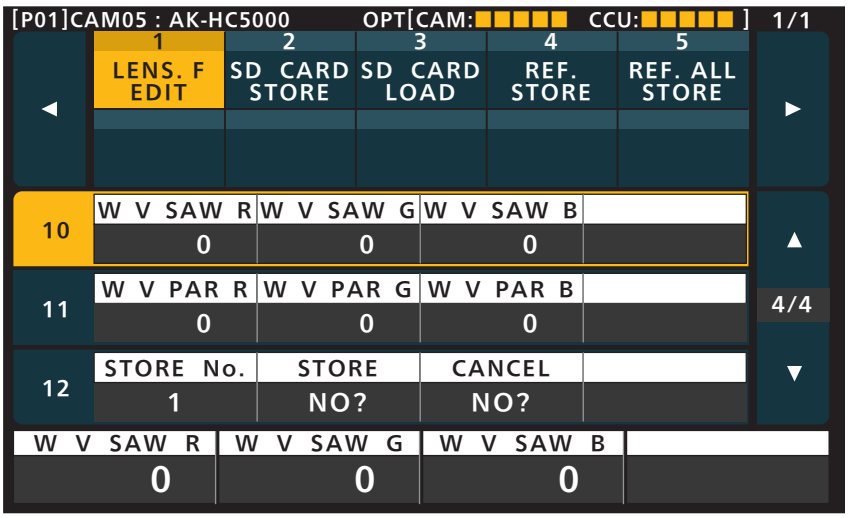
1 LENS.F EDIT

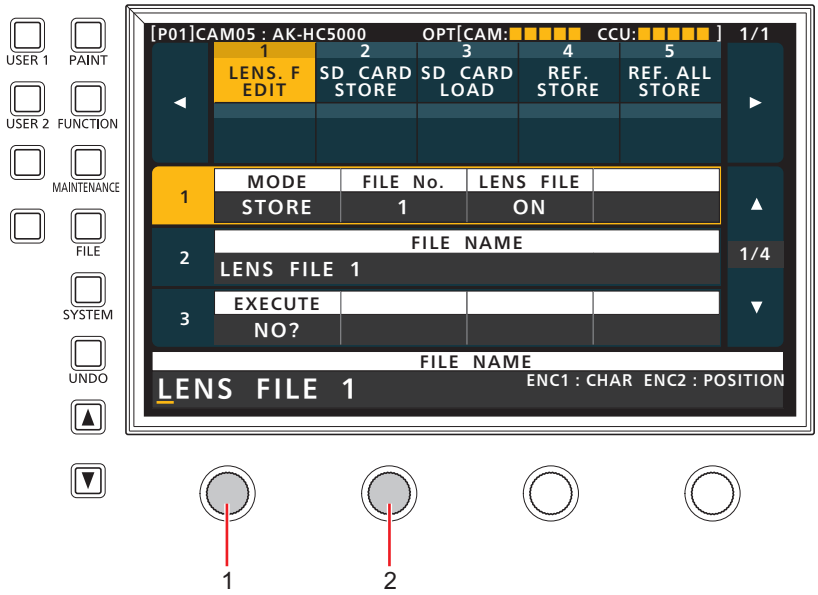
The setting values will vary depending on the connected camera.





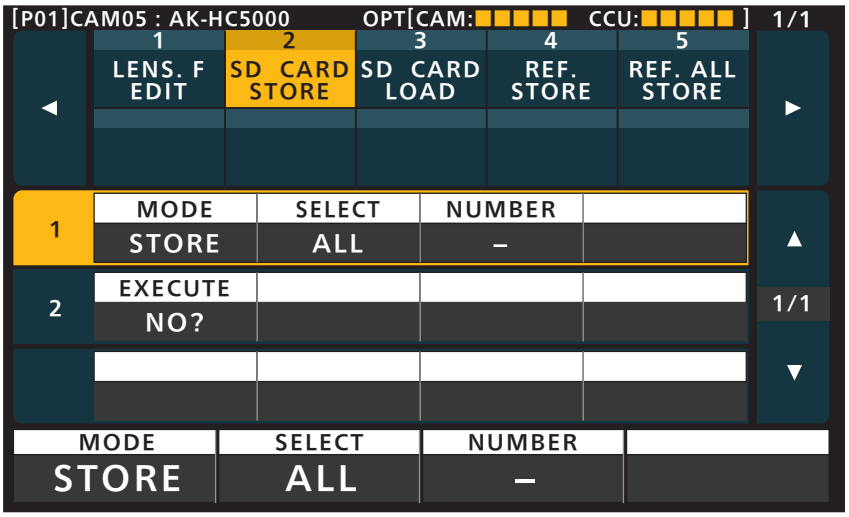




Item	Setting details
MODE	Saves the current lens file in the camera (STORE) or loads a lens file stored in the camera (LOAD).
FILE No.	Selects the file.
LENS FILE	Enables or disables the lens file.
FILE NAME	Displays the file name of the file number specified in [FILE No.]. If [MODE] is set to "STORE", the file name can be changed. Use menu operation dials 1 and 2 to change the file name.  Menu operation dial 1 (far left): Selects the character. Menu operation dial 2 (second from left): Selects the character position.
EXECUTE	**When [MODE] is set to "LOAD"** Load the file. **When [MODE] is set to "STORE"** Save the file.
EXTENDER	Sets the current magnification of the lens extender.
FILE No.	Displays the number of the lens file currently loaded.
FILE NAME	Displays the name of the lens file currently loaded.
FLARE R	Adjusts the R flare of the display data.
FLARE G	Adjusts the G flare of the display data.
FLARE B	Adjusts the B flare of the display data.
GAIN R	Adjusts the R gain of the display data.
GAIN B	Adjusts the B gain of the display data.

Item	Setting details
W H SAW R	Adjusts the R, G, and Bch white shading of the display data in the horizontal direction using a sawtooth waveform.
W H SAW G	
W H SAW B	
W H PAR R	Adjusts the R, G, and Bch white shading of the display data in the horizontal direction using a parabolic waveform.
W H PAR G	
W H PAR B	
W V SAW R	Adjusts the R, G, and Bch white shading of the display data in the vertical direction using a sawtooth waveform.
W V SAW G	
W V SAW B	
W V PAR R	Adjusts the R, G, and Bch white shading of the display data in the vertical direction using a parabolic waveform.
W V PAR G	
W V PAR B	
STORE No.	Specifies the number of the lens file to be registered.
STORE	Saves the [FLARE R/G/B], [GAIN R/B], [W H SAW R/G/B], [W H PAR R/G/B], [W V SAW R/G/B], and [W V PAR R/G/B] settings to the lens file specified in [FILE No.].
CANCEL	Discards changes to the [FLARE R/G/B], [GAIN R/B], [W H SAW R/G/B], [W H PAR R/G/B], [W V SAW R/G/B], and [W V PAR R/G/B] settings, and returns them to their previous states.

2 SD CARD STORE

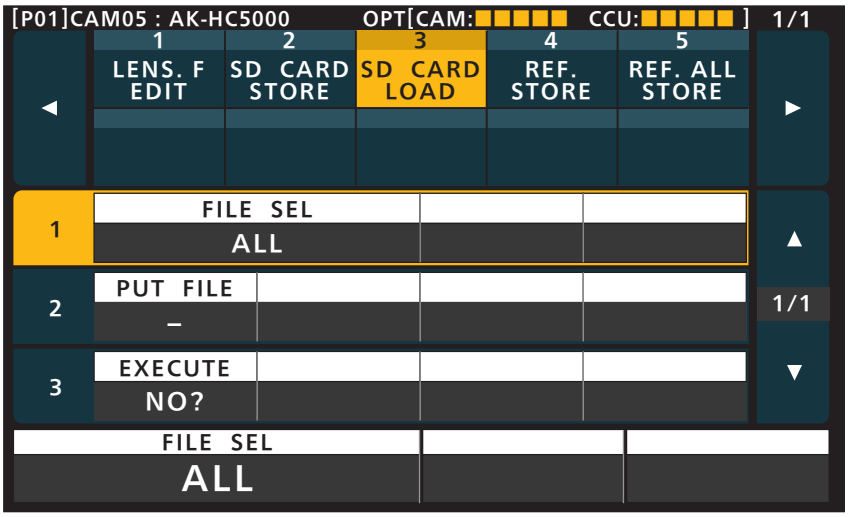


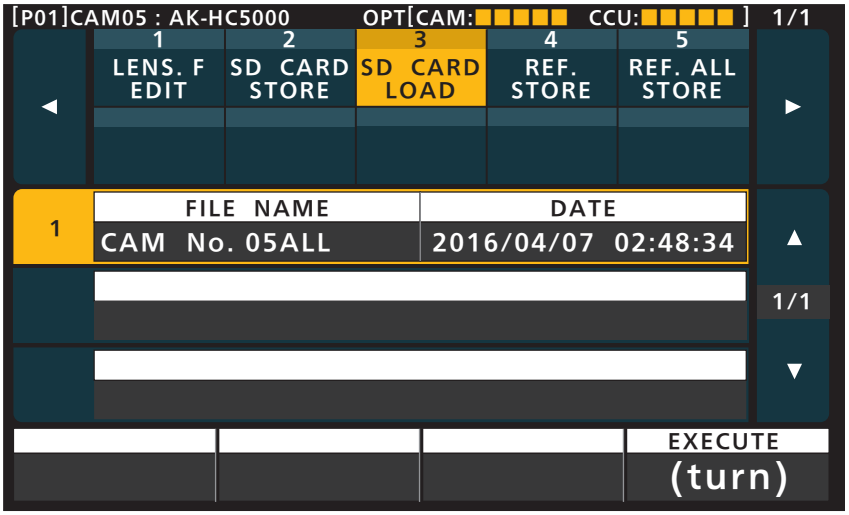
Item	Setting value	Setting details
MODE	FORMAT STORE	Selects the format, load, or store mode for the SD card.
SELECT	ALL SCENE USER LENS REF	Selects the type of files to be saved. **ALL** Saves all scene files (SCENE1 to SCENE8), user files (USER1 to USER3), reference user files (REF1 to REF3), and lens files (LENS1 to LENS32). **SCENE** Saves scene files (CURR (CURRENT), SCENE1 to SCENE8). **USER** Saves user files (USER1 to USER3). **LENS** Saves lens files (LENS1 to LENS32). **REF** Saves reference user files (REF1 to REF3).
NUMBER	SCENE: CURR, 1 to 8 USER: 1 to 3 LENS: 1 to 32 REF: 1 to 3	Selects the data based on the file type specified in [SELECT]. This cannot be selected when [SELECT] is set to "ALL".
EXECUTE	NO? YES?	Select "YES?" to execute the operation. ● After starting this process, do not turn off the unit or remove SD cards until the process is complete.

