Panasonic®

Operating Instructions
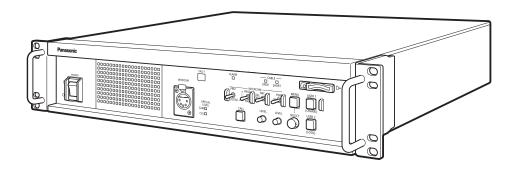
Camera Control Unit

Model No. **AK-HCU250P**

Model No. **AK-HCU250PS**

Model No. **AK-HCU250E**

Model No. **AK-HCU250ES**

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 6).

Read this first!

WARNING:

This equipment must be grounded.

To ensure safe operation, the three-pin plug must be inserted only into a standard three-pin power outlet which is effectively grounded through normal household wiring.

Extension cords used with the equipment must have three cores and be correctly wired to provide connection to the ground. Wrongly wired extension cords are a major cause of fatalities.

The fact that the equipment operates satisfactorily does not imply that the power outlet is grounded or that the installation is completely safe. For your safety, if you are in any doubt about the effective grounding of the power outlet, please consult aqualified electrician.

WARNING:

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

WARNING:

Installation should only be performed by qualified installation personnel. Improper installation may result in the entire apparatus falling down and causing injury.

WARNING:

This equipment is compliant with Class A of CISPR 32.
In a residential environment this equipment may cause radio interference.

CAUTION:

Do not remove panel covers by unscrewing.
To reduce the risk of electric shock, do not remove the covers. No user serviceable parts inside.
Refer servicing to qualified service personnel.

CAUTION:

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

CAUTION:

In order to maintain adequate ventilation, do not install or place this unit in a bookcase, built-in cabinet or any other confined space. To prevent risk of electric shock or fire hazard due to overheating, ensure that curtains and any other materials do not obstruct the ventilation.

CAUTION:

The mains plug of the power supply cord shall remain readily operable.
The AC receptacle (mains socket outlet) shall be installed near the equipment and shall be easily accessible. To completely disconnect this equipment from the AC mains, disconnect the power cord plug from the AC receptacle.

CAUTION:

Invisible Laser radiation is emitted from the Optical fiber connector when this product is turned on. Don't look into directly into the Optical fiber connector of this product.

CAUTION:

This product uses a semiconductor laser system and is a Class 1 Laser Product complies with Radiation Performance Standards, 21CFR SUBCHAPTER J.
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
Don't make any modifications.
Don't repair by yourself.
Refer servicing to qualified personnel.

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:

Naked flame sources, such as lighted candles, should not be placed on the apparatus.

CAUTION:

To reduce the risk of fire or electric shock, refer mounting of the optional interface boards to qualified service personnel.

For U.S.A. and Canada

CAUTION:

This apparatus can be operated at a voltage in the range of 100– 240 V AC.
Voltages other than 120 V are not intended for U.S.A. and Canada.
Operation at a voltage other than 120 V AC may require the use of a different AC plug. Please contact either a local or foreign Panasonic authorized service center for assistance in selecting an alternate AC plug.

NOTIFICATION (Canada)

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

⬜ indicates safety information.

For AK-HCU250P, AK-HCU250PS

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 cord 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.

FCC NOTICE (USA)

Supplier's Declaration of Conformity
Model Number: AK-HCU250P/AK-HCU250PS
Trade Name: Panasonic
Responsible Party: Panasonic Corporation of North America
Two Riverfront Plaza, Newark, NJ 07102
Support contact: 1-800-524-1448

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 Note:
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.

Warning:
To assure continued FCC emission limit compliance, the user must use only shielded interface cables when connecting to external units. Also, any unauthorized changes or modifications to this equipment could void the user's authority to operate it.

▭ indicates safety information.

For AK-HCU250E, AK-HCU250ES
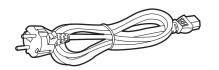
Caution for AC Mains Lead

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.
This product is equipped with 2 types of AC mains cable. One is for continental Europe, etc. and the other one is only for U.K.

Appropriate mains cable must be used in each local area, since the other type of mains cable is not suitable.
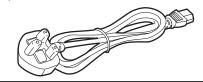
FOR CONTINENTAL EUROPE, ETC.
Not to be used in the U.K.

FOR U.K. ONLY
If the plug supplied is not suitable for your socket outlet, it should be cut off and appropriate one fitted.

FOR U.K. ONLY

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 13 amp fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 13 amps and that it is approved by ASTA or BSI to BS1362.
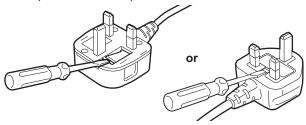Check for the ASTA mark ⊛ or the BSI mark ⊽ on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
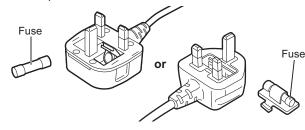A replacement fuse cover can be purchased from your local Panasonic Dealer.

How to replace the fuse
1. Open the fuse compartment with a screwdriver.

or

2. Replace the fuse.

Fuse

or

Fuse

▭ indicates safety information.

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 double 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.

AEEE Yönetmeliğine Uygundur.
AEEE Complies with Directive of Turkey.

Manufactured by: Panasonic Connect Co., Ltd. 4-1-62 Minoshima, Hakata-ku, Fukuoka 812-8531, Japan **Importer:** Panasonic Connect Europe GmbH Hagenauer Strasse 43, 65203 Wiesbaden, Germany **Authorized Representative in EU:** Panasonic Connect Europe GmbH Panasonic Testing Centre Winsbergring 15, 22525 Hamburg, Germany **Importer for UK:** Panasonic Connect UK, a branch of Panasonic Connect Europe GmbH, Maxis 2, Western Road, Bracknell, Berkshire, RG12 1RT

UK CA

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 municipality, 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.
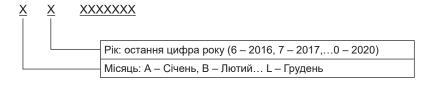
Приклад: X   X   XXXXXXX

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

Table of Contents

Introduction

How to View This Manual

About trademarks and registered trademarks

- SDXC logo is a trademark of SD-3C and LLC.
- 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.

Overview

This is a camera control unit (CCU) designed for use with the HD studio camera (AK-HC3900: sold separately) and the 4K studio camera (AK-PLV100: sold separately).

Use by connecting the unit to the HD studio camera and 4K studio camera ("camera" hereafter) using an optical fiber multi cable (sold separately).

You can use the unit to input and output the video signals of various formats.[1]

Equipped with 3G-HD/HD-SDI output, 3G/HD-SDI return input, prompter input (3G/HD-SDI, analog composite), and 3G/HD-SDI HD TRUNK OUT output.

Intercom calls with the camera and microphone audio output are possible.

The unit also comes with tally and other system interface inputs.

Connecting the ROP (AK-HRP250; sold separately, AK-HRP1000; sold separately, AK-HRP1005; sold separately, AK-HRP1010; sold separately; AK-HRP1015; sold separately) with a multi cable (sold separately) allows you to use the ROP to control the adjustment and setting of the camera and this unit.

[1]: Configure the format and imaging mode settings on the camera according to the format setting of the CCU.

Notice

Personal computer requirements

Use a host computer that satisfies the following conditions.

CPU	CPU Intel® Core™2 DUO 2.4 GHz or better is recommended
Memory	● **Windows** 1 GB or more (However, 2 GB or more for the 64-bit versions of Microsoft® Windows® 10, Microsoft® Windows® 8.1, Microsoft® Windows® 8, and Microsoft® Windows® 7)
	● **Mac** 2 GB or more
Network function	100BASE-TX 1 port
Image display function	Resolution: 1024×768 pixels or more Color generation: True Color 24-bit or better
Supported operating systems and Web browser	● **Windows** ● Microsoft® Windows® 10 Pro 64-bit/32-bit*1 ● Microsoft® Windows® 8.1 Pro 64-bit/32-bit*1 ● Windows® Internet Explorer® 11.0*1*3 ● Microsoft® Windows® 8 Pro 64-bit/32-bit*1 ● Windows® Internet Explorer® 10.0*1*3 ● Microsoft® Windows® 7 Professional SP1 64-bit/32-bit*2 ● Windows® Internet Explorer® 11.0/10.0/9.0/8.0*3 ● **Mac** ● OS X 10.12 Safari 10 ● OS X 10.11 Safari 9 ● OS X 10.10 Safari 8.0.4 ● OS X 10.9 Safari 7.0.2 ● OS X 10.8 Safari 6.1.2

*1: Use the desktop version of Internet Explorer. (Internet Explorer for Windows UI is not supported.)
*2: Use is not possible in Windows® XP compatibility mode.
*3: Use is not possible with the 64-bit version of Internet Explorer®.

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.

Memory cards

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

Be sure to use the unit to format memory cards.

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

SD:	2 GB
SDHC:	4 GB to 32 GB
SDXC:	64 GB

For the latest information not included in these Operating Instructions, refer to the support pages at the following website.

https://pro-av.panasonic.net/en/
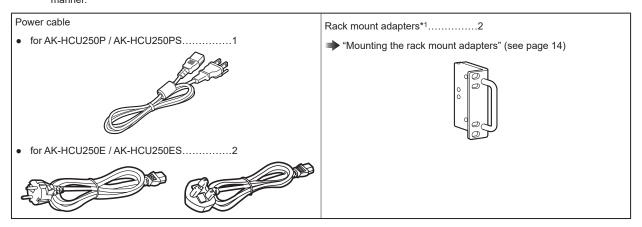
Observe the following points when using and storing this unit.

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

Accessories

● After removing the product from its container, dispose of the power cable cap (if supplied) and packing materials in an appropriate manner.

Power cable	Rack mount adapters*1……………2
● for AK-HCU250P / AK-HCU250PS……………1	➡ "Mounting the rack mount adapters" (see page 14)
● for AK-HCU250E / AK-HCU250ES……………2	

*1: The screws for the rack mount adapters come attached to the unit.

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 product or subject it to a strong impact. Doing so may cause a failure or accident.

▌ **Avoid using the unit outdoors**

- Use the product in an ambient temperature of 0 °C to 40 °C (32 °F to 104 °F). Avoid using the product 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) because an extremely low or high temperature will adversely affect the internal parts.

▌ **Turn off the power before connecting or disconnecting cables**

- Before connecting or disconnecting the cables, be sure to turn the power off.

▌ **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 parts.

▌ **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.

▌ **Optical fiber multi cable**

- When the optical fiber connectors of the optical fiber multi cable (sold separately) become dirty, the optical signal transmission state will deteriorate. Use commercially available optical connector cleaner to clean the optical connector end faces in accordance with the instructions.

▌ **Consumable parts**

- The cooling fan is a consumable part. The replacement cycle is approximately 10 years (when used approximately 8 hours per day).
  Contact your dealer to request cooling fan replacement.

▌ **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.

■ **Information on software used with this product**

1 **This product includes software licensed under GNU General Public License (GPL) and GNU Lesser General Public License (LGPL), and customers are hereby notified that they have rights to obtain, re-engineer, and redistribute the source code of these software.**

2 **This product includes software licensed under MIT-License.**

3 **This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/).**

4 **This product includes software licensed under OpenBSD License.**

For details on each license, refer to the terms of license.

The terms of license can be displayed using the following method.

- Select [MAINTENANCE] menu → [SD CARD] menu → [OSS LICENSE] → [YES] and the file is written to an SD card inserted in this camera.
  Insert the SD card to which the file has been written into a computer and select "LICENSE.TXT".

For details on these descriptions (originally provided in English) and how to obtain the source code, visit the following website.

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

We do not accept inquiries about the details of the source code obtained by the customer.

Excluding the open source software licensed based on GPL/LGPL, etc., transferring, copying, reverse assembling, reverse compiling, and reverse engineering of the software included in the camera is prohibited. Also, exporting of any software included in the camera against the export laws and regulations is prohibited.

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.

▌ **Connecting a power supply**
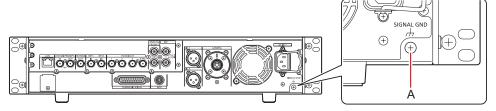
- Be sure to use the power cable supplied with the unit.
- Connect the [SIGNAL GND] terminal on the rear of the unit to the system ground.
- When the unit will not be used for a long time, turn off the [POWER] switch and remove the power plug from the outlet to save power.

▌ **Ground of the power plug**

- The power cable supplied with the unit has a 3-prong plug with a ground terminal.
  Connect it to a 3-prong outlet with a ground contact.

▌ **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.
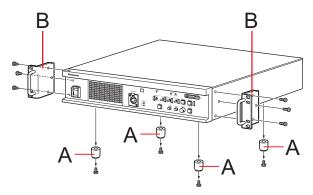
▌ **Installation location**

- This unit is designed for indoor use only.
- 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.

Mounting the unit in a rack

Mounting the rack mount adapters
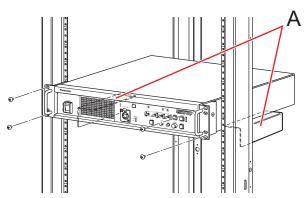
1. **Remove the setting legs (A) secured to the unit.**
   Remove them using a Phillips screwdriver.

2. **Mount the supplied rack mount adapters (B).**
   - Mounting screws are not supplied. Use mounting screws removed from the unit using a Phillips screwdriver.
     Tighten the mounting screws for rack mount adapters using a torque of 110 N·m or more.

- **A. Setting legs**
- **B. Rack mount adapters**
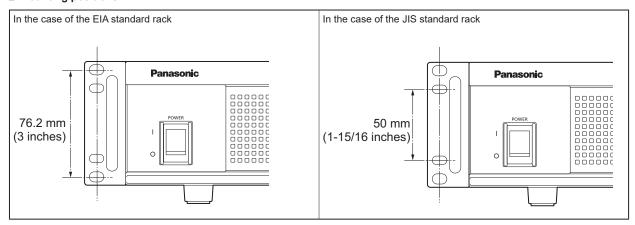
Mounting the unit in a rack

- Use the unit securely mounted in a standard 19-type rack (depth: 600 mm [23-5/8 inches] or more) compliant with EIA or JIS standards or equivalent.

- Securely fix the unit in place using screws that are appropriate for the rack.

- Be sure to attach a support guide for supporting (A) the rear of the unit.
  (Provide a support guide that is appropriate for the rack.)

- A.   Support guide

Mounting positions

In the case of the EIA standard rack	In the case of the JIS standard rack
76.2 mm (3 inches)	50 mm (1-15/16 inches)

NOTE

- Do not block the ventilation holes when installing the unit.