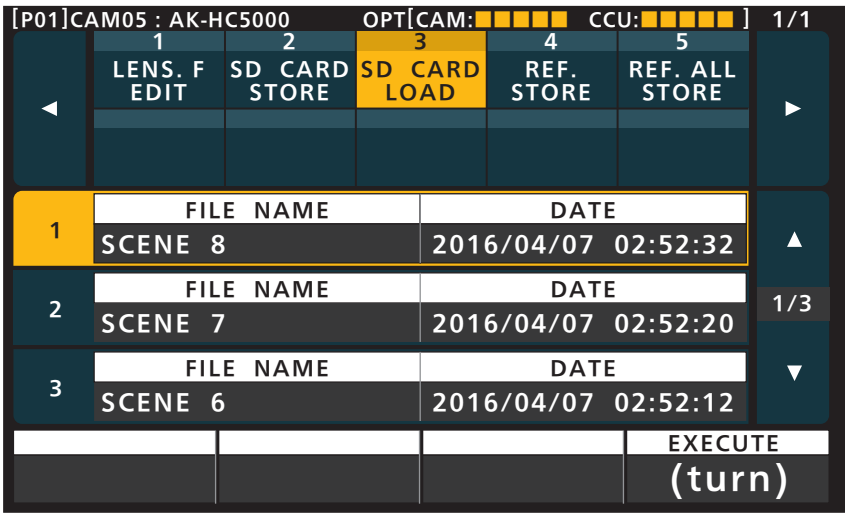
NOTE

- As the unit is not equipped with a clock function, the date and time at which the file was saved on the camera will be used for the creation dates of saved files.

3 SD CARD LOAD





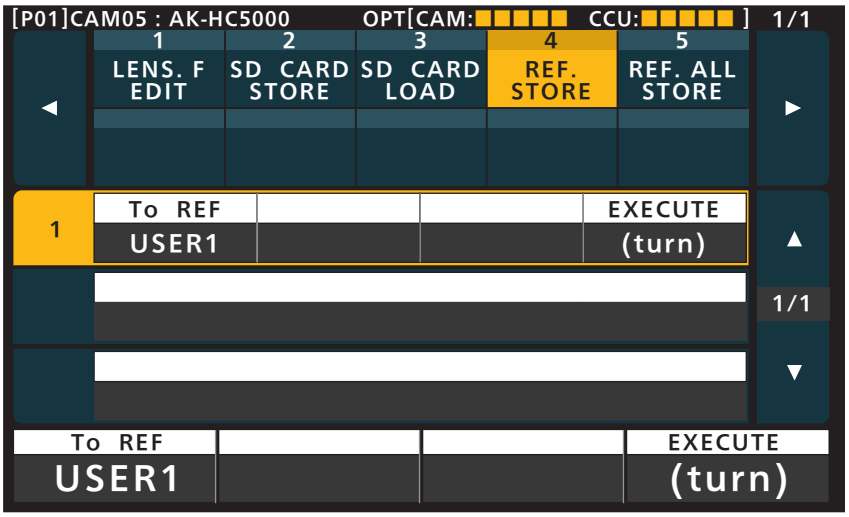


Item	Setting value	Setting details
FILE SEL	ALL ALL SCENE SCENE ALL USER USER ALL LENS LENS ALL REF REF	Selects the type of files to be loaded. **ALL** Loads the data saved with "ALL". **ALL SCENE** Loads the scene file data (SCENE1 to SCENE8) saved with "ALL". **SCENE** Loads a single scene file. **ALL USER** Loads the user file data (USER1 to USER3) saved with "ALL". **USER** Loads data from a single user file. **ALL LENS** Loads the lens file data (LENS1 to LENS32) saved with "ALL". **LENS** Loads a single lens file. **ALL REF** Loads all reference user file data (REF1 to REF3) saved with "ALL". **REF** Loads data from a single reference user file.
PUT FILE	FILE SEL : SCENE CURR, SCENE1 to 8, EXT1, EXT2 FILE SEL : USER USER1 to 3 FILE SEL : LENS LENS1 to 32 FILE SEL : REF REF1 to REF3	Specify the LOAD destination type. • This cannot be specified when [FILE SEL] is set to "ALL", "ALL SCENE", "ALL USER", "ALL REF" or "ALL LENS". • When [FILE SEL] is set to "SCENE", "CURR" (CURRENT), "SCENE1" to "SCENE8" and "EXT1" and "EXT2" can be selected. The loaded data is saved to the unit only when "EXT1" or "EXT2" is selected, and pressing the [4] (EXT1) or [5] (EXT2) button of the SCENE FILE while the scene file page switching button is lit applies the data to the camera and CCU. ➡ "Front panel 3" (see page 24) • When [FILE SEL] is set to "USER", "USER1" to "USER3" can be selected. • When [FILE SEL] is set to "LENS", "LENS1" to "LENS32" can be selected. • When [FILE SEL] is set to "REF", "REF1" to "REF3" can be selected.
EXECUTE	NO? YES?	Select "YES?" to load the selected data. • After starting this process, do not turn off the unit or remove SD cards until the process is complete.

NOTE

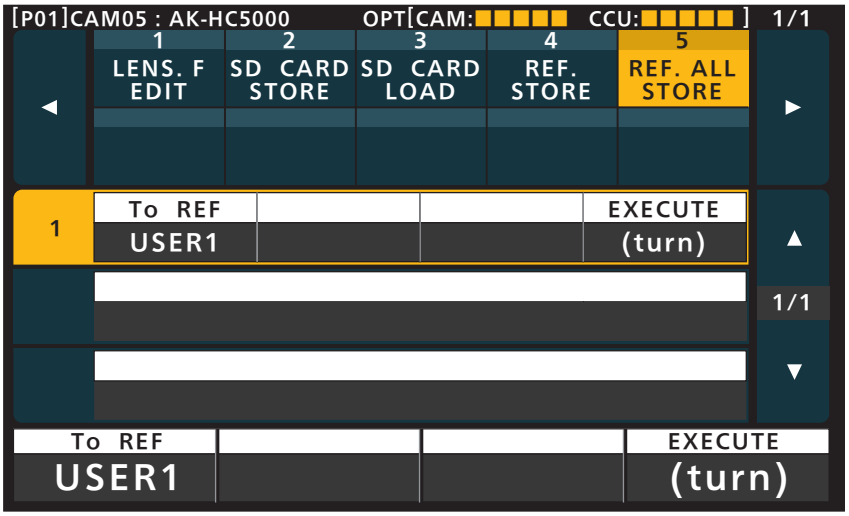
- As the unit is not equipped with a clock function, the date and time at which the file was saved on the camera will be used for the creation dates of saved files.

4 REF. STORE



Item	Setting value	Setting details
To REF	USER1 to USER3 REF1 to REF3	Overwrite the current setting values to the selected file.
EXECUTE	-	Execute saving of the reference file.

5 REF. ALL STORE

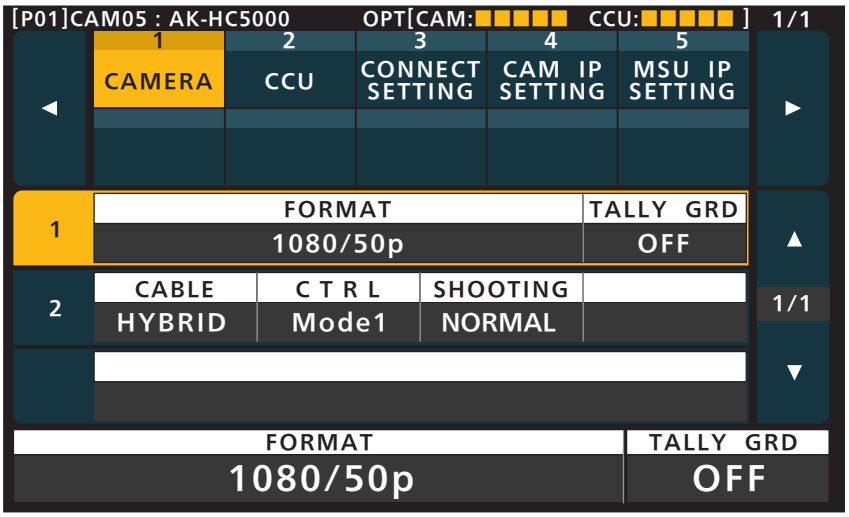


Item	Setting value	Setting details
To REF	USER1 to USER3 REF1 to REF3	Overwrite the current setting values to the selected file.
EXECUTE	-	Execute saving of the reference file.

SYSTEM

1 CAMERA

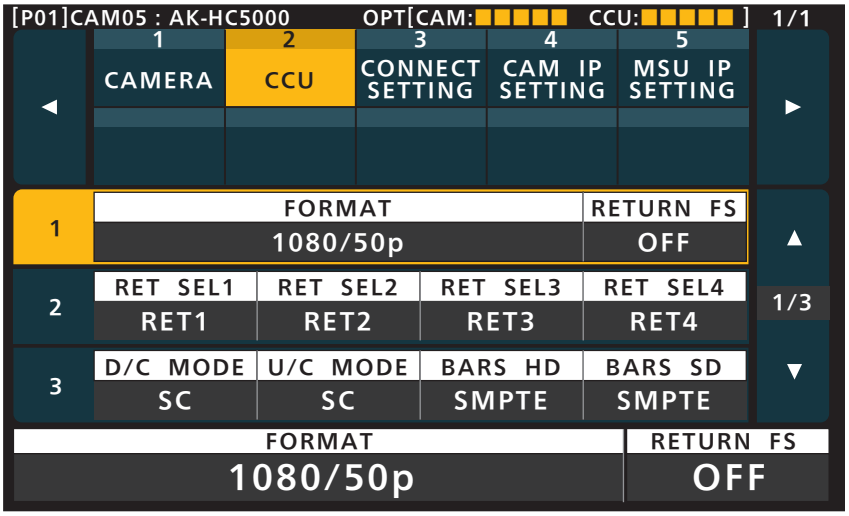
The setting values will vary depending on the connected camera.

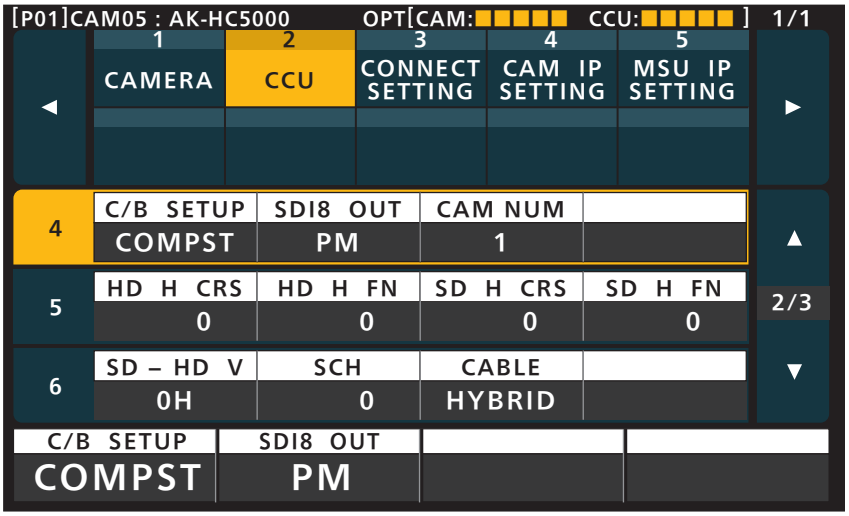


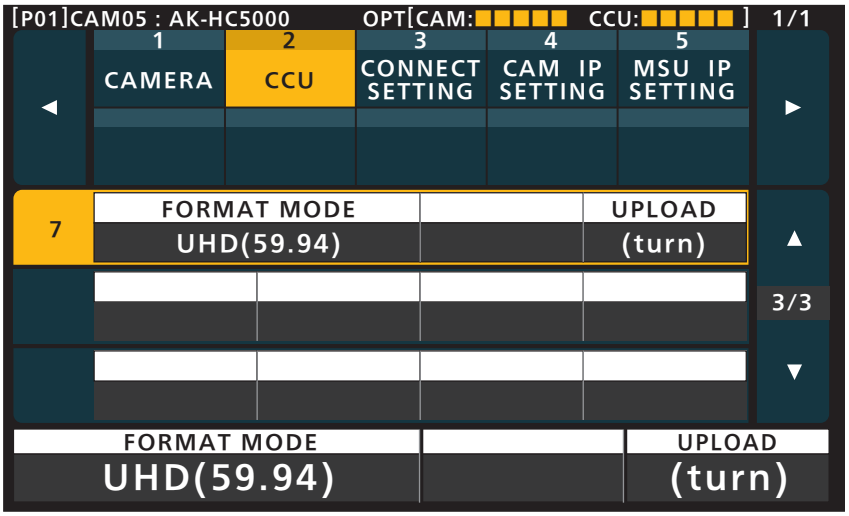
Item	Setting details
FORMAT	Set the camera format. When the unit is connected to a CCU, this item is only displayed and cannot be changed.
TALLY GRD	When set to ON, this function disables automatic ASU, AWB, ABB operation while the tally is ON.
CABLE	Displays the CCU connection cable setting. You can change the setting via menu operations on the camera itself. **HYBRID** Indicates that the CCU is connected via an optical fiber multi cable. **FIBER** Indicates that the CCU is connected via an optical fiber cable.
CTRL	A mode that operates based on the numerical value and a mode that operates based on the effect are available. For details, refer to the operating instructions of the camera.
SHOOTING	Sets the shooting mode.

2 CCU

The setting values will vary depending on the connected CCU.

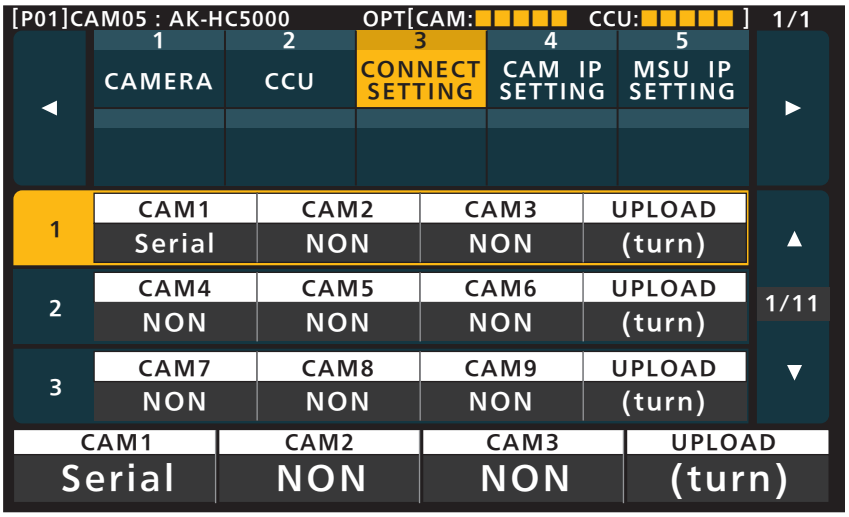


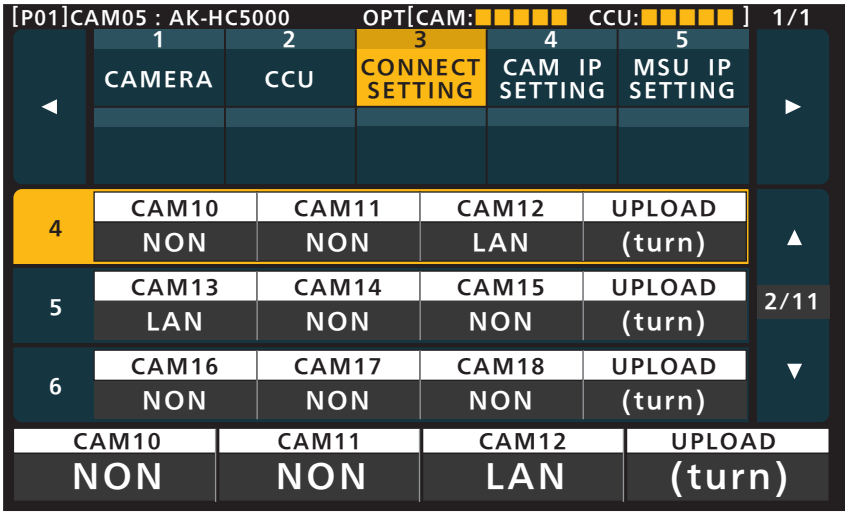


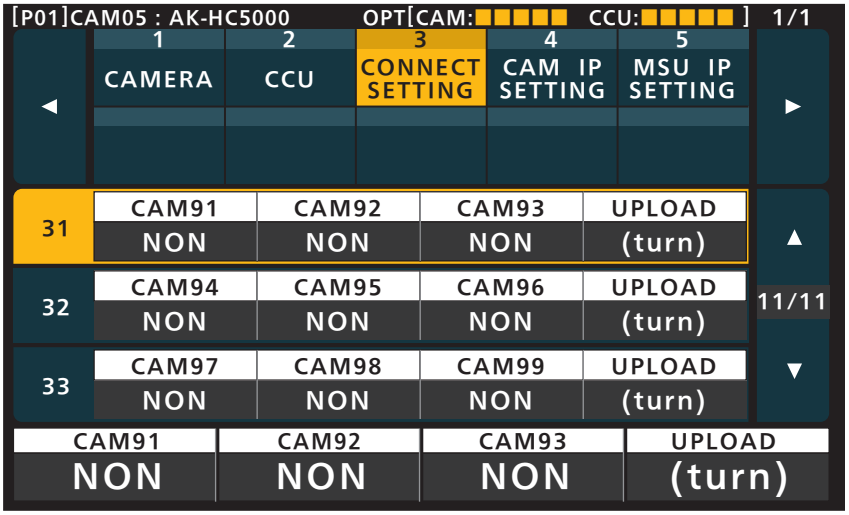


Item	Setting details
FORMAT	Selects the format that is output from the CCU. The CCU specifies the format to the camera based on the format selected here.
RETURN FS	Set the delay mode for the HD return signals.
RET SEL1	Sets the input allocations of return signal 1.
RET SEL2	Sets the input allocations of return signal 2.
RET SEL3	Sets the input allocations of return signal 3.
RET SEL4	Sets the input allocations of return signal 4.
D/C MODE	Selects the down-conversion system for video output from SD SDI and VBS.
U/C MODE	Selects the video up-conversion system used for SD SDI and VBS return videos.
BARS HD	Specifies the HD color bar output by the CCU.
BARS SD	Specifies the SD color bar output by the CCU.
C/B SETUP	Set the SD signal output for use with color bar output. • The "SETUP7.5%" setting is not valid when "SD_SDI" is selected.
SDI8 OUT	Performs PM/NORMAL switching for SDI8 OUT.
CAM NUM	Specifies the number of the camera to be controlled by the CCU.
HD H CRS	Make the coarse setting of the H_FINE phase used with GL HD REF.
HD H FN	Make the fine setting of the H_FINE phase used with GL HD REF.
SD H CRS	Make the coarse setting of the H_FINE phase used with GL SD REF.
SD H FN	Make the fine setting of the H_FINE phase used with GL SD REF.
SD-HD V	Set the vertical phase used with down-convert SD REF. • When the [24PsF GL MODE] setting for the CCU is "NORMAL", this is fixed to "0H". • When the [24PsF GL MODE] setting for the CCU is "ADVANCE", this is fixed to "0H_SD_DLAY". • With 1080/59.94i(24P), this is fixed to "0H".
SCH	Adjust the SCH phase of VBS output.
CABLE	Displays the camera connection cable setting. You can change the setting via menu operations on the CCU itself. **HYBRID** Indicates that the camera is connected via an optical fiber multi cable. **FIBER** Indicates that the camera is connected via an optical fiber cable.
FORMAT MODE	Selects the CCU format mode.