Connection

System configuration
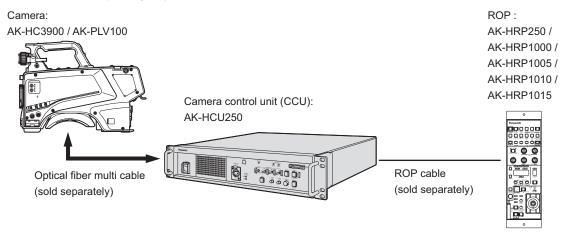
Serial connection

Use the optical fiber multi cable (sold separately) to connect the unit and camera.

Use a ROP cable to connect the unit to the ROP (AK-HRP250 / AK-HRP1000 / AK-HRP1005 / AK-HRP1010 / AK-HRP1015).

For the connection procedure, see "Equipment connections."

➡ "Equipment connections" (see page 17)

Camera:
AK-HC3900 / AK-PLV100

Camera control unit (CCU):
AK-HCU250

ROP :
AK-HRP250 /
AK-HRP1000 /
AK-HRP1005 /
AK-HRP1010 /
AK-HRP1015

Optical fiber multi cable
(sold separately)

ROP cable
(sold separately)

IP connection
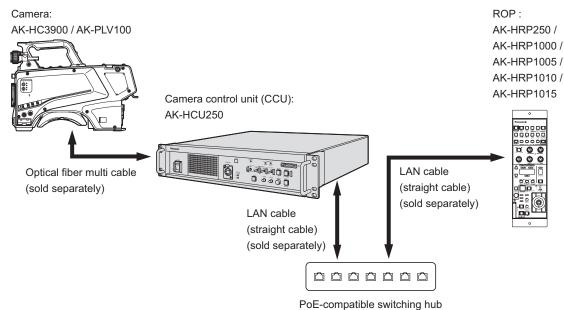
Use the optical fiber multi cable (sold separately) to connect the unit and camera.

Connect the unit to the ROP (AK-HRP250 / AK-HRP1000 / AK-HRP1005 / AK-HRP1010 / AK-HRP1015) via a PoE-compatible switching hub using LAN cables (straight cables: sold separately).

● Read "Network security" before connecting the devices.

● Use a switching hub with PoE support.

For the connection procedure, see "Setting the user account" and "Equipment connections."

➡ "Setting the user account" (see page 16)

➡ "Equipment connections" (see page 17)

Camera:
AK-HC3900 / AK-PLV100

Camera control unit (CCU):
AK-HCU250

ROP :
AK-HRP250 /
AK-HRP1000 /
AK-HRP1005 /
AK-HRP1010 /
AK-HRP1015

Optical fiber multi cable
(sold separately)

LAN cable
(straight cable)
(sold separately)

LAN cable
(straight cable)
(sold separately)

PoE-compatible switching hub

Setting the user account

In order to connect this unit and the ROP (AK-HRP250 / AK-HRP1000 / AK-HRP1005 / AK-HRP1010 / AK-HRP1015), you will need to register the account that has been registered on the ROP on this unit.

Use the following procedure to register the account on this unit.

Software

To install the software, download User Account Setup Software (AccoutGen) from the following website. (Windows)

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

■ **User Account Setup Software (AccoutGen)**
User account setting of this unit can be set using User Account Setup Software.
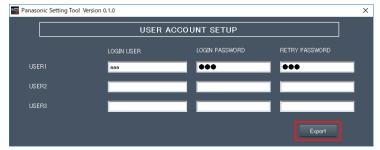
Use the User Account Setup Software to set the user accounts in this unit

User account setting of this unit can be set using User Account Setup Software.

● The User Account Setup Software saves user account information to an SD card, so you will need to insert an SD card in preparation.

● We recommend a password for the user account that is 8 characters or more, and that includes at least 3 types of character including upper case, lower case, numerals, and special characters.

● User accounts can also be set from the web screen of this unit.
   ➡ "ROP account settings screen [ROP account setting]" (see page 78)

Procedure for setting with the User Account Setup Software
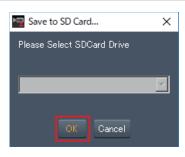
Fig.1

Fig. 2

1. **Start User Account Setup Software.**

2. **Enter the account name in the LOGIN USER field and the password in the LOGIN PASSWORD and RETRY PASSWORD fields.**
   You can register user accounts for a maximum of 3 people. (Fig.1)

3. **Click the [Export] button. (Fig.1)**

4. **Select the SD card to save to and click [OK]. (Fig.2)**

Setting procedure on this unit
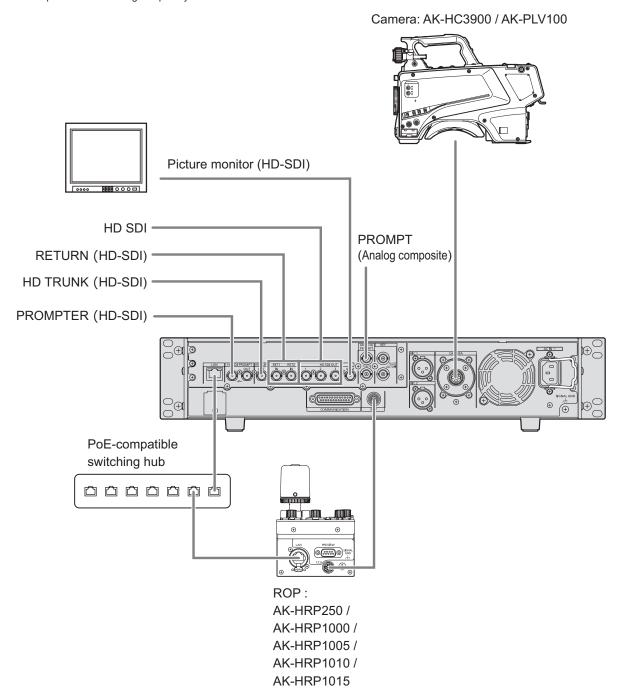
1. **Insert the SD card containing the user account information into this unit.**

2. **Select [ACCOUNT SETTING] in the [MAINTENANCE] menu.**

3. **Select [LOAD].**

4. **Select [EXECUTE].**

5. **Select [YES].**

Equipment connections

● Before proceeding with the connections, check that the power of the unit and camera is OFF.

● Use the optical fiber multi cable to connect the unit and camera.
Connect only the AK-HC3900 / AK-PLV100 camera: Do not connect any other model.

● Use a dedicated cable to connect the unit to the ROP.

● When the unit's [POWER] switch is set to ON and then the camera's power is set to ON, the camera can be controlled using the ROP.

● The camera statuses are shown on the picture monitor.
➡ "Picture monitor displays" (see page 23)
When you configure the unit's settings by menu operations, the menu screens are displayed on the picture monitor.
➡ "Menu operations" (see page 36)
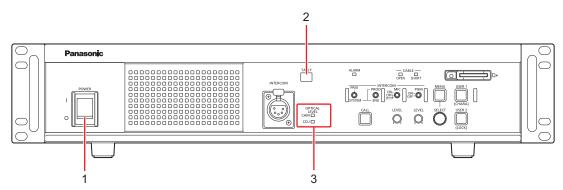
● Before disconnecting the cables from the camera and ROP, turn off the camera's power and then turn off the unit's power.

● When connecting the unit to the ROP using IP connection via a switching hub, use a switching hub that provides PoE support.

● When operating multiple ROPs at the same time with the unit connected using IP connection via a switching hub, the ROP operated last will be given priority.

Camera: AK-HC3900 / AK-PLV100

Picture monitor (HD-SDI)

HD SDI

RETURN (HD-SDI)

HD TRUNK (HD-SDI)

PROMPTER (HD-SDI)

PROMPT
(Analog composite)

PoE-compatible
switching hub

ROP :
AK-HRP250 /
AK-HRP1000 /
AK-HRP1005 /
AK-HRP1010 /
AK-HRP1015

- 17 -
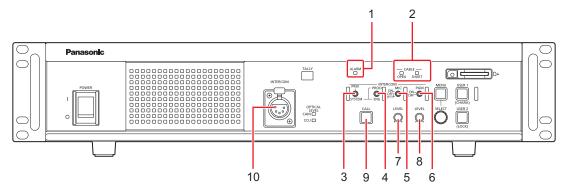
Parts and their functions

Front panel 1
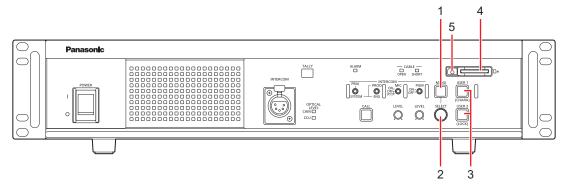
1	[POWER] switch	This is the unit's power switch. Move it to the ON position to turn on the power. POWER ON (I) OFF (O)
2	[TALLY] lamps	The lamp remains lit while tally signals (R) are input.
3	[OPTICAL LEVEL] indicators	Indicates the reception status of optical transmission. ● [CAM] indicator Indicates the reception status on the camera. ● [CCU] indicator Indicates the reception status on the CCU.

Front panel 2
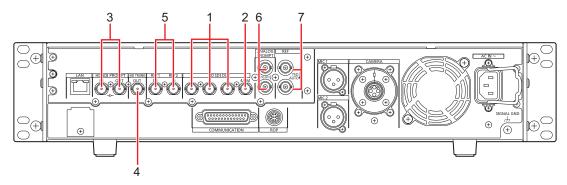
1	[ALARM] indicator	• [ALARM] indicator Lights when the unit malfunctions.

2	[CABLE] indicators	Lights to indicate the cable connection status.
		
		• [OPEN] indicator
		  This lights when the unit and camera are not connected by the optical fiber multi cable.
		
		• [SHORT] indicator
		  This lights when the cable connecting the unit and camera has been short-circuited.

3	[PRIV/SYSTEM] selector switch	This switch is for selecting the party to call using the intercom. **Switch position** PRIV: For making private calls between the unit and camera side. SYSTEM: For calling the intercom on the system side and camera side.
4	[PROD/ENG] selector switch	This switch selects the party to which to speak via the intercom.
5	[MIC] switch	This switch switches the intercom microphone ON/OFF. **Switch position** ON: The intercom microphone is turned on. OFF: The intercom microphone is turned off. PTT: The intercom microphone is on only while the switch is held down.
6	[PGM] switch	This switch mixes audio for the intercom. **Switch position** ON: The sound of PGM is mixed with the intercom sound. OFF: The sound of PGM is not mixed with the intercom sound.
7	[INCOM LEVEL] adjustment dial	These controls are for adjusting the volume level of the sound heard through the intercom.
8	[PGM LEVEL] adjustment dial	This dial adjusts the volume level of the intercom's program audio mix.
9	[CALL] button	This button calls the camera and the ROP. During calling, it lights red.
10	[INTERCOM] connector	This connector is for connecting the intercom. This connector enables calls with the intercom line of the camera.

Front panel 3
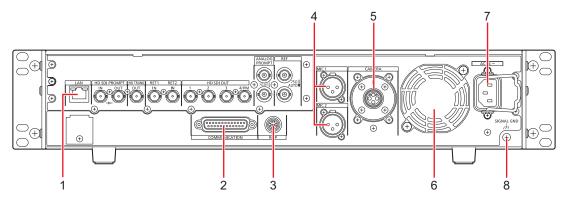
1	**[MENU] button**	When you hold down the [MENU] button, the menu screen is displayed on the picture monitor and the [MENU] button lights. If you hold down the [MENU] button while the menu is displayed, the menu closes and the [MENU] button turns off. ➡ "Menu operations" (see page 36)
2	**[SELECT] dial**	This jog dial is for menu screen operations. When the [SELECT] dial is turned clockwise, the cursor moves down; conversely, when it is turned counterclockwise, the cursor moves up. Press the [SELECT] dial to select the menu items. ➡ "Menu operations" (see page 36)
3	**[USER1] and [USER2] buttons**	These buttons are used for assigning functions. Function assignments are selected using [SETUP] in the CCU menu. The following functions are pre-assigned at the factory. [USER1] button: CHARA [USER2] button: LOCK ➡ "SETUP" (see page 50)
4	**Memory card slot**	Insert a memory card (sold separately). A memory card can be used to set this unit. ➡ "SD CARD" (see page 54)
5	**Memory card access lamp**	This is lit while the memory card is being accessed.

Rear panel 1

1	[HD SDI OUT] connectors [1] to [3]	These connectors (BNC) are for outputting 3G/1.5G-SDI signals. Signals output can be selected from the CCU menu. ● Connect with a 5C-FB cable or better.
2	[HD SDI OUT] connector [4/PM]	These connectors (BNC) are for outputting 1.5G-SDI signals. This output is specifically for the picture monitor. ● Connect with a 5C-FB cable or better.
3	[HD SDI PROMPT IN] and [HD SDI PROMPT OUT] connectors	These connectors (BNC) are for inputting 3G/1.5G-SDI prompter signals. An active through signal is output from the [HD SDI PROMPT OUT] connector. ● 1080/59.94p/50p/59.94i/50i video formats can be input. ● Connect with a 5C-FB cable or better.
4	[HD TRUNK OUT] connector	The 3G/1.5G HD SDI TRUNK signals that are input to the camera are output.
5	[RET1 IN] to [RET2 IN] connectors	These connectors (BNC) are for inputting SDI signals for return images in HDTV formats. 3G and 1.5G are recognized automatically. ● Connect with a 5C-FB cable or better.
6	[ANALOG PROMPT IN] and [ANALOG PROMPT OUT] connectors	This connector (BNC) is for inputting SD analog composite signals for the prompter. When a cable is not connected to ANALOG PROMPT OUT, the connector is automatically terminated at 75 Ω. Connecting a cable to this connector releases 75 Ω termination.
7	[REF] connector	These connectors (BNC) are for inputting reference signals. Black burst (BB) signals and tri-level sync signals can be input, and the type of signals input is recognized automatically.[1] When no cable is connected to the loop-through output connector (B), the connector is automatically terminated at 75 Ω. Connecting a cable to this connector releases 75 Ω termination. When a cable is connected to the loop-through output connector (B), be sure to connect the other end of the cable to a connector. REF A. Reference signal input connector B. Loop-through output *1: When the [CCU MODE] is [1080/23.98psF], input 1080/23.98psF (47.95 Hz) tri-level sync signals. For details on supported sync signals for each format, see "G/L specifications." ➡ "G/L specifications" (see page 85)

Rear panel 2

1	[LAN] connector	It is the LAN connector (RJ45) for connecting the ROP (AK-HRP250 / AK-HRP1000 / AK-HRP1005 / AK-HRP1010 / AK-HRP1015) with an IP connection. Use a switch hub and connect the devices with a 10BASE-T/100BASE-TX straight cable. This connector is for connecting a personal computer when configuring Web settings. ● Connect with a category 5e or better STP (Shielded Twisted Pair) LAN cable.
2	[COMMUNICATION] connector	This connector is for connecting the intercom signals and tally signals to the external system.
3	[ROP] connector	This connector is for connecting a ROP (sold separately).
4	[MIC1] and [MIC2] connectors	These connectors are for outputting the analog signals of microphones 1 and 2 of the camera. The microphone level is 0 dBm/600 Ω.
5	[CAMERA] connector	This connector is for connecting the optical fiber multi cable (sold separately).
6	Cooling fan	This is the unit's cooling fan.
7	AC power socket	This socket is for inputting AC power. Connect the supplied power cable, and use a 3-prong outlet and ground the unit properly.
8	[SIGNAL GND] terminal	Connect this to the system ground.
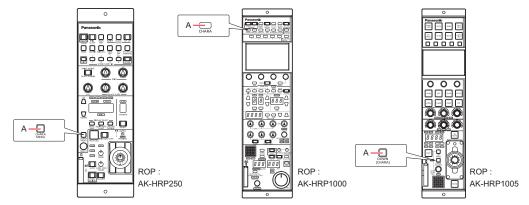
Picture monitor (PM)

Picture monitor displays

Display the camera statuses, warnings, and other information on the picture monitor using the operation panel of the ROP.