3 CONNECT SETTING



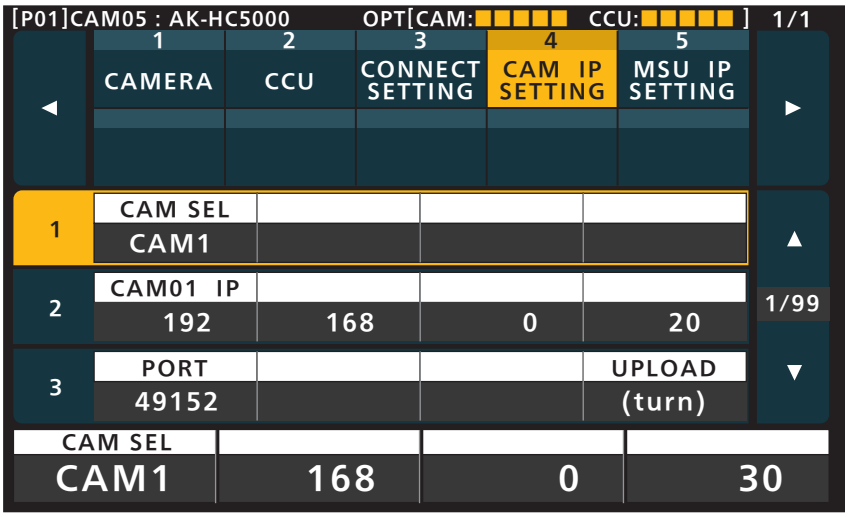




___ indicates factory default settings.

Item	Setting value	Setting details
CAM1	NON Serial LAN LAN(AW)	Sets the connection method for camera 1. Serial, LAN: Select when connecting with the AK-HC5000 series, AK-UC3000 series, or AK-UC4000 series. LAN(AW): Select when connecting with the AK-UB300 series. ● "Serial" can be selected for [CAM1] to [CAM6] (corresponding to the rear <CCU (1 to 6)> connectors). For [CAM7] and higher cameras, only "LAN" and "LAN(AW)" can be selected.
CAM2 to CAM99	NON Serial LAN LAN(AW)	Sets the connection method for cameras 2 to 99. Serial, LAN: Select when connecting with the AK-HC5000 series, AK-UC3000 series, or AK-UC4000 series. LAN(AW): Select when connecting with the AK-UB300 series. ● "Serial" can be selected for [CAM1] to [CAM6] (corresponding to the rear <CCU (1 to 6)> connectors). For [CAM7] and higher cameras, only "LAN" can be selected.

4 CAM IP SETTING

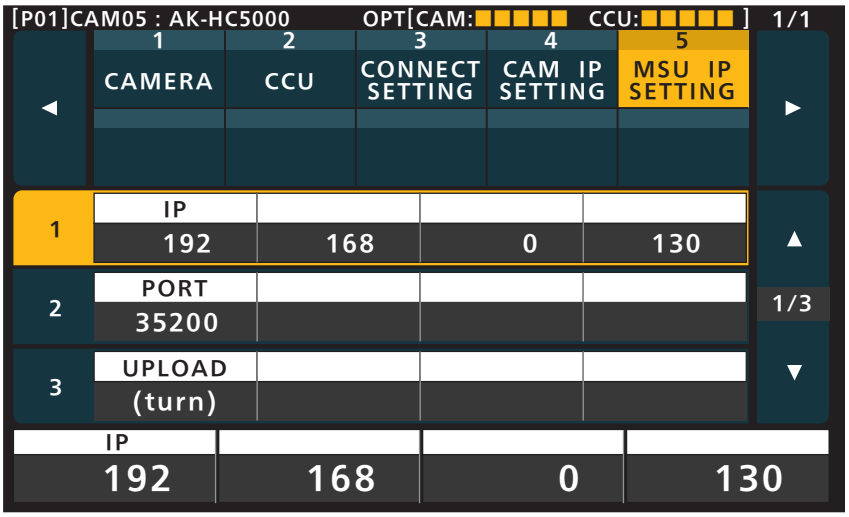


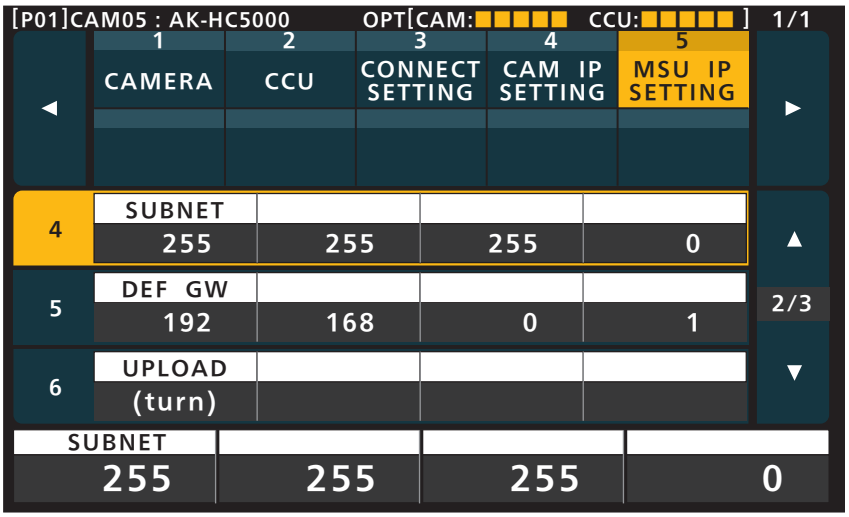
Item	Setting details
CAM SEL	Select the camera control number for which you want to configure settings. The setting ranges are as follows. CAM1 to CAM99 The network settings for the selected camera control number will appear in the screens that follow.
CAM01 to CAM99 IP	Sets the IP address of the camera. The setting ranges are as follows. (IP addresses are assigned in order starting with 192.168.0.20 for CAM1 under factory default conditions.) ● 1st octet: 1 to 223 ● 2nd octet: 0 to 255 ● 3rd octet: 0 to 255 ● 4th octet: 1 to 254 However, the following addresses cannot be set. Check the setting values during configuration. ● 0.*.*.*, *.*.*.0, *.*.*.255, 127.0.0.1 ● Class D address (224.0.0.0 to 239.255.255.255) ● Class E address (240.0.0.0 to 255.255.255.255)
PORT	Sets the port of the camera. Values from 1 to 65535 can be set. (Factory default: 49152)
UPLOAD	When you press the [MENU] dial, the camera's IP address and port will be set.

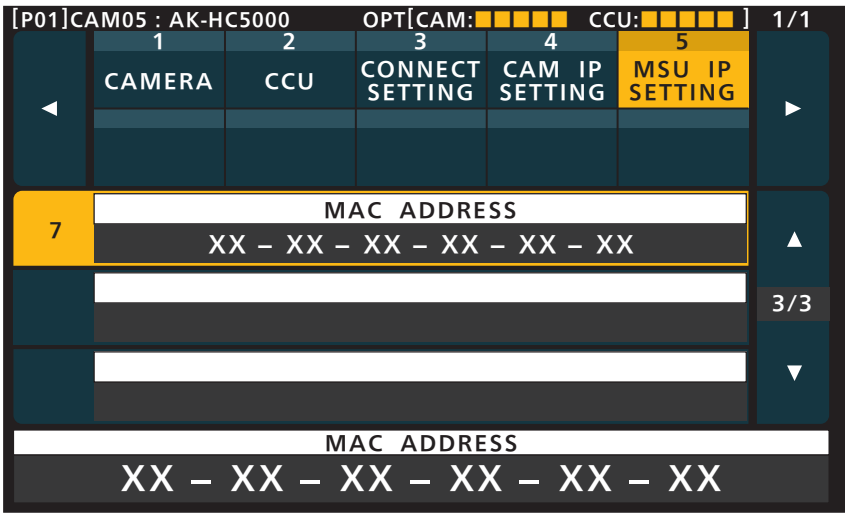
NOTE

- Performing [UPLOAD] after changing the settings will apply the setting value changes. Perform [UPLOAD] on each screen. The settings will not be applied unless [UPLOAD] is performed.

5 MSU IP SETTING







Item	Setting details
IP	Sets the IP address of the unit. The setting ranges are as follows. (Factory default: 192.168.0.130) ● 1st octet: 1 to 223 ● 2nd octet: 0 to 255 ● 3rd octet: 0 to 255 ● 4th octet: 1 to 254 However, the following addresses cannot be set. Check the setting values during configuration. ● 0.*.*.*, *.*.*.0, *.*.*.255, 127.0.0.1 ● Class D address (224.0.0.0 to 239.255.255.255) ● Class E address (240.0.0.0 to 255.255.255.255)
PORT	Sets the port of the unit. Values from 1 to 65535 can be set. (Factory default: 35200)
UPLOAD	When you press the [MENU] dial, the unit's IP address and port will be set.
SUBNET	Sets the subnet mask of the unit. The follow values can be set. (Factory default: 255.255.255.0) ● 1st octet: 128, 192, 224, 240, 248, 252, 254, 255 ● 2nd octet: 0, 128, 192, 224, 240, 248, 252, 254, 255 ● 3rd octet: 0, 128, 192, 224, 240, 248, 252, 254, 255 ● 4th octet: 0, 128, 192, 224, 240, 248, 252, 254, 255
DEF GW	Sets the default gateway of the unit. The setting ranges are as follows. (Factory default: 192.168.0.1) ● 1st octet: 1 to 223 ● 2nd octet: 0 to 255 ● 3rd octet: 0 to 255 ● 4th octet: 1 to 254 However, the following addresses cannot be set. Check the setting values during configuration. ● 0.*.*.*, *.*.*.0, *.*.*.255, 127.0.0.1 ● Class D address (224.0.0.0 to 239.255.255.255) ● Class E address (240.0.0.0 to 255.255.255.255)
UPLOAD	When you press the [MENU] dial, the unit's default gateway will be set.
MAC ADDRESS	Display the unit 's MAC address. (Display only)

NOTE

- Performing [UPLOAD] after changing the settings will store the setting value changes to the internal memory. Perform [UPLOAD] on each screen. The setting values stored to memory will be applied after the unit is restarted.

Software

IP connection

IP connection procedure

This section describes how to configure the unit and CCU using the software.

For the system configuration when using IP connections, see the following page.

“System Connection Configuration” (see page 18)

Connection flow

1. **Installing the software**
   Install Easy IP Setup Tool and MSU Setup Tool supplied with the unit on a personal computer.
   - Easy IP Setup Tool is a tool for setting the IP addresses of the MSU and CCU. MSU Setup Tool is a tool for configuring various settings (system settings) of the MSU.
   - When configuring settings using a personal computer, use the Easy IP Setup Tool supplied with the unit.

   “Easy IP Setup Tool” (see page 106)
   “MSU Setup Tool” (see page 108)
2. **Equipment connections**
   Connect the unit to the CCU via a PoE+ switching hub (100base-TX) with LAN cables.
   - Be sure to connect the devices via a switching hub because the personal computer for configuring the IP settings needs to be connected. Use a switching hub with PoE+ support because the unit can be powered by PoE+.