Press the [CHARA] button (A) of the ROP to display the desired information.

● When [CHARA] is assigned to the [USER] button on the front panel of the unit (AK-HCU250), the same operation can also be carried out with the [USER] button.

The camera statuses, warnings, and other information are cleared when the [CHARA] button of the ROP is held down.

ROP :
AK-HRP250

ROP :
AK-HRP1000

ROP :
AK-HRP1005

A. [CHARA] button

Transition of displays

When trouble is detected, warning information is automatically displayed on the picture monitor.

Even if status information or operation information is already displayed on the picture monitor when trouble is detected, priority is given to the display of the warning information.

The descending sequence of priority for the displays on the picture monitor is as follows: warning displays → auto displays → status displays → ROP menu displays → CCU menu displays → operation displays → no display.

When the warning information with the highest priority disappears, the warning information with the next highest priority appears.
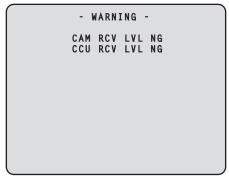
Priority	Screen	ROP connected	
		Yes	No
High ↑ ↓ **Low**	Warning displays	Warnings are automatically displayed when trouble is detected. ● Self-recovery. ● The warning displays are cleared. ● Press the [CHARA] button of the ROP No display→(WARNING)→ IRIS →Status displays→ Status1 → Status2 → Status3 → Status4 → Status5 → Status6 → Status7 → IRIS・・・ ● Hold down the [CHARA] button of the ROP. The warning displays are cleared.	Warnings are automatically displayed when trouble is detected. ● Self-recovery. The warning displays are cleared. ● Press the [USER1] button of this unit (This is enabled when [CHARA] is assigned to the button.) ● When the transition source screen is displayed: The display switches to the transition source screen. ● When the transition source screen is not displayed: The warning displays are cleared.
	Auto displays	Automatically displayed	Automatically displayed
	Status displays	● Perform display operations using the [CHARA] button of the ROP. ● Press the [CHARA] button of the ROP No display→(WARNING)→ IRIS →Status displays→ Status1 → Status2 → Status3 → Status4 → Status5 → Status6 → Status7 → IRIS・・・ ● Hold down the [CHARA] button of the ROP. The status displays end.	–
	CCU menu displays ● When the camera menu is displayed from the ROP while a menu of the CCU (this unit) is displayed, the menu of the CCU (this unit) disappears.	Display by pressing the menu button on the unit. ● Operations using the [SELECT] dial on the unit.	Display by pressing the menu button on the unit. ● Operations using the [SELECT] dial on the unit.
	Operation displays	Automatically displayed	Automatically displayed
	No display	–	–

Information display

This information is displayed on the picture monitor (PM).

Warning displays

The warning information is displayed when trouble is detected in the unit, camera, or optical fiber multi cable.

```
        - WARNING -

   CAM RCV LVL NG
   CCU RCV LVL NG
```
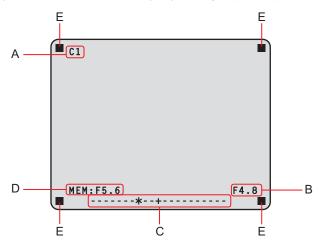
- ● Warning information displayed is cleared when the status returns to normal.

- ● To manually clear the warning information display, hold down the [CHARA] button of the ROP.

Information displayed

Display item	Description
CAM RCV LVL NG	The level of the optical signal received by the camera is low.
CCU RCV LVL NG	The level of the optical signal received by the CCU is low.
CAM FAN NG	Trouble with the cooling fan of the camera.
CCU FAN NG	Trouble with the cooling fan of the CCU.
CAM HIGH TEMP	The temperature of the camera is abnormally high.
CCU HIGH TEMP	The temperature of the CCU is abnormally high. If you continue operation even with the message displayed, power supply to the camera may stop as a protective measure.
CAM OVER TEMP	Due to overheating, the camera turned OFF automatically as a protective measure.
OVER LOAD	The power supply circuit load to the camera exceeded 90%.
POWER CONT ERROR	Trouble with the power supply circuit to the camera.
CABLE OPEN	The optical fiber multi cable is not connected.
CABLE SHORT	● The optical fiber multi cable is shorted. ● The power supply voltage to the unit dropped momentarily. Power supply to the camera will stop as a protective measure. Turn the unit off immediately, and determine and resolve the problem before turning it back on. ● The camera is malfunctioning or startup of the camera failed for reasons other than the above.
FORMAT NG	The CAM mode and CCU mode do not match.
During data transfer (CAM←→ROP)	Data transfer between the camera and ROP is in progress.
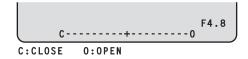
IRIS display

When the information is not displayed on the picture monitor, display it by pressing the [CHARA] button of the ROP.

A. **Camera number**
B. **IRIS F value**
C. **IRIS level**
D. **IRIS memory**
E. **TALLY INFO**

- Set each item to be displayed on the [PM VIEW SETTING] screen that can be accessed by selecting [MAINTENANCE] on the CCU menu. However, this screen will not appear if the menu's [IRIS LEVEL] setting is [OFF].

- The IRIS schedule is displayed as follows depending on the setting of [IRIS SCALE] that can be accessed by selecting [MAINTENANCE] > [SETUP].

   IRIS SCALE: FULL

   IRIS SCALE: 2STOP

   - In the IRIS level display, the IRIS F value stored in IRIS memory is indicated at the center (+), and the current IRIS F value is displayed relative to the center as "✱".
   When the center value (+) and the current IRIS value (✱) overlap, the display shows "＞ ✱ ＜".

   - When the IRIS level falls outside either end of the display range, the status is displayed as a flashing "＞" or "＜".

- TALLY INFO (E)

   - Display the R tally in two segments of the upper row and the R or G tally in two segments of the lower row.

   - When all R and G tally signals are ON, the upper row is red, and the left segment of the lower row is green.

   - When the R and G tally signals are ON, the upper row is red and the lower row is green.

Status displays
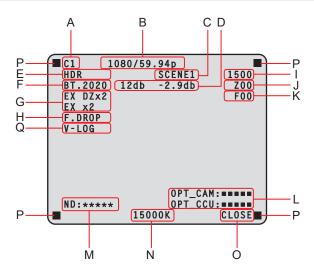
From the IRIS display screen, press the [CHARA] button of the ROP to display the "status display screen".

However, when the "IRIS LEVEL" setting is "OFF", the screen will be displayed first if the [CHARA] button of the ROP is pressed when the information is not displayed on the picture monitor.

When the "status display screen" appears, pressing the [CHARA] button of the ROP again displays the status screen.

Pressing the [CHARA] button repeatedly switches display through the status screens in the sequence 1/7 → 2/7 → 3/7 → 4/7 → 5/7 → 6/7 → 7/7 → 1/7 ….

Status display screen
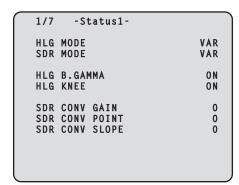
A. **Camera number**
B. **System format**
C. **Scene file number**
   Not displayed when SCENE FILE is set to OFF.
D. **Gain value**
E. **HDR information**
F. **COLORIMETRY information**
G. **Extender information**
H. **F.DROP information**
I. **Shutter value**
J. **Zoom position**
K. **Focus position**
L. **Optical signal reception status**
M. **ND filter value**
N. **Color temperature**
O. **IRIS value**
P. **TALLY INFO**
   - Set each item to be displayed on the [PM VIEW SETTING] screen that can be accessed by selecting [MAINTENANCE] on the CCU menu.
   - The camera format indicates the format of the signal output from the camera.
   - Pressing the [CHARA] button of the ROP from the status display screen displays the "status screen".
   - TALLY INFO (L)
     - Display the R tally in two segments of the upper row and the R or G tally in two segments of the lower row.
     - When all R and G tally signals are ON, the upper row is red, and the left segment of the lower row is green.
     - When the R and G tally signals are ON, the upper row is red and the lower row is green.
Q. **V-LOG information**
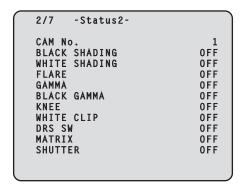
Status displays (page 1 of 7)

```
1/7   -Status1-

HLG MODE               VAR
SDR MODE               VAR

HLG B.GAMMA            ON
HLG KNEE               ON

SDR CONV GAIN          0
SDR CONV POINT         0
SDR CONV SLOPE         0
```

Item	Display range	Remarks
HLG MODE	FIX VAR	The HLG mode is displayed here.
SDR MODE	FIX VAR	The SDR mode is displayed here.
HLG B.GAMMA	OFF ON	The status of black gamma when HLG is enabled is displayed here.
HLG KNEE	OFF ON	The status of knee when HLG is enabled is displayed here.
SDR CONV GAIN	−12 −11 −10 −9 −8 −7 −6 −5 0	The gain value when HDR video is converted to SDR video is displayed here.
SDR CONV POINT	0 to 100	The video level to start compression for SDR video is displayed here.
SDR CONV SLOPE	0 to 127	The slope to compress video signals is displayed here.

Status displays (page 2 of 7)

```
2/7   -Status2-

CAM No.                      1
BLACK SHADING              OFF
WHITE SHADING              OFF
FLARE                      OFF
GAMMA                      OFF
BLACK GAMMA                OFF
KNEE                       OFF
WHITE CLIP                 OFF
DRS SW                     OFF
MATRIX                     OFF
SHUTTER                    OFF
```

Item	Display range	Remarks
CAM No.	1 to 99	The camera number is displayed here.
BLACK SHADING	OFF ON	The status of the black shading is displayed here.
WHITE SHADING	OFF ON	The status of the white shading is displayed here.
FLARE	OFF ON	The status of the FLARE is displayed here.
GAMMA	OFF ON	The status of the gamma correction is displayed here.
BLACK GAMMA	OFF ON	The status of the black gamma is displayed here. ● This function changes the amplification rate of the video signals in the low-brightness areas.
KNEE	OFF ON	The status of the knee function is displayed here. ● This function attenuates that part of the video signal that exceeds the prescribed level (knee point) to minimize saturation.
WHITE CLIP	OFF ON	The status of the white clip function is displayed here.
DRS SW	OFF ON	The status of the DRS SW is displayed here.
MATRIX	OFF ON	The status of the matrix function is displayed here. ● This function compensates the saturation and hue.
SHUTTER	Setting values on camera	The speed of the electronic shutter is displayed here. ● For the setting values, refer to the Operating Instructions for the camera.

Status displays (page 3 of 7)

When AK-PLV100 is connected, if the setting on AK-PLV100 of [MODE] in [SWITCH MODE] → [GAIN SETTING] is [ISO], [M.GAIN] becomes [ISO SELECT] and [M.GAIN VAR] becomes [ISO].

```
3/7   -Status3-

GAMMA MODE          FLIKE1
M.GAIN                36dB
M.GAIN VAR          -2.9dB
DETAIL                 OFF
SKIN TONE DETAIL       OFF
DC DETAIL              OFF
DC SKIN TONE DETAIL    OFF
ND FILTER             ****
LENS EXTENDER          1.0
AUTO IRIS              OFF
SCENE FILE           SCENE0
```

When [MODE] is [dB]

```
3/7   -Status3-

GAMMA MODE          FLIKE1
ISO SELECT          NATIVE
ISO                    800
DETAIL                 OFF
SKIN TONE DETAIL       OFF
DC DETAIL              OFF
DC SKIN TONE DETAIL    OFF
ND FILTER             ****
LENS EXTENDER          1.0
AUTO IRIS              OFF
SCENE FILE           SCENE0
```
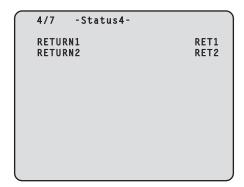
When [MODE] is [ISO]

Item	Display range	Remarks
GAMMA MODE	HD FILMLIKE1 FILMLIKE2 FILMLIKE3 FILM REC VIDEO REC	The selected gamma type is displayed here.
M.GAIN	-6dB to 36dB	The gain increase value is displayed here.
ISO SELECT	NATIVE / 800 / 2500	The ISO operation set on AK-PLV100 is displayed here.
M.GAIN VAR	-6dB to 36dB	The gain offset value is displayed here.
ISO	200 to 25600	The ISO value set on AK-PLV100 is displayed here.
DETAIL	OFF ON	The status of DETAIL is displayed here.
SKIN TONE DETAIL	OFF ON	The status of SKIN TONE DETAIL is displayed here.
DC DETAIL	OFF ON	The status of DC DETAIL is displayed here. ● Displayed only when the SYSTEM FORMAT is UHD.
DC SKIN TONE DETAIL	OFF ON	The status of DC SKIN TONE DETAIL is displayed here. ● Displayed only when the SYSTEM FORMAT is UHD.
ND FILTER	****	The names of the ND filters are displayed here. ● Indicates the names (4 letters each) corresponding to ND filters 1 to 5. ● The names configured in the CCU screen appear.
LENS EXTENDER	1.0 2.0	The magnification of the lens extender is displayed here.
AUTO IRIS	OFF ON	The status of the auto IRIS function is displayed here. ● This is not displayed when AK-PLV100 is connected.
SCENE FILE	OFF --- 1 to 8	The selected scene file is displayed here.