     “IP connection example” (see page 19)
3. **Connecting and setting the personal computer**
   Connect the personal computer to the switching hub (100base-TX) using a LAN cable.
   Configure the network settings of the personal computer.
   - Configure the network settings of the personal computer so that it is in the same segment as the unit and CCUs.

     “Connecting and setting the personal computer” (see page 105)
4. **Device IP address configuration**
   Configure IP addresses for connected devices using the methods described in "Configuring the settings using the menus" or "Configuring the settings using Easy IP Setup Tool" section.
   - To configure the settings using the menus, configure the settings by operating the menus of each device. For details on the menu operation, refer to the operating instructions of the corresponding devices.

     “Setting the IP addresses of the devices” (see page 105)
5. **Configuring various settings of the MSU**
   Use MSU Setup Tool to configure various settings.
   Install the MSU Setup Tool supplied with the unit on the personal computer.
   Various settings of an MSU connected with an IP connection can be configured.
   - Create a list of the MSUs in the same system.
   - Set the MSU system settings.
   - Set the connection authentication.
6. **Start operation**

About the IP connection settings

Do not start Easy IP Setup Tool and MSU Setup Tool during operation. The MSU will be disconnected, which in turn may cause a problem with operation.

Connecting and setting the personal computer

Establish an IP connection for the personal computer on which Easy IP Setup Tool and MSU Setup Tool are installed.

Configure the network settings of the personal computer.

Configure the network settings of the personal computer so that the same segment of the devices being connected is used.

The recommended settings are shown below.

IP address	192.168.0.200 ● Change the IP address if it is already used by another device.
Subnet mask	255.255.255.0
Default gateway	192.168.0.1

Setting the IP addresses of the devices

Configuring the settings using the menus

Set the IP address of the unit (MSU) in [MSU IP SETTING] under the MSU menu.

➡ “5 MSU IP SETTING” (see page 102)

For the IP address of the CCU, refer to the operating instructions for the CCU.

Configuring the settings using Easy IP Setup Tool

Use Easy IP Setup Tool to set the IP address of each device.

➡ “Easy IP Setup Tool” (see page 106)

Configuring various settings of the MSU

Use MSU Setup Tool to configure various settings.

➡ “MSU Setup Tool” (see page 108)

Easy IP Setup Tool

Installing and starting the software

Easy IP Setup Tool (EasyIPSetup.exe) is on the supplied CD-ROM.

Be sure to read “Readme.txt” on the supplied CD-ROM before installing the software.

1. **Insert the CD-ROM supplied with the unit into the CD-ROM drive of the personal computer on which the application is going to be installed.**
2. **Copy the entire [EasyIPSetup] folder on the CD-ROM to the hard disk drive of the personal computer.**
3. **Double-click [EasyIPSetup.exe] in the copied [EasyIPSetup] folder.**
   Easy IP Setup Tool starts.

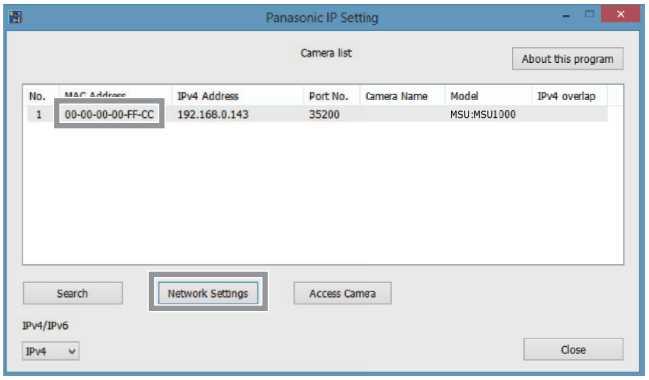
Setting IP addresses of devices

Use Easy IP Setup Tool to set the IP address of each device.

- With this software, the MSU and CCU are also displayed as cameras.
- If you are using Microsoft® Windows® Vista, you may be asked to enter the password for the administrator account when you start Easy IP Setup Tool. If that happens, disable [User Account Control] from the Control Panel.
- Easy IP Setup Tool cannot be used from a different subnet via a router.
- IPv6 is not supported.

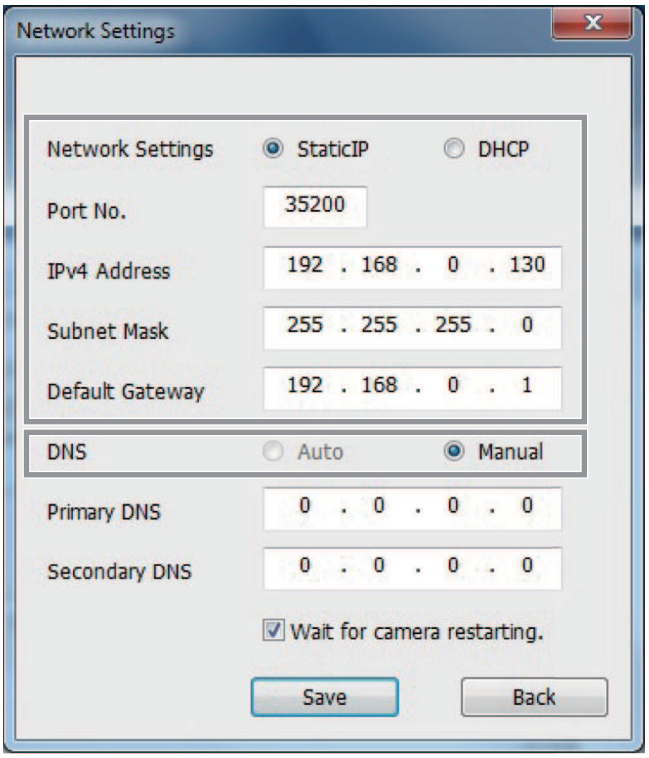
Setting Procedure

1. **Start the Easy IP Setup Tool.**
   A list of the devices connected with IP connections is displayed.
2. **Click the MAC address of the MSU or CCU you wish to set, and then click the [Network Settings] button.**



- If there is an IP address conflict, the MAC addresses of the corresponding cameras are displayed with drop shadows.

3. **Enter each of the network items and then click the [Save] button.**
   - Set [Network Settings] to "Static IP".
   - Enter the setting information in [IPv4 Address], [Subnet Mask], and [Default Gateway].
   - Do not change any of the other settings.



- Setting of the CCU or MSU takes about 2 minutes to complete after you click the [Save] button. If the DC cables or LAN cable is disconnected before the settings are completed, the settings will be canceled. In such a case, configure the settings again.
- Even though the network settings have been completed, the network operations is not performed properly if the same IP address is used by another device on the same network. Set the IP address that does not coincide with an existing IP address.
- Do not configure the network settings from multiple instances of Easy IP Setup Tool at the same time.

NOTE

- Set the network settings for the CCU from the menus of the CCU. (For details, refer the operating instructions for the CCU.) Restart the CCU after changing of the settings is complete.

Firewall

- If a firewall (including software) exists, allow access to UDP for all ports.
- If a firewall is activated, enable the “Allow a program through Windows Firewall” setting.

1. **Open the control panel, and click [System and Security].**
2. **Click [Allow a program through Windows Firewall] of [Windows Firewall].**
3. **Select the [Internet Explorer] or [EasyIpSetup] line, click the [Change settings] button, and then add a check to [Internet Explorer] or [EasyIpSetup].**
4. **Click [OK].**

MSU Setup Tool

MSU Setup Tool (MSU1000Tool.exe) is on the supplied CD-ROM.

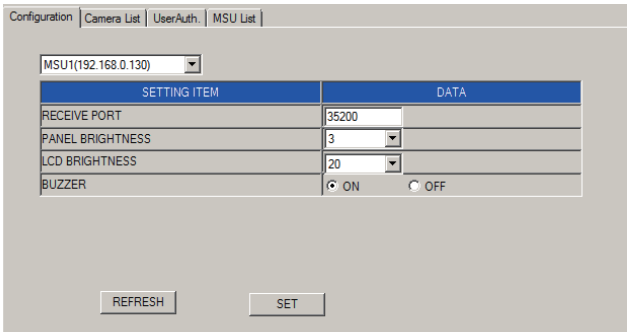
Be sure to read “Readme.txt” on the supplied CD-ROM before installing the software.

1. **Insert the CD-ROM supplied with the unit into the CD-ROM drive of the personal computer on which the application is going to be installed.**
2. **Copy the entire [MSUSetup] folder on the CD-ROM to the hard disk drive of the personal computer.**
3. **Double-click [MSU1000Tool.exe] in the copied [MSUSetup] folder.**
   MSU Setup Tool starts.

Use MSU Setup Tool to configure various settings of the unit.

First, register this unit to MSU Setup Tool from the [MSU List] tab screen.

Once the registration has been done, various settings can be configured on the [Configuration] tab, [Camera List] tab, and [UserAuth.] tab.



When MSU Setup Tool is started, the [Configuration] tab is displayed first. Click tabs to switch screens and make necessary registrations and configurations.

Notice about using MSU Setup Tool

When configuring settings from a personal computer using MSU Setup Tool, please pay attention to the following points.

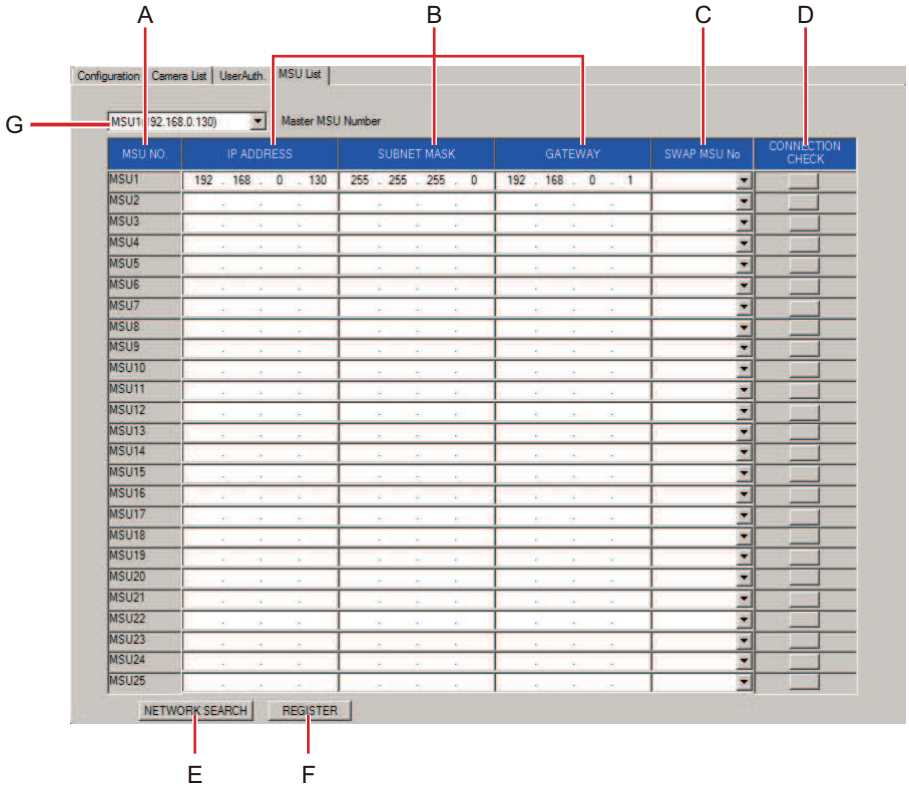
- Do not start up MSU Setup Tool while the unit is in the setup mode.
- Do not start up MSU Setup Tool on another personal computer on the same network.
- After using the setup software to configure connection settings, we recommend backing up the setting data.
  ➡ “DATA SAVE” (see page 87)

Register the unit in MSU Setup Tool [MSU List].