Status displays (page 4 of 7)

```
4/7    -Status4-

RETURN1                      RET1
RETURN2                      RET2
              - 31 -
```

Item	Display range	Remarks
RETURN1	RET1	The input assignment for return signals is displayed here.
RETURN2	RET2	

Status displays (page 5-1 of 7)

```
5-1/7    -Status5-

HD SDI OUTPUT1
HD SDI OUTPUT2
                      1080p-HDR
HD SDI OUTPUT3
                      1080p-HDR
HD SDI OUTPUT4
                         1080i
```

Item	Display range	Remarks
HD SDI OUTPUT1	1080p/1080i/1080-29.97PsF/ 1080-23.98PsF/1080-23.98p over 59.94i/ 720p/1080p-HDR/1080i-HDR/ 1080-29.97PsF-HDR/1080-23.98PsF-HDR/ 1080-23.98p over 59.94i-HDR/ 1080-25PsF/1080-25PsF-HDR	The output formats for connectors HD SDI OUTPUT1, HD SDI OUTPUT2, and HD SDI OUTPUT3 are displayed here.
HD SDI OUTPUT2		
HD SDI OUTPUT3		
HD SDI OUTPUT4	1080i/720p	The output format for connectors HD SDI OUTPUT4 is displayed here.
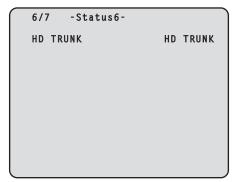
Status displays (page 5-2 of 7)

```
5-2/7    -Status5-

UHD/HD SDI OUTPUT1-4 2160p-HDR

             OUTPUT1:UHD
             OUTPUT2:UHD
             OUTPUT3:UHD
             OUTPUT4:UHD

UHD OUTPUT FORMAT   INTERLEAVE
UHD COLORIMETRY         BT.709
UHD GAMUT               NORMAL
```

Item	Display range	Remarks
UHD/HD SDI OUTPUT1-4	2160p/2160-29.97PsF/2160-29.97p/ 2160-23.98PsF/2160-23.98p/ 2160p-HDR/2160-29.97PsF-HDR/ 2160-29.97p-HDR/2160-23.98PsF-HDR/ 2160-23.98p-HDR/2160-25PsF-HDR/ 2160-25p-HDR/1080p/1080i/ 1080-29.97PsF/1080-23.98PsF/ 1080-23.98p over 59.94i/ 1080-23.98p over 59.94i-HDR/720p/ 1080p-HDR/1080i-HDR/1080-29.97PsF-HDR/ 1080-23.98PsF-HDR/1080-25PsF/ 1080-25PsF-HDR	The output formats for UHD/HD SDI OUTPUT1 to 4 are displayed here.
UHD/HD SDI OUTPUT1	1.5G/3G/6G/12G/UHD/no signal	The output formats for UHD/HD SDI OUT1 to 4 are displayed here.
UHD/HD SDI OUTPUT2		
UHD/HD SDI OUTPUT3		
UHD/HD SDI OUTPUT4		
UHD OUTPUT FORMAT	INTERLEAVE SQUARE	The signal format of UHD is displayed here.
UHD COLORIMETRY	BT.709 BT.2020	The status of COLORIMETRY is displayed here.
UHD GAMUT	NORMAL WIDE_G2	The status of GAMUT is displayed here.

Status displays (page 6 of 7)

```
6/7    -Status6-

HD TRUNK               HD TRUNK


                 -
```

Item	Display range	Remarks
HD TRUNK	HD TRUNK	The signal to be output from the [HD TRUNK OUT] connector is displayed here.

Status displays (page 7 of 7)

```
7/7    -Status7-

BUTTON ASSIGN
 USER1                    CHARA
 USER2          MENU/USER1 LOCK
HOURS CCU              ******H
CABLE OPEN
CABLE SHORT
CAM RECEIVE LEVEL       ■■■■■
CCU RECEIVE LEVEL       ■■■■■

VERSION         xx.xx-xxx-xx.xx
```

Item	Display range	Remarks
BUTTON ASSIGN USER1	NONE CHARA BARS CLEAN	The function assigned to the [USER1] button is displayed here.
BUTTON ASSIGN USER2	NONE CHARA MENU/USER1 LOCK BARS CLEAN	The function assigned to the [USER2] button is displayed here.
HOURS CCU	******H	Cumulative CCU operating time is displayed here.
CABLE OPEN	(Off)	This item flashes when the optical fiber multi cable is not connected.
CABLE SHORT	(Off)	This item flashes when the optical fiber multi cable is short-circuited.
CAM RECEIVE LEVEL	■■■■■	The level of the optical signals received by the camera is displayed in 5 gradations.
CCU RECEIVE LEVEL	■■■■■	The level of the optical signals received by the unit is displayed in 5 gradations.
VERSION	- - -	The unit's software version is displayed here.

Operation displays

The operation displays appear at the bottom of the screen for approx. 4 seconds when any of the following operations have been performed with the operation panel of the ROP.

- Master gain change
- Electronic shutter change
- Lens extender change
- Scene file change
- REF LOAD is changed
- FILTER is changed

The display time can be changed from [MAINTENANCE] menu > [PM OPERATION STATUS] > [STATUS DISP TIME].

```
                              MASTER GAIN 12dB
```

Item	Display range	Remarks
MASTER GAIN	Setting values on camera	The master gain value is displayed here. ● For the setting values, refer to the Operating Instructions for the camera.
SHUTTER	Setting values on camera	The speed of the electronic shutter is displayed here. ● For the setting values, refer to the Operating Instructions for the camera.
LENS EXT	1.0 2.0	The magnification of the lens extender is displayed here. ● When the magnification of the lens extender is set to 2x, [2.0] is displayed. Otherwise, [1.0] is displayed.
SCENE FILE	OFF 1 to 8	This indicates the scene file name.
REF LOAD	FACTORY USER1 to USER3 REF1 to 3	This indicates the reference file that was loaded via reference call recalling.
FILTER	**** (ND/CC filter name)	The names of the ND filter/CC filters are displayed here.

Auto displays

When the following operation is performed while no menu is displayed on the picture monitor, information on the operation performed appears at the bottom of the screen.

- AWB (Auto White Balance) function
- ABB (Auto Black Balance) function

The display is cleared 4 seconds after the operations are completed.

If the operations cannot be completed, they will remain displayed until the NG (error) items of the AUTO function are released.

The display time can be changed from [MAINTENANCE] menu > [PM OPERATION STATUS] > [STATUS DISP TIME].
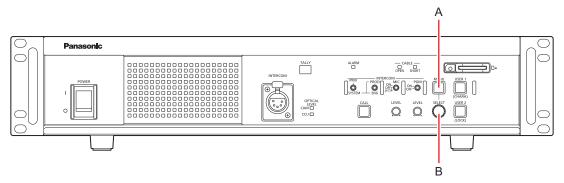
```
                    AWB: ACTIVE
```

Item	Display description
AWB	AWB : OK
	AWB : ACTIVE
	AWB : G/B/R NG
	AWB : BREAK
ABB	ABB : OK
	ABB : ACTIVE
	ABB : G/B/R NG
	ABB : LENS OPEN
	ABB : BREAK

CCU menu

Menu operations

While viewing the menu screen of the picture monitor, operate the [MENU] button and [SELECT] dial on the front panel.
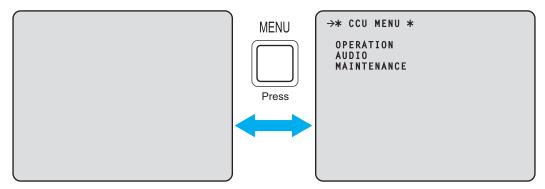
A. **[MENU] button**
B. **[SELECT] dial**

Displaying and hiding the menus

Menus are displayed or hidden by the following procedure.

1. **Press the [MENU] button.**
   The [MENU] button lights and the menu (CCU MENU) is displayed.
   If you press the [MENU] button while the menu is displayed, the menu closes and the [MENU] button turns off.

MENU

Press

→* CCU MENU *

   OPERATION
   AUDIO
   MAINTENANCE
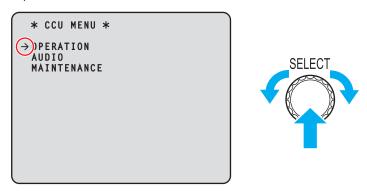
Basic menu operations

Menu items are selected and set by the following procedure.
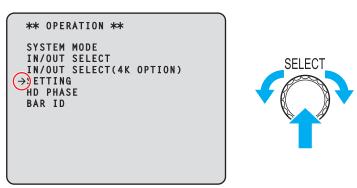
1. **Turn the [SELECT] dial while in the [CCU MENU], select [OPERATION] or [MAINTENANCE], and then press the [SELECT] dial.**
   A list of menu items included in the selected item ([OPERATION] or [MAINTENANCE]) is displayed.
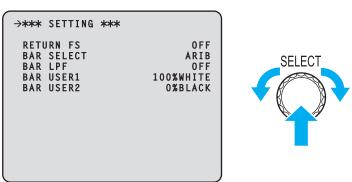
   - When the [SELECT] dial is turned clockwise, the cursor moves down; conversely, when it is turned counterclockwise, the cursor moves up.

   ```
   ＊ CCU MENU ＊

   →OPERATION
     AUDIO
     MAINTENANCE
   ```

   SELECT

2. **Turn the [SELECT] dial to move the cursor to the menu item you want to set, and then press the [SELECT] dial.**

   ```
   ＊＊ OPERATION ＊＊

     SYSTEM MODE
     IN/OUT SELECT
     IN/OUT SELECT(4K OPTION)
   →SETTING
     HD PHASE
     BAR ID
   ```

   SELECT

   The setting screen one level below the selected menu item appears.

   ```
   →＊＊＊ SETTING ＊＊＊

     RETURN FS              OFF
     BAR SELECT            ARIB
     BAR LPF               OFF
     BAR USER1        100%WHITE
     BAR USER2          0%BLACK
   ```

   SELECT
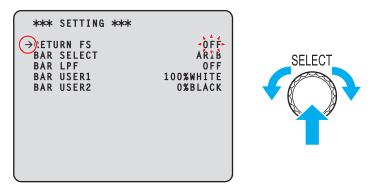
   - Moving the cursor to the menu title and then pressing the [SELECT] dial redisplays [CCU MENU].

   ```
   →＊＊ OPERATION ＊＊

     SYSTEM MODE
     IN/OUT SELECT
     IN/OUT SELECT(4K OPTION)
     SETTING
     HD PHASE
     BAR ID
   ```

   SELECT

   ```
   →＊ CCU MENU ＊

     OPERATION
     AUDIO
     MAINTENANCE
   ```

3. **Turn the [SELECT] dial to move the cursor to the menu item you want to set, and then press the [SELECT] dial.**

The setting value of the selected menu item starts flashing and you can change it.

```
    *** SETTING ***

  → RETURN FS              OFF
    BAR SELECT             ARIB
    BAR LPF                OFF
    BAR USER1          100%WHITE
    BAR USER2            0%BLACK
```

SELECT

4. **Turn the [SELECT] dial to change the value, and then press the [SELECT] dial.**

Turning the [SELECT] dial changes the setting value and pressing the [SELECT] dial confirms the setting value.

```
    *** SETTING ***

  → RETURN FS               ON
    BAR SELECT             ARIB
    BAR LPF                OFF
    BAR USER1          100%WHITE
    BAR USER2            0%BLACK
```

SELECT

When the setting value is confirmed and the flashing stops, you can move the cursor.

With some menu items, setting changes become effective while the setting value is in the flashing state; with others, changes become effective when the [SELECT] dial is pressed to confirm the setting value.

Operation with menu items that have multiple setting items on one line
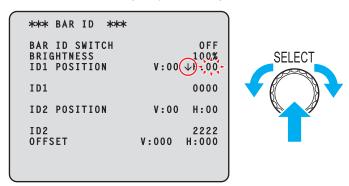
1. **Turn the [SELECT] dial to move the cursor to the menu item you want to set, and then press the [SELECT] dial.**

   The cursor becomes "↓" and you can use the [SELECT] dial to move the cursor to a setting item in the selected menu item.

   ```
   *** BAR ID ***

   BAR ID SWITCH              OFF
   BRIGHTNESS                100%
   ID1 POSITION      ↓V:00  H:00

   ID1                       0000

   ID2 POSITION       V:00  H:00

   ID2                       2222
   OFFSET           V:000  H:000
   ```
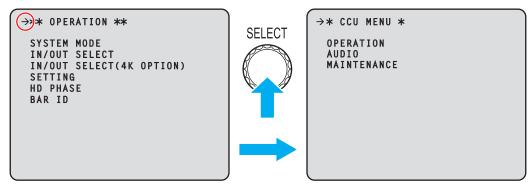
   SELECT
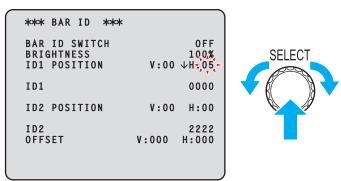
2. **Turn the [SELECT] dial to move the cursor to the item you want to set, and then press the [SELECT] dial.**
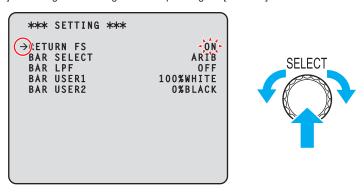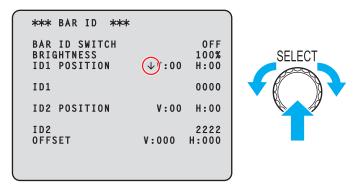
   The setting value of the selected item starts flashing and you can change it.

   ```
   *** BAR ID ***

   BAR ID SWITCH              OFF
   BRIGHTNESS                100%
   ID1 POSITION      V:00 ↓H:00

   ID1                       0000

   ID2 POSITION       V:00  H:00

   ID2                       2222
   OFFSET           V:000  H:000
   ```

   SELECT

3. **Turn the [SELECT] dial to change the value, and then press the [SELECT] dial.**

   Turning the [SELECT] dial changes the setting value and pressing the [SELECT] dial confirms the setting value.

   ```
   *** BAR ID ***

   BAR ID SWITCH              OFF
   BRIGHTNESS                100%
   ID1 POSITION      V:00 ↓H:05

   ID1                       0000

   ID2 POSITION       V:00  H:00

   ID2                       2222
   OFFSET           V:000  H:000
   ```

   SELECT

When the setting value is confirmed and the flashing stops, you can move the cursor.