On the [MSU List] tab, register the IP address of the unit to be set from MSU Setup Tool in [MSU1].

When connecting multiple MSUs to the network, register one of the units in [MSU1] and then register the other MSUs (AK-MSU1000) connected to the network.

MSUs registered here can be selected from the list box of the [Camera List] tab. Up to 25 units can be registered.



A. MSU NO. column [MSU NO.]
B. IP address column [IP ADDRESS] [SUBNET MASK] [GATEWAY]
C. SWAP MSU No. column [SWAP MSU No]
D. CONNECTION CHECK button [CONNECTION CHECK]
E. NETWORK SEARCH button [NETWORK SEARCH]
F. REGISTER button [REGISTER]
G. Setting target selection list box [Master MSU Number]

Setting Procedure

1. Set IP addresses in [MSU1].

1. On the [MSU1] line under [MSU NO.] (A), enter the IP address of the unit to be registered
2. Click the [REGISTER] button (F) to confirm the [MSU1] setting.

2. Set the connections for multiple units.

Settings can be configured in the following two ways.

- Register IP addresses assigned to devices in the IP address column [IP ADDRESS] [SUBNET MASK] [GATEWAY] (B) in the same manner as with [MSU1].
- Click the [NETWORK SEARCH] button (E) to retrieve the information for the MSUs in the same segment. A list is displayed in [MSU2] to [MSU25].

Click the [REGISTER] button (F) to confirm the [MSU1] setting. Registered MSUs are displayed in the [Master MSU Number] (G) list box.

- If you want to change the MSU numbers in the list, see the following page.
  ➡ “Changing the MSU numbers in the list” (see page 110)

3. Check the MSU connection on the network.

Click the [CONNECTION CHECK] button (D) in the row of the [MSU NO.] you need to check.

- If communication is performed correctly, the red tally of the tally display of the corresponding MSU flashes for approximately 3 seconds. If it does not flash, check the settings and connection.

Changing the MSU numbers in the list

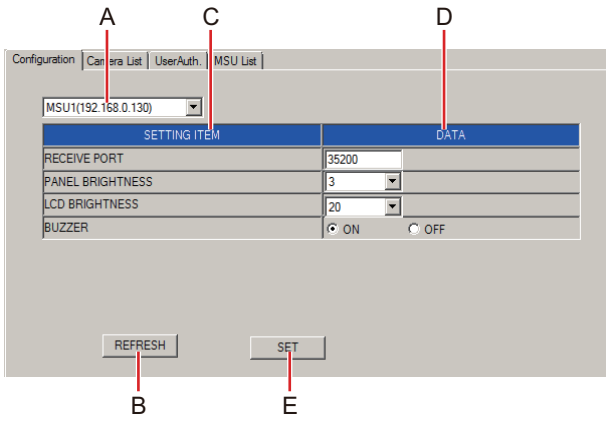
If you want to change the list's MSU numbers in the step 2 above, swap the connect destination MSUs between the two MSU numbers.

1. **Click ▼ in the [SWAP MSU No.] column (C).**
   A list of MSU numbers [MSU2] to [MSU25] is displayed.
2. **Select the MSU number with which you want to make the swap.**
3. **Click the [REGISTER] button (F) to confirm the change.**
   - The length of time required for setting after you click the [REGISTER] button (F) is proportional to the number of MSUs connected. When there are 25 MSUs connected, it takes up to about 10 minutes.

Configuring the Unit Settings [Configuration]

Configure the settings of the unit in the [Configuration] tab.

When you connect the personal computer to the unit for the first time, click the [REFRESH] button (B) to retrieve the values set on the unit.



A. Setting target selection list box [Master MSU Number]
B. REFRESH button [REFRESH]
C. Setting item [SETTING ITEM]
D. DATA column [DATA]
E. SET button [SET]

Setting Procedure

1. **Select the unit (MSU) to be set.**
   Click ▼ of [Master MSU Number] (A) to display a list of the IP addresses of MSU units that can be set. From the list, select the IP address of the MSU you want to set.
   Any of the units registered on the [MSU List] tab can be selected.
2. **Update the [Configuration] tab display.**
   Click the [REFRESH] button (B) to retrieve the connection information set on the unit to the personal computer and update the [Configuration] tab display.
3. **Configure the unit settings.**
   [SETTING ITEM] (C) is displayed for setting items of the MSU selected in step 1.
   Configure the settings for the required items in the [DATA] column (D).

RECEIVE PORT	Set the receive port.
PANEL BRIGHTNESS	Set the brightness of the panel LED display.
LCD BRIGHTNESS	Set the brightness of the LCD screen.
BUZZER	Enable or disable the buzzer (beep/call tone).

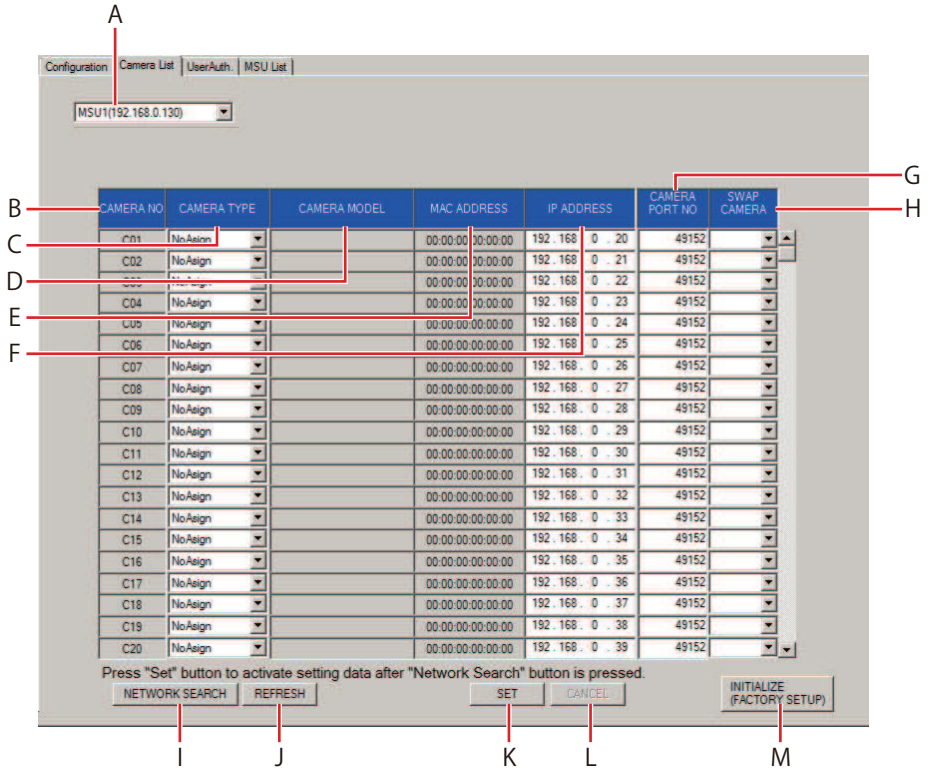
   - The settings above can also be configured on the unit in setup mode.
4. **Confirm the settings.**
   Confirm the settings.When the settings are complete, click the [SET] button (E) to confirm them.
   When the [Do you agree to rebooting after data transfer?] message appears, click the [OK] button.
   If you click [CANCEL], the settings are not reflected on the unit.

Configuring camera connection settings [Camera List]

On the [Camera List] tab, configure settings for connections between the MSU and the cameras.

When you connect the personal computer to the unit for the first time, first select the MSU to be set in [Master MSU Number] (A) and then click the [REFRESH] button (J). The values set on the MSU selected in [Master MSU Number] (A) are acquired.

Each of the [C01] to [C19] lines displays a list of the connection setting information for the corresponding camera number.

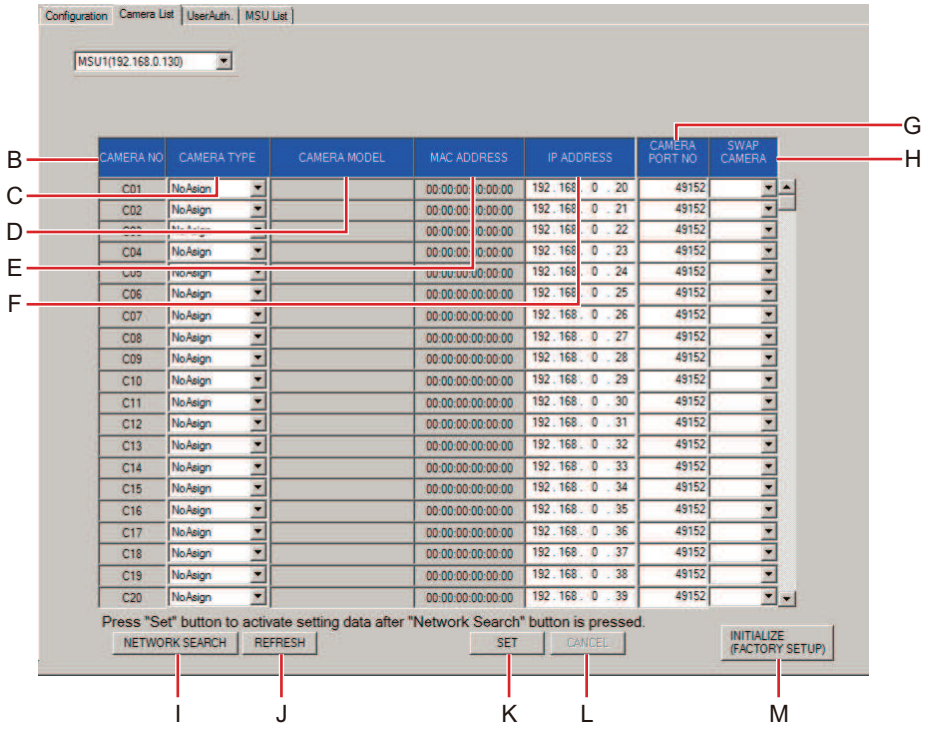


A. Setting target selection list box [Master MSU Number]
B. CAMERA NO column [CAMERA NO]
C. CAMERA TYPE column [CAMERA TYPE]
D. CAMERA MODEL column [CAMERA MODEL]
E. MAC ADDRESS column [MAC ADDRESS]
F. IP ADDRESS column [IP ADDRESS]
G. CAMERA PORT NO column [CAMERA PORT NO]
H. SWAP CAMERA column [SWAP CAMERA]
I. NETWORK SEARCH button [NETWORK SEARCH]
J. REFRESH button [REFRESH]
K. SET button [SET]
L. CANCEL button [CANCEL]
M. INITIALIZE(FACTORY SETUP) button [INITIALIZE(FACTORY SETUP)]

Setting Procedure

1. **Select the MSU for which you want to configure the connection settings.**
   Click ▼ of [Master MSU Number] (A) to display a list of the IP addresses of MSU units that can be set. From the list, select the MSU whose IP address you want to set.
   Any of the units registered on the [MSU List] tab can be selected.
2. **Update the [Camera List] tab display.**
   Click the [REFRESH] button (J) to retrieve the connection information for the MSU set in [Master MSU Number] (A) to the personal computer and update the [Camera List] tab display.
3. **Configure the connection settings.**
   Connection setting information is displayed for the MSU selected in procedure 1.
   Configure the settings for the required items.

Connection settings



B	**CAMERA NO column**	Displays the camera numbers.
C	**CAMERA TYPE column**	Click ▼ and select the connection type. The connection types are identical to those of [CONNECT SETTING] in the unit's MAINTENANCE menu. **"Serial", "NetWork"** Select when connecting with the AK-HC5000 series, AK-UC3000 series, or AK-UC4000 series. "Serial": Serial connection, "NetWork": IP connection **"NetWork(AK)"** Select when connecting with the AK-UB300 series. **"NoAsign"** Not set (default setting)
D	**CAMERA MODEL column**	Displays the connected devices acquired with the [NETWORK SEARCH] button (I). • The CCUs connected via a serial connection are not displayed.
E	**MAC ADDRESS column**	Displays the MAC addresses of cameras linked with camera numbers [CAMERA NO] (B) on the unit. MAC addresses of devices corresponding to camera numbers acquired by the [NETWORK SEARCH] button (I) are displayed.
F	**IP ADDRESS column**	Set the IP addresses of the CCUs to be connected. After input, click the [SET] button (K) to reflect the changes.
G	**CAMERA PORT NO column**	Set the port numbers of CCUs to be connected. After input, click the [SET] button (K) to reflect the changes. • **Possible setting range** 1 to 65535 However, the following values cannot be set even though they are within this range. 20, 21, 23, 25, 42, 53, 67, 68, 69, 110, 123, 161, 162, 995, 10669, 10670 • **Setting for normal operation** For normal operation, configure the setting as follows. However, if the setting has been changed on the camera side, the setting must be matched to that setting. • CCU IP: 49152
H	**SWAP CAMERA column**	Swap the camera connections set between two camera numbers. Click ▼ to display camera numbers "C01" to "C99". Select the camera number with which you want to make the swap from this list. After making a change, click the [SET] button (K) to reflect it.

I	**NETWORK SEARCH button**	Clicking this button to execute [NETWORK SEARCH] displays in yellow the cameras (CAMERA NO) corresponding to the newly detected link settings. If you click the [SET] button (K), the settings are confirmed and the connection destination IP addresses of the unit are updated. If you click the [CANCEL] button (L), the settings are not reflected. • If no camera was detected by executing [NETWORK SEARCH], click the [SET] button (K) once and then configure the settings manually. Then click the [SET] button (K) again to confirm the settings. • If a duplication error occurred during [NETWORK SEARCH], change the IP addresses on the screen. A duplication error is displayed if the IP addresses of two or more cameras displayed on the screen are same, or if the IP addresses of a camera displayed on the screen and a camera you are attempting to newly add to the network are same. Change the IP addresses for which the error was displayed, register the cameras to the unit, and then execute [NETWORK SEARCH].
J	**REFRESH button**	Retrieves the connection information set on the unit to the personal computer and updates the [Camera List] tab display.
K	**SET button**	Confirm the changes on the [Camera List] tab and update the settings on the unit. When the [Do you agree to rebooting after data transfer?] message appears, click the [OK] button. If you click [CANCEL] button (L), the settings are not reflected on the unit.
L	**CANCEL button**	Cancels changes that were made after executing [NETWORK SEARCH] button (I).
M	**INITIALIZE (FACTORY SETUP) button**	Click the [INITIALIZE(FACTORY SETUP)] button (M) to initialize the unit settings. The IP address is also initialized (factory default setting: 192.168.0.130).

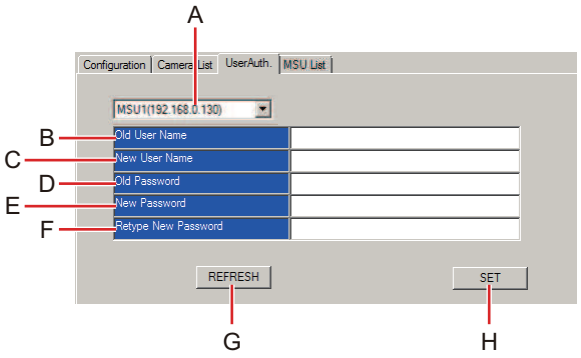
Caution when setting camera numbers

Be careful with regards to the following points when configuring the settings in [Camera List] for each AK-MSU1000.

- Decide the number of each camera beforehand, and set [Camera List] so that each camera number becomes the same as in the settings of all MSUs.
  For example, when connecting CCU and MSU (two of each) with a serial connection and IP connection, set [C01] to a serial connection and [C02] to an IP connection for [Camera List] of MSU1. For [Camera List] of MSU2, use [SWAP CAMERA] to set [C01] to an IP connection and [C02] to a serial connection.
- When you perform a search with [NETWORK SEARCH], all of the cameras and CCUs (C01 and C02) in the same segment will be found, but change any camera that has already been set with a serial connection to "NoAsign".

Setting user authentication [User Auth.]

To control CCUs that have the user authentication function enabled, you need to set the user name and password on the unit. Configure this setting on the [User Auth.] tab of this software. The user authentication function is only enabled when the unit is controlling CCUs connected with an IP connection. Also refer to the operating instructions for the CCU.



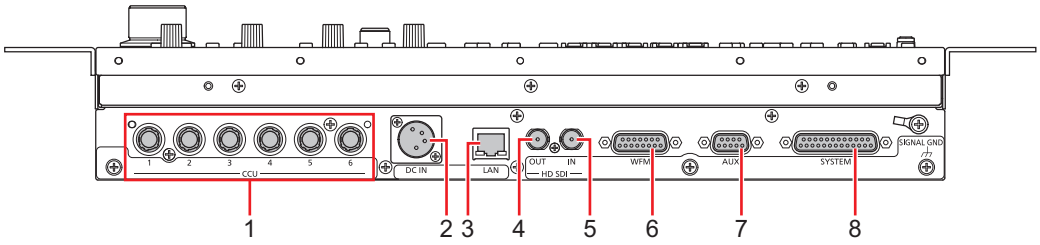
A. Setting target selection list box [Master MSU Number]
B. Old User Name box [Old User Name]
C. New User Name box [New User Name]
D. Old Password box [Old Password]
E. New Password box [New Password]
F. Retype New Password box [Retype New Password]
G. REFRESH button [REFRESH]
H. SET button [SET]

Setting Procedure

1. **Select the MSU for which you want to configure the connection settings in [Master MSU Number] (A).**
   Clicking ▼ displays the IP addresses of the MSU units that can be set. From the list, select the MSU whose IP address you want to set.
   Any of the units registered on the [MSU List] tab can be selected.
2. **Click the [REFRESH] button (G)**
   The user name set on the MSU selected in [Master MSU Number] (A) is displayed in [Old User Name] (B).
   - The MSU factory default user name is "admin".
3. **In the [New User Name] (C), enter the new user name to set.**
4. **In the [Old Password] (D), enter the password set on the selected MSU.**
   - Entered characters are displayed as [*].
5. **In the [New Password] box (E), enter the new password to set.**
   - Entered characters are displayed as [*].
6. **In the [Retype New Password] box (F), enter the same password entered in step 5.**
   - Entered characters are displayed as [*].
7. **Click the [SET] button (H).**
   The user name and password are set on the MSU selected in [Master MSU Number] (A).
   - When cameras with the user authentication function enabled are controlled, the user name and password that were set here will be required.
     Enter the user ID and password configured on the connected device.

Reference

Connector pin assignment table



1 <CCU> connector

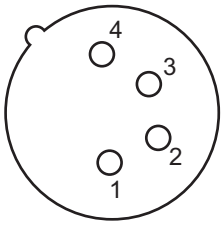
(Hirose Electric: HR10A-10R-10P (71))

Pin No.	Function	Polarity	Flow of signal
1	CAM DATA (H)	+	CAM→MSU
2	CAM DATA (L)	-	CAM→MSU
3	CAM CONT (H)	+	MSU→CAM
4	CAM CONT (L)	-	MSU→CAM
5	NC		
6	NC		
7	NC		
8	NC		
9	NC		
10	GND		

2 <DC IN> connector

(Hirose Electric: HA16RA-4P (77))

Accepts DC 12V inputs from an external power supply. The input voltage range is DC 10 V to 16 V.



Pin No.	Function
1	GND
2	NC
3	NC
4	+12 V

3 <LAN> connector

Complies with 100base-TX.

Allowing connection to a network device that supports the PoE+ standard (IEEE802.3af compliant).