If you press the [SELECT] dial while the cursor is on the left of a menu item, the cursor becomes "→" and you can select the menu item.

```
*** BAR ID ***

BAR ID SWITCH              OFF
BRIGHTNESS                100%
→ID1 POSITION      V:00  H:05

ID1                       0000

ID2 POSITION       V:00  H:00

ID2                       2222
OFFSET           V:000  H:000
```

SELECT

Text input

1. **Turn the [SELECT] dial to move the cursor to the menu item where text is to be input, and then press the [SELECT] dial.**

   The cursor display changes as indicated by "↓". By turning the [SELECT] dial, you can move the cursor to the next (previous) character position.

   ```
   ***  BAR  ID   ***

   BAR  ID  SWITCH              OFF
   BRIGHTNESS                  100%
   ID1  POSITION       V:00   H:00
                                ↓
   ID1                         0000

   ID2  POSITION       V:00   H:00

   ID2                         2222
   OFFSET           V:000   H:000
   ```

2. **Turn the [SELECT] dial to move the cursor to position where a character is to be input, and then press the [SELECT] dial.**

   The selected character starts flashing and you can change it.

   ```
   ***  BAR  ID   ***

   BAR  ID  SWITCH              OFF
   BRIGHTNESS                  100%
   ID1  POSITION       V:00   H:00

   ID1                         00 0

   ID2  POSITION       V:00   H:00

   ID2                         2222
   OFFSET           V:000   H:000
   ```
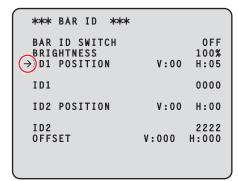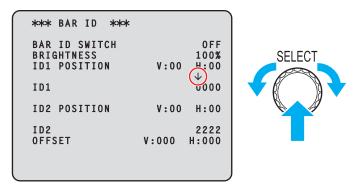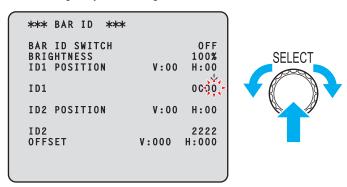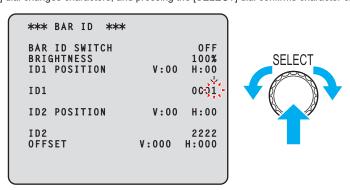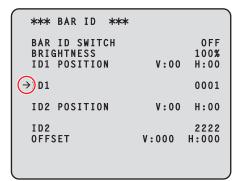
3. **Turn the [SELECT] dial to change the character, and then press the [SELECT] dial.**

   Turning the [SELECT] dial changes characters, and pressing the [SELECT] dial confirms character changes.

   ```
   ***  BAR  ID   ***

   BAR  ID  SWITCH              OFF
   BRIGHTNESS                  100%
   ID1  POSITION       V:00   H:00

   ID1                         00 1

   ID2  POSITION       V:00   H:00

   ID2                         2222
   OFFSET           V:000   H:000
   ```

When a character has been input and the flashing stops, you can move the cursor.

If you press the [SELECT] dial while the cursor is on the left of a menu item, the cursor becomes "→" and you can select the menu item.

   ```
   ***  BAR  ID   ***

   BAR  ID  SWITCH              OFF
   BRIGHTNESS                  100%
   ID1  POSITION       V:00   H:00

   → D1                        0001

   ID2  POSITION       V:00   H:00

   ID2                         2222
   OFFSET           V:000   H:000
   ```

📝 **NOTE**
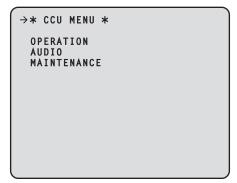
- Turning the [SELECT] dial clockwise while pressing it increases the speed at which the number increases (turning it counterclockwise decreases the number). Turning the dial more increases the speed even more. This operation is effective for making a large change to a value when the setting width is large (e.g., IP address or port number).

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Menu composition

This is the first screen displayed when you press the [MENU] button.

Select one of the menus.

```
→* CCU MENU *

  OPERATION
  AUDIO
  MAINTENANCE
```

Item	Content	Details page
OPERATION	Makes settings for items such as the system format and input and output.	➡ "OPERATION" (see page 43)
AUDIO	Makes AUDIO related settings.	➡ "AUDIO" (see page 47)
MAINTENANCE	Makes MAINTENANCE related settings.	➡ "MAINTENANCE" (see page 49)

OPERATION

This is the selection screen for the OPERATION menu.

Item	Content	Details page
SYSTEM MODE	Makes settings for items such as the system frequency.	➡ "SYSTEM MODE" (see page 43)
IN/OUT SELECT	Sets the external input/output and the operation mode for each connection.	➡ "IN/OUT SELECT" (see page 44)
IN/OUT SELECT(4K OPTION)	Sets the external input/output and the operation mode for each connection when a 4K OPTION board is connected.	➡ "IN/OUT SELECT(4K OPTION)" (see page 44)
SETTING	Makes settings for items such as the color bar and delay time for the return signal.	➡ "SETTING" (see page 45)
HD PHASE	Makes Genlock phase settings.	➡ "HD PHASE" (see page 45)
BAR ID	Makes settings related to the IDs superimposed on color bar.	➡ "BAR ID" (see page 46)

SYSTEM MODE

This is the selection screen for the SYSTEM MODE menu.

___ indicates factory default settings.

Item		Setting value	Setting details
FORMAT		1080/59.94p[*1] 1080/29.97PsF 1080/23.98PsF 1080/23.98p over 59.94i 720/59.94p 2160/59.94p 2160/29.97PsF 2160/29.97p 2160/23.98PsF 2160/23.98p 1080/50p[*2] 1080/25PsF 720/50p 2160/50p 2160/25PsF 2160/25p	Sets the system format. ● The 4K (2160) format is available for selection only when the 4K OPTION board is fitted.
CAMERA NUMBER		1 to 99	Sets the camera number displayed on the camera, in the CCU status, and on the ROP.
HDR SW		OFF ON	Enables/disables the HDR mode.
	HD SDI OUTPUT3(HDR)	OFF ON	Enables/disables the HDR mode for HD SDI OUTPUT3.
	HD SDI OUTPUT1&2(HDR)	OFF ON	Enables/disables the HDR mode for HD SDI OUTPUT1&2. ● Enabled only when the 4K OPTION board is fitted.

*1: AK-HCU250P/250PS
*2: AK-HCU250E/250ES

IN/OUT SELECT

This is the selection screen for the IN/OUT SELECT menu.

___ indicates factory default settings.

Item	Setting value	Setting details
SDI OUTPUT1&2	3G 1.5G	Sets the format of the signal output from SDI1&2. ● Fixed to 1.5G when SYSTEM 720p.
SDI OUTPUT3	3G 1.5G	Sets the format of the signal output from SDI3. ● Fixed to 1.5G when SYSTEM 720p.
3G SDI	LEVEL-A LEVEL-B	Sets the output format when SDI is outputting 3G. ● Output to the OPTION board is also enabled when the 4K OPTION board is fitted.

IN/OUT SELECT(4K OPTION)

Displayed only when the 4K OPTION board is fitted.

___ indicates factory default settings.

Item	Setting value	Setting details
UHD/HD SDI OUT(1-4)	1.5G 3G 6G 12G UHD	Sets the format of the signal output from UHD/HD SDI OUT. ● Fixed to 1.5G when [FORMAT] is 720p. ● Switchable between 1.5G and 3G when [FORMAT] is [1080/59.94p] or [1080/50p]. Fixed to 1.5G when [FORMAT] is [1080/29.97PsF], [1080/23.98PsF], or [1080/25PsF]. ● Switchable between UHD and 12G when [FORMAT] is [2160/59.94p] or [2160/50p]. Fixed to UHD when [FORMAT] is [2160/29.97PsF], [2160/23.98PsF], or [2160/25PsF]. Switchable between UHD and 6G when [FORMAT] is [2160/29.97p], [2160/23.98p], or [2160/25p].
SDI OUT1		The content set in UHD/HD SDI OUT(1-4) is displayed. The display is "no signal" when there is no output.
SDI OUT2		
SDI OUT3		
SDI OUT4		
UHD OUTPUT FORMAT	SQUARE INTERLEAVE	Sets the type of signal output from SDI when UHD. ● The selection item is enabled only when [FORMAT] is UHD. ● Fixed to SQUARE when [FORMAT] is [2160/29.97PsF], [2160/23.98PsF], or [2160/25PsF]. ● When [FORMAT] is [2160/29.97P], [2160/23.98P], or [2160/25P] and INTERLEAVE is selected, UHD/HD SDI will be LEVEL B.
COLORIMETRY	BT.709 BT.2020	Switches the Y/C conversion coefficient. ● The selection item is enabled only when [FORMAT] is UHD.
GAMUT	NORMAL WIDE_G2	Switches the color gamut. ● The selection item is enabled only when [FORMAT] is UHD.

SETTING

This is the selection screen for the SETTING menu.

___ indicates factory default settings.

Item	Setting value	Setting details
RETURN FS	ON OFF	Set the delay mode for the HD return signals.
BAR SELECT	STD SMPTE ARIB EIAJ	Sets the color bar signal.
BAR LPF	OFF 3TAP 5TAP 7TAP 9TAP	Sets the filter to be applied to the color bar signal.
BAR USER1	75%WHITE 100%WHITE +I_SIGNAL -I_SIGNAL	When the color bar is ARIB, the settings for BAR USER1 are selected.
BAR USER2	0%BLACK +Q_SIGNAL	When the color bar is ARIB, the settings for BAR USER2 are selected.

HD PHASE

This is the selection screen for the HD PHASE menu.

___ indicates factory default settings.

Item	Setting value	Setting details
HD H COARSE	-127 to 0 to +127	Makes broad settings for the horizontal phase for GL HD REF.
HD H FINE	-100 to 0 to +100	Makes detailed settings for the horizontal phase for GL HD REF.
V ADVANCE	-3 / -2 / -1 / 0	Set the vertical phase of this unit in relation to the vertical phase of the REF signal. ● The larger the negative value, the larger the advance. ● The setting unit varies depending on [FORMAT]. ● When the mode is [720/59.94p] or [720/50p], the setting unit is 1H of [720p]. ● When the mode is [1080/23.98PsF], the setting unit is 1H of [1080/23.98PsF]. ● Otherwise, the setting unit is 1H of [1080/59.94i] or [1080/50i].

BAR ID

This is the selection screen for the BAR ID menu.

___ indicates factory default settings.

Item	Setting value	Setting details
BAR ID SWITCH	ON OFF	Shows/hides the ID superimposed on the color bars.
BRIGHTNESS	0 to 100%	Sets the luminance for the ID display.
ID1 POSITION V	0 to 05	Sets the vertical position for the start of the ID1 display.
ID1 POSITION H	0 to 15	Sets the horizontal position for the start of the ID1 display.
ID1	## (Max. 16 characters)	Set camera ID1. **Characters which can be used:** Alphanumeric characters, spaces, ! # % & ' ( ) * + , - . / : ; < = > ? [ ] _ ~ • If "##" is input, that portion is replaced with the camera number (1 to 15) being managed by the CCU.
ID2 POSITION V	0 to 05	Sets the vertical position for the start of the ID2 display.
ID2 POSITION H	0 to 15	Sets the horizontal position for the start of the ID2 display.
ID2	Spaces (Max. 16 characters)	Set camera ID2. **Characters which can be used:** Alphanumeric characters, spaces, ! # % & ' ( ) * + , - . / : ; < = > ? [ ] _ ~ • If "##" is input, that portion is replaced with the camera number (1 to 15) being managed by the CCU.
OFFSET V	00 to 89	Specify the origin (upper left) in the vertical direction of the character drawing area in pixels.
OFFSET H	00 to 79	Specify the origin (upper left) in the horizontal direction of the character drawing area in pixels.

AUDIO

This is the selection screen for the AUDIO menu.

Item	Content	Details page
MIC OUT	Makes settings for microphone output.	➡ "MIC OUT" (see page 47)
CCU INTERCOM TALK	Makes settings for the microphone of the intercom.	➡ "CCU INTERCOM TALK" (see page 47)
INTERCOM	Makes settings for the intercom.	➡ "INTERCOM" (see page 48)
PGM	Makes settings for PGM.	➡ "PGM" (see page 48)

MIC OUT

This is the selection screen for the MIC OUT menu.

___ indicates factory default settings.

Item	Setting value	Setting details
MIC1 OUT LV	-40dB to 0dB to +20dB	This adjusts the analog output level for MIC1.
MIC2 OUT LV	-40dB to 0dB to +20dB	This adjusts the analog output level for MIC2.

CCU INTERCOM TALK

This is the selection screen for the CCU INTERCOM TALK menu.

___ indicates factory default settings.

Item	Setting value	Setting details
MIC TYPE	DYN ECM CBN	Select the type of intercom microphone.
MIC POWER	ON OFF	Set the power supply of the intercom microphone to ON or OFF.
MIC GAIN	-40dB to 0dB to +12dB (1dB Step)	This is the volume control of the intercom microphone.
SIDE TONE	OFF -36dB to -6dB to 0dB	This is the side tone volume control of the intercom microphone.

INTERCOM

This is the selection screen for the INTERCOM menu.

___ indicates factory default settings.

Item	Setting value	Setting details
4W/RTS	4W RTS	Select the intercom voice I/O method.
4W INPUT LEVEL	-40dB to 0dB to +20dB (1dB Step)	Switch the 4W (intercom) input level.
4W OUTPUT LEVEL	-40dB to 0dB to +20dB (1dB Step)	Switch the 4W (intercom) output level.
RTS INPUT LEVEL	-40dB to 0dB to +20dB (1dB Step)	Switch the RTS (intercom) input level.
RTS OUTPUT LEVEL	-40dB to 0dB to +20dB (1dB Step)	Switch the RTS (intercom) output level.
RTS CANCEL LEVEL	-20.0dB to +20.0dB (0.5dB Step)	Switch the RTS (intercom) I/O cancellation level.

PGM

This is the selection screen for the PGM menu.

___ indicates factory default settings.

Item	Setting value	Setting details
PGM GAIN	0dB 20dB	Switch the PGM input gain.

MAINTENANCE

This is the selection screen for the MAINTENANCE menu.

Item	Content	Details page
START UP	Sets the behavior when the unit's power is turned on.	➡ "START UP" (see page 49)
SETUP	Sets the SW&BUTTON and various connection related settings.	➡ "SETUP" (see page 50)
ND NAME	Sets the ND filter name.	➡ "ND NAME" (see page 50)
NETWORK	Makes settings for establishing IP connections.	➡ "NETWORK" (see page 51)
VERSION	Displays the version.	➡ "VERSION" (see page 52)
PM VIEW SETTING(1/2)	Sets what is displayed on the PM.	➡ "PM VIEW SETTING(1/2)" (see page 52)
PM VIEW SETTING(2/2)	Sets what is displayed on the PM.	➡ "PM VIEW SETTING(2/2)" (see page 53)
PM OPERATION STATUS	Sets what is displayed on the PM when there is a change in status.	➡ "PM OPERATION STATUS" (see page 53)
SYSTEM	Initializes the unit and displays connection status with the ROP.	➡ "SYSTEM" (see page 54)
SD CARD	Operations on SD cards.	➡ "SD CARD" (see page 54)
ACCOUNT SETTING	Makes settings for user accounts.	➡ "ACCOUNT SETTING" (see page 54)
UPDATE	This is the page for updating the software version.	➡ "UPDATE" (see page 55)

START UP

This is the selection screen for the START UP menu.

___ indicates factory default settings.

Item	Setting value	Setting details
CAM POWER	OFF ON REMOTE	Sets the camera power control when the unit's power is turned on. **OFF** The power of the camera will not come on even if the power of this unit is turned on. In this case, you will need to switch "HEAD POWER" on the ROP control panel to ON. **ON** The camera's power will come on when the unit's power is turned on. **REMOTE** The camera's power will come on when the unit's power is turned off.
VF POWER	OFF ON REMOTE	Sets the viewfinder power control when the unit's power is turned on. **OFF** The viewfinder's power will not come on even when the unit's power is turned on. In this case, "VF POWER" must be set to ON on the operation panel of the ROP. **ON** Turning on the power of this unit also turns on the power of the viewfinder. **REMOTE** The camera's power will come on when the unit's power is turned off.
CONNECT MODE	HC3900 PLV100	Selects the camera to be connected to the unit. **HC3900** Connects to AK-HC3900. **PLV100** Connects to AK-PLV100.

SETUP

This is the selection screen for the SETUP menu.

___ indicates factory default settings.

Item	Setting value	Setting details
IRIS SCALE	FULL 2STOP	Set the IRIS display range of the status display screen.
CABLE CONNECTION	HYBRID FIBER	Sets the cable used to connect the camera. **HYBRID** Select this when connecting the camera using an optical fiber multi cable. **FIBER** Select this when connecting the camera using only optical fiber. ● When [FIBER] is selected, power will not be supplied to the camera. In addition, the "OPEN" and "SHORT" errors will not be displayed.
USER BUTTON1	NONE CHARA BARS	Sets the function to be assigned to the [USER1] button on the front panel. **NONE** No assignment **CHARA** Character display, operation **BARS** Color bar ON/OFF
USER BUTTON2	NONE CHARA MENU/USER1 LOCK BARS	Sets the function to be assigned to the [USER2] button on the front panel. **NONE** No assignment **CHARA** Character display, operation **MENU/USER1 LOCK** Invalidate [MENU] button, [USER1] button (Function is assigned, but nothing happens when button pressed.) **BARS** Color bar ON/OFF
TALLY	MAKE V	Select the input format for the TALLY signal. **MAKE** When the TALLY IN H terminal and the TALLY IN C terminal are OPEN, then TALLY=OFF. When they are MAKE, then TALLY=ON. ● The TALLY IN H terminal is internally pulled up to +5 V with a 2.2 K resistor through a protective diode. The maximum current is 20 mA or less. **V** When voltage is applied to the TALLY IN H terminal, TALLY is ON, and when voltage is not applied, TALLY is OFF. Connect TALLY IN C to GND. ● A resistor of about 12.4 kΩ is inserted between TALLY IN H and TALLY IN C. The maximum voltage that can be applied is 24 V, and the maximum current is 20 mA.

ND NAME

This is the selection screen for the ND NAME menu.

Item	Setting value	Setting details
ND FILTER1 NAME	5 characters	Sets the name of the ND filter 1 (maximum of 5 characters).
ND FILTER2 NAME	5 characters	Sets the name of the ND filter 2 (maximum of 5 characters).
ND FILTER3 NAME	5 characters	Sets the name of the ND filter 3 (maximum of 5 characters).
ND FILTER4 NAME	5 characters	Sets the name of the ND filter 4 (maximum of 5 characters).

NOTE

● The name set here is displayed in the status display

Characters which can be used:
Alphanumeric characters, spaces, ! # % & ' ( ) * + , - . / : ; < = > ? [ ] _ ~

NETWORK

This is the selection screen for the NETWORK menu.

NETWORK(1/2)

This is the setting screen for the NETWORK(1/2) menu.

___ indicates factory default settings.

Item	Setting value	Setting details
IP ADDRESS	(Factory setting: 192.168.0.20)	Set the IP address.
SUBNETMASK	(Factory setting: 255.255.255.0)	Set the subnet mask.
DEFAULT GATEWAY	(Factory setting: 192.168.0.1)	Set the default gateway.
HTTP PORT	1 to 80 to 65535	Sets the PORT number used for HTTP. 📝**NOTE** ● The following port numbers cannot be set because they are used by this unit: 20, 21, 23, 25, 42, 53, 67, 68, 69, 110, 123, 161, 162, 443, 546, 547, 554, 995, 5960 to 5985, 7960 to 8060, 10669, 10670, 10672, 49152, 49200 to 49299, 59000 to 61000
HTTPS PORT	1 to 443 to 65535	Sets the PORT number used for HTTPS. 📝**NOTE** ● The following port numbers cannot be set because they are used by this unit: 20, 21, 23, 25, 42, 53, 67, 68, 69, 80, 110, 123, 161, 162, 546, 547, 554, 995, 5960 to 5985, 7960 to 8060, 10669, 10670, 10672, 49152, 49200 to 49299, 59000 to 61000
ROP PORT	49152 to 49299	Set the port number used for connecting to the ROP.
SET EXECUTE	-	When you press the [SELECT] button, [NETWORK SET EXECUTE NO/YES] appears. Select [YES] to apply the configured [NETWORK] information to the unit. If this operation is not performed, the changed [NETWORK] settings will not be applied. In addition, if you exit the menu without performing this operation, the settings will return to their original values.
WEB CONNECTION	HTTP HTTPS	Sets the method to connect to the unit.
MAC ADDRESS	Display only	Displays the MAC address.

NETWORK(2/2)

This is the setting screen for the NETWORK(2/2) menu.

___ indicates factory default settings.

Item		Setting value	Setting details
IP TALLY	INDEX NO	1 to 65534	Sets the INDEX NO set by devices that output TALLY.
	PORT	60000 to 65535	Sets the PORT number for TALLY IN.
SET EXECUTE		-	When you press the [SELECT] button, [NETWORK(2/2) SET EXECUTE NO/YES] appears. Select [YES] to apply the configured [NETWORK(2/2)] information to the unit. If this operation is not performed, the changed [NETWORK(2/2)] settings will not be applied. In addition, if you exit the menu without performing this operation, the settings will return to their original values.

NTP SETTING

___ indicates factory default settings.

Item	Setting value	Setting details
NTP SERVER ADDRESS	-	Input the IP address of the NTP server.
NTP PORT	1 to 65535 (Factory setting: <u>123</u>)	Input the port No. of the NTP server. 📝**NOTE** ● You cannot use a port number that is being used by other functions such as [NETWORK].
TIME ADJUSTMENT INTERVAL	<u>1h</u> to 24h	Selects the interval (1 to 24 hours in 1-hour increments) for acquiring the time from the NTP server.
SET EXECUTE	NO YES	Select whether to have the unit operate according to the settings made in [NTP SETTING].

VERSION

This is the selection screen for the VERSION menu.

Item	Setting value	Setting details
SYSTEM	Display only	Displays the SYSTEM version of the unit.
MAIN FPGA	Display only	Displays the MAIN FPGA version.
RET FPGA	Display only	Displays the RET FPGA version.
USC FPGA	Display only	Displays the USC FPGA version. ● Displayed when the 4K OPTION board is fitted.

PM VIEW SETTING(1/2)

This is the selection screen for the PM VIEW SETTING(1/2) menu.

___ indicates factory default settings.

Item	Setting value	Setting details
CAMERA NO	<u>ON</u> OFF	Shows/hides the camera number.
SYSTEM MODE	<u>ON</u> OFF	Shows/hides the system mode.
SCENE FILE No	<u>ON</u> OFF	Shows/hides the scene file number.
SHUTTER	<u>ON</u> OFF	Shows/hides the shutter value.
ND FILTER	<u>ON</u> OFF	Shows/hides the ND filter name.
GAIN	<u>ON</u> OFF	Shows/hides the gain value.
EXTENDER INFO	<u>ON</u> OFF	Shows/hides the extender information.
IRIS	<u>ON</u> OFF	Shows/hides the iris value (F value).
IRIS LEVEL	<u>ON</u> OFF	Shows/hides the IRIS level bar.
COLOR TEMP VALUE	<u>ON</u> OFF	Shows/hides the color temperature.
IRIS MEMORY	<u>ON</u> OFF	Shows/hides the iris value in the camera memory.

PM VIEW SETTING(2/2)

This is the selection screen for the PM VIEW SETTING(2/2) menu.

___ indicates factory default settings.

Item	Setting value	Setting details
TALLY INFO	ON OFF	Shows/hides the TALLY INFO.
F.DROP	ON OFF	Shows/hides the F.DROP.
ZOOM POSITION	ON OFF	Shows/hides the zoom position Information.
FOCUS POSITION	ON OFF	Shows/hides the focus position Information.
OPT_CAM	ON OFF	Shows/hides the optical signal level on the camera.
OPT_CCU	ON OFF	Shows/hides the optical signal level on the CCU.
COLORIMETRY	ON OFF	Shows/hides COLORIMETRY information.
HDR	ON OFF	Shows/hides HDR information.
G/L	ON OFF	Shows/hides G/L information.
V-LOG	ON OFF	Shows/hides V-LOG information.

PM OPERATION STATUS

This is the selection screen for the PM OPERATION STATUS menu.

___ indicates factory default settings.

Item	Setting value	Setting details
STATUS DISPLAY TIME	0 2 4	Sets the time for displaying the status.
MANUAL OPERATION STATUS		
▶ MASTER GAIN	ON OFF	Shows/hides when MASTER GAIN is operated.
▶ SHUTTER	ON OFF	Shows/hides when SHUTTER is operated.
▶ LENS EXTENDER	ON OFF	Shows/hides when LENS EXTENDER is operated.
▶ FILTER	ON OFF	Shows/hides when FILTER is operated.
▶ SCENE FILE	ON OFF	Shows/hides when SCENE FILE is operated.
▶ REF LOAD	ON OFF	Shows/hides when REF LOAD is operated.
AUTO OPERATION STATUS	ON OFF	Shows/hides when the AUTO function is operated.

SYSTEM

This is the selection screen for the SYSTEM menu.

Item	Setting value	Setting details
INITIALIZE	-	Return the menu items to the factory default values.
FACTORY INITIALIZE	-	Return the unit's settings to the factory default values. When you place the cursor on [FACTORY INITIALIZE] and press the [SELECT] dial, [FACTORY INITIALIZE? NO/YES] appears. Select [YES] to start initialization. ● Controls from the camera, ROP, or MSU cannot be performed during initialization.
ROP CONNECT SERIAL	CONNECT -------	Displays the serial connection status with the ROP. **CONNECT** Connected. **-------** Not connected.
ROP CONNECT NETWORK	CONNECT -------	Displays the IP connection status with the ROP. **CONNECT** Connected. **-------** Not connected.

SD CARD

This is the selection screen for the SD CARD menu.

___ indicates factory default settings.

Item	Setting value	Setting details
DATA SAVE	-	Save settings data to a memory card.
DATA LOAD	-	Load the settings data that has been saved to a memory card.
CARD FORMAT	-	Initialize the memory card.
OSS LICENSE	YES <u>NO</u>	Record OSS license terms to an SD card. The file generated will be named "LICENSE.TXT".

ACCOUNT SETTING

This is the selection screen for the ACCOUNT SETTING menu.

___ indicates factory default settings.

Item		Setting value	Setting details
LOAD			Load user account information from an SD card.
	EXECUTE	YES NO	Select load execution.
	NO.1		Display the account name on the SD card.
	NO.2		Display the account name on the SD card.
	NO.3		Display the account name on the SD card.
DELETE			Delete the account information recorded in this unit.
	EXECUTE	YES NO	Select delete execution.
	DELETE NO.1	<u>NONE</u> 1 to 12	Set the list number to be deleted.
	DELETE NO.2	<u>NONE</u> 1 to 12	Set the list number to be deleted.
	DELETE NO.3	<u>NONE</u> 1 to 12	Set the list number to be deleted.
LIST			Display the account information recorded in this unit.

UPDATE

This is the screen for updating the software.

___ indicates factory default settings.

Item	Setting value	Setting details
UPDATE	YES NO	● Initiate the updating of the software with the image file for updating stored on an SD memory card. ● While executing the software update, the busy lamp (next to the SD memory card slot) flashes.

Web Screen

Network settings

Software

Download EasyIP Setup Tool Plus from the following website and then install them. [Windows]

- **Download URL**
  https://pro-av.panasonic.net/en/

EasyIP Setup Tool Plus

This software sets the unit's network settings.

➡ "Using EasyIP Setup Tool Plus to set the unit's settings" (see page 56)

Using EasyIP Setup Tool Plus to set the unit's settings

The settings related to the unit's network can be set using the supplied EasyIP Setup Tool Plus.

When multiple of this unit are to be set, they each need to be set individually.

If setting cannot be done using the EasyIP Setup Tool Plus, make the individual settings for this unit and the personal computer in [MAINTENANCE] > [NETWORK] in the CCU menu.

➡ "NETWORK" (see page 51)

NOTE
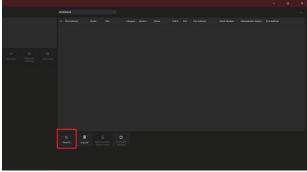
- If, after the network settings have been set, another device on the same network has the same IP address, the network operations will not be performed properly. Set the IP address in such a way that it does not duplicate an existing IP address.

- Do not set network settings from a multiple number of EasyIP Setup Tool Plus programs at the same time for a single camera.

  When connected from more than one PC, the settings of this unit can only be changed from the PC that was connected first.

- EasyIP Setup Tool Plus cannot be used from a different subnet via a router.

- Changes to the settings of this unit using the EasyIP Setup Tool Plus are performed with authentication from an account in the web screen, therefore changes are not possible if the initial account for the web screen is not yet set.