4 <HD SDI OUT> connector

BNC 75 Ω

Outputs HD SDI signals that display the status of connected cameras and CCUs using characters.

5 <HD SDI IN> connector

BNC 75 Ω

When the [VIDEO] button is lit, the input video is displayed on the LCD panel.

6 <WFM> connector

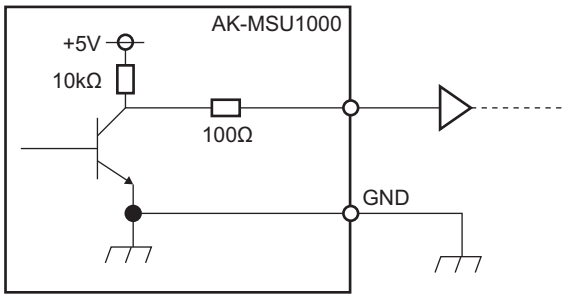
JAY-15S-1A3F (LF)(SN) (J.S.T. Mfg. Co., Ltd.)

This is the control connector for the waveform monitor.

Pin No.	Function	Flow of signal		Flow of signal
1	WFM PRESET1	MSU→WFM	5V TTL	LOW when "R"
2	WFM PRESET2	MSU→WFM	5V TTL	LOW when "G"
3	WFM PRESET3	MSU→WFM	5V TTL	LOW when "B"
4	WFM PRESET4	MSU→WFM	5V TTL	LOW when "R+G/R+B/G+B/R+G+B"
5	WFM PRESET5	MSU→WFM	5V TTL	LOW when "SEQ"
6	WFM PRESET6	MSU→WFM	5V TTL	LOW when "ENC"
7	WFM PRESET7	MSU→WFM	5V TTL	NOP
8	WFM PRESET8	MSU→WFM	5V TTL	NOP
9	RESERVE1	MSU→WFM	CMOS5V	NOP
10	RESERVE2	MSU→WFM	CMOS5V	NOP
11	RESERVE3	MSU→WFM	CMOS5V	NOP
12	GND			
13	NC			
14	NC			
15	NC			

Connection example

Output connection examples



7 <AUX> connector

JEY-9S-1A3F (LF)(SN) (J.S.T. Mfg. Co., Ltd.)

This connector is intended for future use. Do not use this connector.

8 <SYSTEM> connector

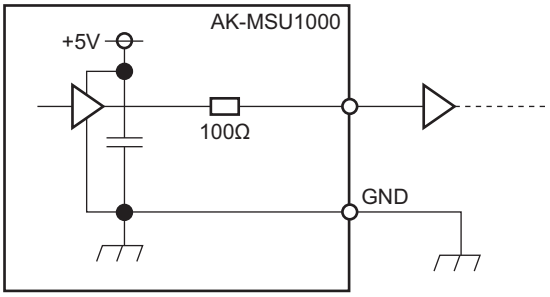
JBY-25S-1A3F (LF)(SN) (J.S.T. Mfg. Co., Ltd.)

This is the interface connector for external camera selection switch control signals.

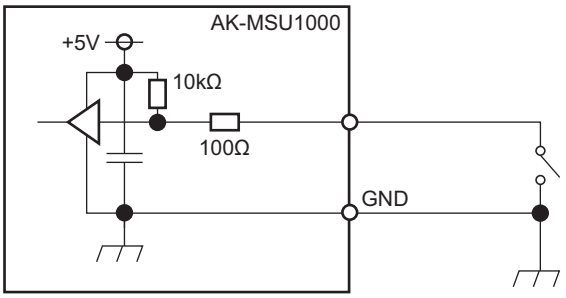
Pin No.	Signal name	Flow of signal	
1	MSU C1 ON	MSU→external	CMOS 5V
2	MSU C2 ON	MSU→external	CMOS 5V
3	MSU C3 ON	MSU→external	CMOS 5V
4	MSU C4 ON	MSU→external	CMOS 5V
5	MSU C5 ON	MSU→external	CMOS 5V
6	MSU C6 ON	MSU→external	CMOS 5V
7	RESERVE1	MSU→external	CMOS 5V
8	RESERVE2	MSU←external	CMOS 5V
9	GND		
10	NC		
11	SYSTEM LINK	MSU←external	CMOS 5V
12	LINK CANCEL	MSU→external	CMOS 5V
13	GND		
14	VE C1 ON	MSU←external	CMOS 5V
15	VE C2 ON	MSU←external	CMOS 5V
16	VE C3 ON	MSU←external	CMOS 5V
17	VE C4 ON	MSU←external	CMOS 5V
18	VE C5 ON	MSU←external	CMOS 5V
19	VE C6 ON	MSU←external	CMOS 5V
20	RESERVE3	MSU→external	CMOS 5V
21	RESERVE4	MSU←external	CMOS 5V
22	GND		
23	NC		
24	NC		
25	GND		

Connection example

Output connection examples



Input connection examples



[MONITOR R, G, B, SEQ, ENC] (monitor switching) button operations

You can switch the PM output signal according to MSU operations.

For the AK-HC5000

Monitor selection	HDTV		SDTV		Remarks
	SDI4/PM	VBS/PM	WFM	VBS/PM	
R	R	R	R	R	Output R instead of Y. PBPR and chroma signals OFF
G	G	G	G	G	Output G instead of Y. PBPR and chroma signals OFF
B	B	B	B	B	Output B instead of Y. PBPR and chroma signals OFF
SEQ	YPBPR	Y	RGB	Y	Chroma signal OFF for VBS output
ENC	YPBPR	VIDEO	VIDEO	VIDEO	

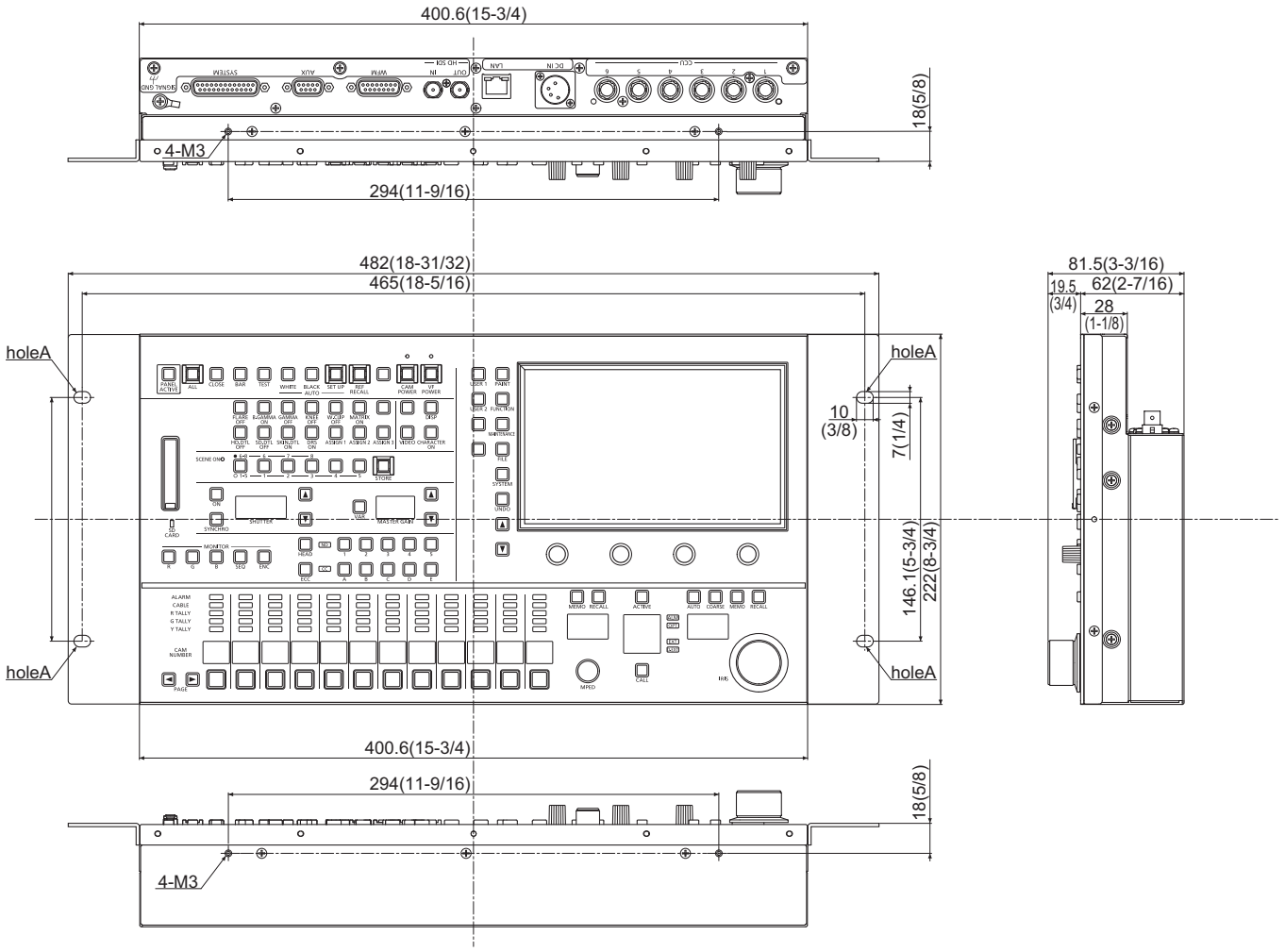
For the AK-UCU500/AK-UCU600

Monitor selection	HDTV		SDTV	
	SDI8/PM	VBS/PM	WFM	VBS/PM
R	R	R	R	R
G	G	G	G	G
B	B	B	B	B
SEQ	YPBPR	Y	RGB	Y
ENC	YPBPR	VIDEO	VIDEO	VIDEO

WFM output not available

Appearance

Unit: mm (inch)



Specifications

General

Power supply	12 V DC (⎓) (DC input range: 10 V - 16 V DC) 42 V - 57 V DC (⎓) (PoE+ power supply)
Power current	1.6 A (Power supply: 12 V DC) 0.6 A (PoE+ power supply)

indicates safety information.

CCU control	RS422 or IP
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	-20°C to 60°C (-4°F to 140°F)
Humidity	90% or less
Dimensions (Width×Height×Depth):	482 mm × 222 mm × 81.5 mm (18-31/32 inches x 8-3/4 inches x 3-3/16 inches) (including mounting brackets and dial heights)
Weight	Approx. 4.0 kg (8.82 lb)

Index

W

Panasonic Connect Co., Ltd.
Web Site: https://pro-av.panasonic.net/en/