  ➡ "Displaying the web screen using a personal computer" (see page 58)
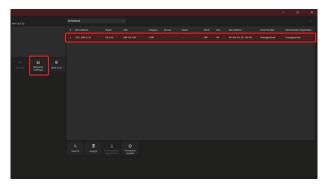
Setting Procedure

1. **Start the EasyIP Setup Tool Plus.**

2. **Click the [Search] button.**
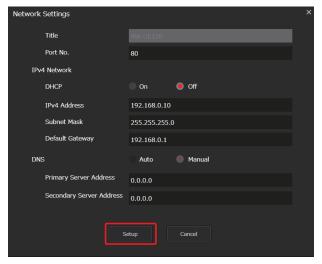
- You can set the Network to be used for the search in the selection menu at the top of the screen.

3. **Select the camera to configure and click the [Network Settings] button.**

- The web screen for the selected camera is displayed when you click the [Web GUI] button.

4. **Input the network items, and click the [Setup] button.**

- Settings for DHCP, DNS, and Port No. are unsupported, so do not make settings for these.

5. **Enter the user name and password registered in the web screen, then click the [OK] button.**

- Enter the user name and password that was set for the initial account or was set in the User management screen [User mng.] in the web screen.

    ➡ "Displaying the web screen using a personal computer" (see page 58)

    ➡ "User management screen [User mng.]" (see page 79)

- After the [OK] button is clicked, it takes about 2 minutes for the settings in the unit to be completed. If this unit is turned off or the LAN cable is disconnected before the settings are completed, the settings will be invalidated. In this case, repeat the steps to set the settings.

📝**NOTE**

- The unit does not support IPv6.
- This unit does not support "Administrator Registration", and "Firmware Update" from EasyIP Setup Tool Plus.
- When a firewall (including software) has been introduced, enable access to all the UDP ports.
- For details about EasyIP Setup Tool Plus, refer to the Help page.

Displaying the web screen

Connect the LAN connector on this unit and a personal computer and make a variety of settings in a web browser.

Use a LAN crossover cable to directly connect the LAN connector on this unit and a personal computer. When connecting via a switching hub, etc., use a LAN straight cable.

Notice regarding the Web screen

IP address and subnet mask

Select an IP address for the personal computer within the private address range while ensuring that it is different from the address of the unit. Set the subnet mask to the same address as the unit.

- **Unit's IP address and subnet mask (factory settings)**

IP address	192.168.0.20
Subnet mask	255.255.255.0

NOTE

- In the factory settings, the variable range for private addresses is between 192.168.0.1 and 192.168.0.255.

Personal computer environment required to display the Web screen

For details on the personal computer environment required to display the Web screen, refer to following page.

➡ "Personal computer requirements" (see page 9)

Displaying the web screen using a personal computer

Screens from Windows (Microsoft Edge) are used as examples in this manual. There will be some differences in how the screen appears in other browsers, but the procedures will be the same.
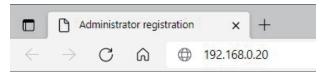
1. **Start the web browser of the personal computer.**
   Use one of the web browsers below depending on the operating system installed in the personal computer.

Installed OS	Web browser
Windows	Microsoft Edge
	Internet Explorer 11
	Google Chrome
macOS	Safari

2. **Enter the IP address you configured on the EasyIP Setup Tool Plus in the address bar of the web browser.**

   - Example of input
     http://registered URL
     http://192.168.0.20

   - If this unit is within a local network, make the settings for the proxy server from the web browser so that the proxy server is not used for the local address.

3. Sets the initial account.

If the web screen is set to be shown in the initial state, the initial account setting screen is displayed.

Set the user name and password.

📝 *NOTE*

- Do not use a string of characters that can be easily guessed by a third party.

- Change your password regularly.

- Use at least 3 of the following 4 character types in a password of at least 8-characters in length.

    - Upper case alphabet
    - Lower case alphabet
    - Numbers
    - Symbols (! # $ % ' ( ) * + , - . / ? @ [ ] ^ _ ` ~)

- If a password is set that does not follow the above policy, the user assumes responsibility for operation, with an adequate understanding of the security risks to the installation environment, etc.

- A warning message is displayed if you set a password that does not meet the recommended setting policy. To change the password, click the [Back] button and enter another password.
  To continue the settings after understanding the risk to security, click [Continue] and then complete the settings.

- If you have forgotten the account information you set, execute [SYSTEM] > [FACTORY INITIALIZE] in the CCU menu, and reset the user information used for network connections.
  The settings for this unit return to the factory settings when you execute [FACTORY INITIALIZE].

  ➡️ "SYSTEM" (see page 54)

4. Complete registration of the initial account.

The following screen indicating registration completion is displayed after registration of the initial account is complete.

After about 10 seconds of showing this completion screen, the settings screen is automatically shown. If the screen does not transition to the settings screen even after 10 seconds have elapsed, click on the link in "please click here" to move to the settings screen manually.
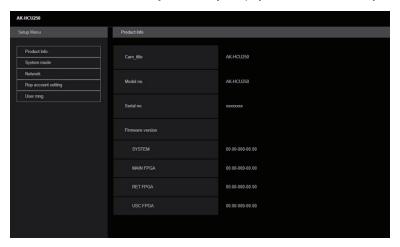
This completes the procedures for registering the initial account.

5. Display the settings screen.

The web screen is displayed.

In the initial screen, the Product information screen [Product info.] is displayed, so switch if necessary.

Logging into the web screen
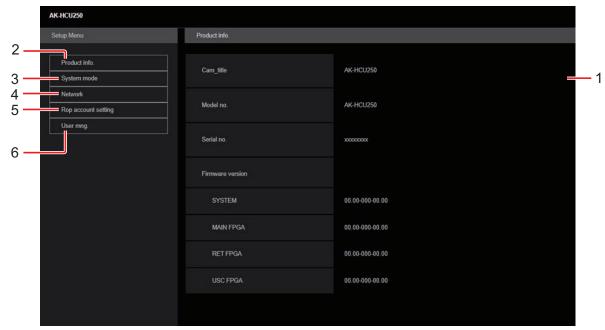
When the web screen is displayed, you need to enter the account information.

NOTE

- The account input screen appears as a pop-up window in the web browser.
- Correctly enter the user name and password that were previously registered.
- It is recommended to regularly change the password.

Web setting screen

This screen enables you to make a variety of settings for this unit.

1	Main area	The menu screen appears.
2	**Product information button [Product info.]**	Click the button to display the Product information screen [Product info.]. ➡ "Product information screen [Product info.]" (see page 62)
3	**View system settings button [System mode]**	Click the button to display the View system settings screen [System mode]. ➡ "View system settings screen [System mode]" (see page 63)
4	**Network settings button [Network]**	Click the button to display the Network settings screen [Network]. ➡ "Network settings screen [Network]" (see page 64)
5	**ROP account settings button [ROP account setting]**	Click the button to display the ROP account settings screen [ROP account setting]. ➡ "ROP account settings screen [ROP account setting]" (see page 78)
6	**User management settings button [User mng.]**	Click the button to display the User management screen [User mng.]. ➡ "User management screen [User mng.]" (see page 79)

NOTE
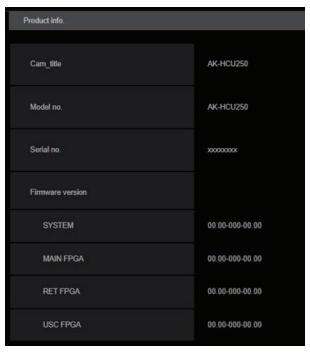
- If setting values are changed from an OSD menu or another web browser while the settings menu is being displayed, there may be a mismatch between the setting values and the displayed values. If this occurs, refresh the screen displaying the settings menu in the web browser.

Product information screen [Product info.]

The versions of the unit's software can be checked on this screen.

The [Model no.], [Serial no.], [Firmware version] and other information about the unit is displayed.

___ indicates factory default settings.

Item	Display description
Cam_title	**AK-HCU250** Set the camera name displayed in the header of the web screen and in EasyIP Setup Tool Plus.
Model no.	Display the unit's model number.
Serial no.	Displays the unit's serial number.
Firmware version	**SYSTEM** Displays the SYSTEM version of the unit. **MAIN FPGA** Displays the MAIN FPGA version. **RET FPGA** Displays the RET FPGA version. **USC FPGA** Displays the USC FPGA version. ● Displayed when the 4K OPTION board is fitted.

View system settings screen [System mode]

View the system format of this unit, etc., in the View system settings screen [System mode].

The View system settings screen [System mode] consists of [Main].

Main

Click [Main] in the View system settings screen [System mode].

You can view the basic settings for the unit.

Main	
Format	2160/59.94p

Item	Display description
Format	Displays the settings for the format of the signals output from the CCU.

Network settings screen [Network]

Make settings related to the network in the Network settings screen [Network].
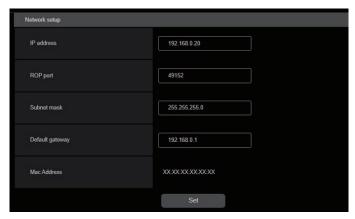
The Network settings screen [Network] consists of [Network setup], [Tally in setting], [HTTPS], [NTP] and [Common].

Network setup

Click [Network setup] in the Network settings screen [Network].

Make network settings.

Confirm the settings with the [Set] button.

The following information is required to configure network settings. Consult your network administrator or Internet service provider.

- IP address
- Port
- Subnet mask
- Default gateway (when using a gateway server or router)

___ indicates factory default settings.

Item	Setting value	Setting details
IP address	192.168.0.20	Enter so that the address does not duplicate the IP addresses of the personal computer or other network cameras.
ROP port	49152 (49152 to 49299)	Enter the port number for ROP connection.
Subnet mask	255.255.255.0	Enter the subnet masks.
Default gateway	192.168.0.1	Set the default gateways.
Mac address	Display only	Display the MAC addresses.

Tally in setting

Click [Tally in setting] in the Network settings screen [Network].

Make settings related to Tally control via TSL Protocol 5.0.

Confirm the settings with the [Set] button.

___ indicates factory default settings.

Item	Setting value	Setting details
Index No.	1 (1 to 65534)	Enter the Index No. set by devices that output Tally.
Port	62000 (60000 to 65535)	Enter the Tally in port number.
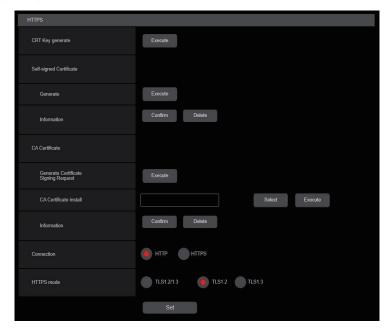
HTTPS

Click [HTTPS] in the Network settings screen [Network].

Makes settings for the HTTPS function.

The setting is confirmed with the [Set] button.

Refer to "HTTPS settings [HTTPS]" for information on how to set HTTPS.

___ indicates factory default settings.

Item	Setting value	Setting details
CRT key generate	-	A CRT key (SSL encryption key) is generated by HTTPS. Generation of the CRT key is performed with the dialog displayed when you click the [Execute] button. ➡ "Generating a CRT key (SSL encryption key) [CRT key generate]" (see page 68)
Self-signed Certificate - Generate	-	A self-signed security certificate is generated by HTTPS. (Self-signed Certificate) Generation of the self-signed certificate (security certificate) is performed with the dialog displayed when you click the [Execute] button. ➡ "Generating a self-signed certificate (security certificate) [Self-signed Certificate - Generate]" (see page 69)
Self-signed Certificate - Information	-	This displays information relating to the self-signed certificate (security certificate). When you click the [Confirm] button, the information registered in the generated self-signed certificate (security certificate) is displayed in a dialog. Click the [Delete] button to delete the generated self-signed certificate (security certificate).
CA Certificate - Generate Certificate Signing Request	-	When using a security certificate issued by the Certificate Authority (CA) as a security certificate for HTTPS, a Certificate Signing Request (CSR) is generated for application to the Certificate Authority (CA). Generation of the Certificate Signing Request (CSR) is performed with the dialog displayed when you click the [Execute] button. ➡ "Generating a Certificate Signing Request (CSR) [CA Certificate - Generate Certificate Signing Request]" (see page 71)

Item	Setting value	Setting details
CA Certificate - CA Certificate install	-	This displays information relating to server certificates (security certificates) issued by the Certificate Authority (CA), which are to be or are already installed.
		In the [File Open] dialog, which is displayed by clicking the [Select] button, select the file of the server certificate (security certificate) issued by the Certificate Authority (CA) and click the [Execute] button to install the server certificate (security certificate).
		If the server certificate (security certificate) is installed, its file name will be displayed.
		➡ "Installing a Server Certificate [CA Certificate - CA Certificate install]" (see page 72)
CA Certificate - Information	-	This displays information relating to the server certificate (security certificate).
		When you click the [Confirm] button, the information registered in the installed server certificate (security certificate) is displayed in a dialog. If the server certificate (security certificate) is not installed, the content of the generated Certificate Signing Request (CSR) is displayed.
		Click the [Delete] button to delete the installed server certificate (security certificate).
Connection	HTTP	This sets the method to connect to the unit.
	HTTPS	
HTTPS mode	TLS1.2/1.3	This sets the encryption protocol when accessing the camera with HTTPS.
	TLS1.2	
	TLS1.3	

📝**NOTE**
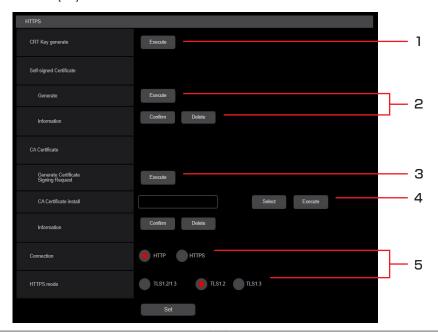
- To delete an enabled server certificate (security certificate), confirm that there is a backup to the said certificate in your personal computer or recording media. A server certificate (security certificate) will be needed to reinstall it.
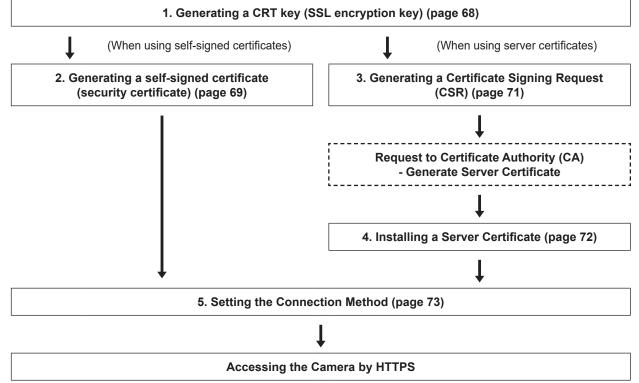
■ HTTPS settings [HTTPS]

This encrypts access to the camera and sets HTTPS to improve communication safety.

Setting HTTPS is performed by following the procedures below.

The setting is confirmed with the [Set] button.


```
┌─────────────────────────────────────────────────────────────┐
│  1. Generating a CRT key (SSL encryption key) (page 68)      │
└─────────────────────────────────────────────────────────────┘
```

(When using self-signed certificates)   (When using server certificates)

```
┌──────────────────────────────┐   ┌──────────────────────────────┐
│ 2. Generating a self-signed  │   │ 3. Generating a Certificate  │
│    certificate               │   │    Signing Request           │
│ (security certificate) (page │   │    (CSR) (page 71)           │
│    69)                       │   │                              │
└──────────────────────────────┘   └──────────────────────────────┘
```

```
                                   ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
                                     Request to Certificate Authority (CA)
                                   │  - Generate Server Certificate │
                                   └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘
```

```
                                   ┌──────────────────────────────┐
                                   │ 4. Installing a Server       │
                                   │    Certificate (page 72)     │
                                   └──────────────────────────────┘
```

```
┌─────────────────────────────────────────────────────────────┐
│  5. Setting the Connection Method (page 73)                  │
└─────────────────────────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────────────────────────┐
│  Accessing the Camera by HTTPS                               │
└─────────────────────────────────────────────────────────────┘
```

NOTE

- When using a server certificate, the process from applying to the Certificate Authority (CA) to issuing a server certificate must be performed between customers and the Certificate Authority (CA).
- Use either a self-signed certificate or server certificate. When simultaneously generating a self-signed certificate and installing a server certificate, this unit will prioritize the server certificate.

■ **Generating a CRT key (SSL encryption key) [CRT key generate]**

NOTE

- A CRT key cannot be generated when self-signed certificates and server certificates are enabled.
- The size of the key that can be used by the Certificate Authority (CA) differs when using a server certificate. Confirm in advance the the size of the key that can be used.
- Generating a CRT key takes about 1 minute for 1024 bit and about 2 minutes for 2048 bit. Do not operate the web browser until CRT key generation is complete. Image display and communication speed may reduce while generating a CRT key.

1. **Click the [Execute] button in [CRT key generate].**
   The [Current CRT key] dialog is displayed.

Current CRT Key		
CRT Key		
RSA key size		
Last modified	Not generated	History
CRT key generate		
RSA key size	● 1024bit ● 2048bit	Execute
	*Generating a CRT key takes around 2 minutes.	
		Close

2. **The size of the generated CRT key is selected from [1024bit]/[2048bit] in [CRT key generate] – [RSA key size].**

   NOTE

   - When using a server certificate, the RSA key size must be in accordance with the demands of the Certificate Authority (CA) which will be applied to.

3. **Click the [Execute] button.**
   CRT key generation starts.
   When CRT key generation stops, the size of the CRT key generated by the [Current CRT key] and the date and time generation concluded will be displayed.

   NOTE

   - Perform procedures 1 to 3 to change (update) the generated CRT key. Because the CRT key, self-signed certificate and server certificate are enabled as a set, it will be necessary to once again generate a self-signed certificate or apply for a server certificate when the CRT key is changed.
   - When the CRT key is changed, previous CRT keys are historically managed one at a time. Clicking the [History] button in the [CRT key] of the [Current CRT key] dialog displays the [Previous CRT key] dialog, allowing confirmation of the key size and the date and time generation was completed.
   Clicking the [Apply] button in [Previous CRT key] allows the previous CRT key to be switched to the current CRT key.
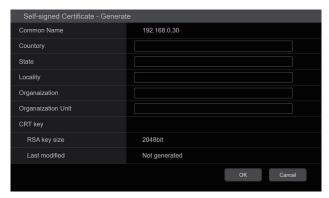
Previous CRT key		
History		
RSA key size	2048bit	
Last modified	2023/01/01 00:00:00	Apply
		Close

■ **Generating a self-signed certificate (security certificate) [Self-signed Certificate - Generate]**

📝**NOTE**

● A self-signed certificate cannot be generated when a CRT key has not been generated.

1. **Click the [Execute] button in [Self-signed Certificate] - [Generate].**
   [Self-signed Certificate - Generate] is displayed.

Self-signed Certificate - Generate	
Common Name	192.168.0.30
Countory	
State	
Locality	
Organaization	
Organaization Unit	
CRT key	
RSA key size	2048bit
Last modified	Not generated
	OK Cancel

2. **Input information relating to the certificate to be generated.**
   Items to be entered are as follows.

Item	Description	Maximum number of characters
Common Name	Sets a fixed camera IP address.	
Country	Inputs the country code. (can be abbreviated)	2 characters: country code
State	Inputs the name of the state. (can be abbreviated)	128 characters
Locality	Inputs the name of the city. (can be abbreviated)	128 characters
Organization	Inputs the name of the organization. (can be abbreviated)	64 characters
Organizational Unit	Inputs the name of the organizational unit. (can be abbreviated)	64 characters
CRT key	Displays the size of the current CRT key and the date and time generation was completed.	

   📝**NOTE**

   ● Characters that can be input for [Common Name], [Country], [State], [Locality], [Organization], [Organizational Unit] are 0 to 9, A to Z, a to z, and the following symbols: - . _ + ( ).
   ● When connecting the camera to the Internet, set the address or host name to be accessed from the Internet in [Common Name]. In this case, when accessing the camera locally, a security warning screen is displayed every time the camera is accessed even when a security certificate is installed.
   ● When inputting the IPv6 address in [Common Name], surround the address with [   ].
     e.g. [2001:db8::10]

3. Click the [OK] button after inputting the address.

A self-signed certificate is generated.

📝 *NOTE*

- Information relating to the generated self-signed certificate is displayed in [Self-signed Certificate] - [Information]. The following is displayed depending on the status of the self-signed security certificate.

Displayed content	Description
Not generated	When the self-signed certificate is not generated
Invalid (Reason: CA Certificate installed)	When the self-signed certificate is already generated and the server certificate is already installed ● The server certificate is enabled in this case.
[Common Name] of self-signed certificate	When the self-signed certificate is already generated and enabled

- When the [Confirm] button is clicked, the registered content of the generated self-signed certificate (security certificate) is displayed in the [Self-signed Certificate - Confirm] dialog.

Self-signed Certificate - Confirm	
Common Name	192.168.0.30
Countory	
State	
Locality	
Organaization	
Organaization Unit	
CRT key	
RSA key size	2048bit
Last modified	2023/01/01 00:00:00
	Close

- Click the [Delete] button to delete the generated self-signed certificate (security certificate).
- When [HTTPS] is selected in [Connection], the self-signed certificate (security certificate) cannot be deleted.
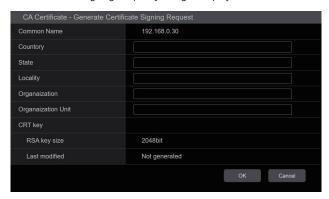
■ **Generating a Certificate Signing Request (CSR) [CA Certificate - Generate Certificate Signing Request]**

📝**NOTE**

- A certificate signing request (CSR) cannot be generated if a CRT key has not been generated.
- To generate a certificate signing request (CSR), perform the following settings in advance in the web browser Internet options. Perform the following settings in the [Security] tab (accessed from [Tools] in the menu bar - [Internet Options] - [Security]).
- Register the camera as a "Trusted Site".
- In [Level Customize], go to [File Download] from [Download] and set to [Enable].
- In [Level Customize], go to [Automatically Display Dialog when Downloading File] from [Download] and set to [Enable].

1. **Click the [Execute] button in [CA Certificate - Generate Certificate Signing Request].**
   The [CA Certificate - Generate Certificate Signing Request] dialog is displayed.

CA Certificate - Generate Certificate Signing Request	
Common Name	192.168.0.30
Countory	
State	
Locality	
Organaization	
Organaization Unit	
CRT key	
RSA key size	2048bit
Last modified	Not generated
	OK Cancel

2. **Input information relating to the certificate to be generated.**
   Items to be entered are as follows.

Item	Description	Maximum number of characters
Common Name	Sets a fixed camera IP address.	
Country	Inputs the country code.	2 characters: country code
State	Inputs the name of the state.	128 characters
Locality	Inputs the name of the city.	128 characters
Organization	Inputs the name of the organization.	64 characters
Organizational Unit	Inputs the name of the organizational unit.	64 characters
CRT key	Displays the size of the current CRT key and the date and time generation was completed.	

   📝**NOTE**

   - When using a server certificate, the information to be input must be in accordance with the demands of the Certificate Authority (CA), which will be applied to.
   - Characters that can be input for [Common Name], [Country], [State], [Locality], [Organization], [Organizational Unit] are 0 to 9, A to Z, a to z, and the following symbols: - . _ + ( ).

3. **Click the [OK] button after inputting the address.**
   The [Save As] dialog is displayed.

4. **In the [Save As] dialog, assign a file name to the Certificate Signing Request (CSR) and save it in personal computer.**
   Apply to the Certificate Authority (CA) using the saved Certificate Signing Request (CSR).

   📝**NOTE**

   - A server certificate is issued for both the generated Certificate Signing Request (CSR) and CRT key. The issued server certificate can no longer be used when generating/updating the CRT key after applying to the Certificate Authority (CA).
   - The Certificate Signing Request (CSR) generated by this unit is in a PEM format.

■ **Installing a Server Certificate [CA Certificate - CA Certificate install]**

📝*NOTE*

- A server certificate (security certificate) cannot be installed if a Certificate Signing Request (CSR) has not been generated.
- The server certificate must have been issued by the Certificate Authority (CA) in order to install it.

1. **Click the [Select] button in [CA Certificate - CA Certificate install].**
   The [Open File] dialog is displayed.

2. **Select the server certificate file and click [Open]. Then click the [Execute] button.**
   The server certificate is installed.

   📝*NOTE*

   - The name of the host registered to the installed server certificate is displayed in [CA Certificate] - [Information]. The following is also displayed depending on the status of the server certificate.

Displayed content	Description
Invalid	When the server certificate is not installed
[Common Name] of server certificate	When the server certificate is already installed and enabled
Expired	When the effective period of the server certificate has expired

   - When the [Confirm] button is clicked, the content of the installed server certificate (security certificate) is displayed in the [CA Certificate - Confirm] dialog. (An asterisk is displayed in the [Organizational Unit] field only.)

CA Certificate - Confirm	
Common Name	192.168.0.30
Countory	
State	
Locality	
Organaization	
Organaization Unit	
CRT key	
RSA key size	2048bit
Last modified	2023/01/01 00:00:00
	Close

   - Click the [Delete] button to delete the installed server certificate (security certificate).
   - When [HTTPS] is selected in [Connection], the server certificate (security certificate) cannot be deleted.
   - Perform STEP 1 to STEP 2 to update a server certificate.
   - To delete an enabled server certificate (security certificate), confirm that there is a backup to the said certificate in your personal computer or recording media. A server certificate (security certificate) will be needed to reinstall it.
   - The HTTPS function can no longer be used when the effective period of the server certificate has expired. In such a case, the connection method is changed to HTTP when the unit is restarted. Update the server certificate before its effective period expires.
   - The effective period of the server certificate can be confirmed by double-clicking the server certificate file issued by the Certificate Authority (CA).

■ **Setting the Connection Method [Connection]**

1. Set the method to access the camera in [Connection].

HTTP: Only HTTP connection is possible.

HTTPS: Only HTTPS connection is possible.

📝**NOTE**

- When using an HTTPS connection, network connection with the AK-HRP1000, AK-HRP1005, AK-HRP1010, AK-HRP250, and AK-MSU1000 will be disabled.

2. Set the Port No. to be used with HTTPS in [HTTPS port].

Port No. that can be selected: 1 to 65535

The following port numbers are used by the unit so they cannot be used.

20, 21, 23, 25, 42, 53, 67, 68, 69, 80, 110, 123, 161, 162, 554, 995, 10669, 10670, 59000 to 61000

Factory settings: 443

3. Set the encryption protocol used with HTTPS in [HTTPS mode].

TLS1.2/1.3: Connection with TLS1.2/1.3 is possible.

TLS1.3: Connection with TLS1.3 is possible.

TLS1.2: Connection with TLS1.2 is possible.

4. Click the [Set] button.

The camera restarts and access to the camera via HTTPS is enabled.

📝**NOTE**

- This unit will restart if the connection method is changed.
- **Using a self-signed certificate**
  A warning screen is displayed when accessing the camera by HTTPS for the first time. Install the self-signed certificate (security certificate) in your personal computer in accordance with the screen instructions.
  ➡ "Install the security certificate" (see page 74)
- **Using a server certificate**
  Install the Certificate Authority (CA) root certificate or intermediate certificate in your web browser in advance. Follow the Certificate Authority (CA) procedures to acquire and install root certificates and intermediate certificates.
- When accessing the camera by HTTPS, the image display speed and frame rate of the moving image may reduce.
- When accessing the camera by HTTPS, it may take some time for the images to be displayed.
- When accessing the camera by HTTPS, images may be disturbed and sound may be interrupted.
- The maximum number of cameras that can be connected simultaneously depends on the maximum image size and distribution format.

■ **Accessing the Camera by HTTPS**

1. Launch the web browser in your personal computer.

2. Input the camera's IP address in the address bar of the web browser.

Input address: https://192.168.0.10/

📝**NOTE**

- When the HTTPS port No. is changed from "443", input "https://camera IP address: Port No." in the address bar.
  E.g. https://192.168.0.11:61443
- When this unit is in a local network, set a proxy server from the web browser (menu bar: [Tools] - [Internet Options]) to ensure that a proxy server is not used for a local address.

3. Press the [Enter] key.

The live screen [Live] is displayed.

The security certificate is installed when the security warning screen is displayed.

➡ "Install the security certificate" (see page 74)

When [User auth.] is set to [On], the user name and password input screen is displayed before the live screen [Live] appears.

📝**NOTE**
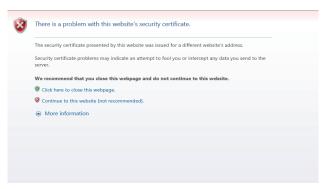
- When HTTPS is used, screen and image display may slow down and image update interval (frame rate) may also slow down.

● **Install the security certificate**

When using HTTPS to access the camera, the security warning screen will be displayed if the security certificate of the said camera has not been installed in your personal computer. To prevent this warning screen being displayed, the security certificate must be installed in accordance with the following procedures. If it is not installed, the security warning screen will be displayed every time the camera is accessed.

📝 **NOTE**

- The security certificate will be installed to your personal computer based on the content set for [Common Name]. The content set for the "Host Name" must therefore match that set for the address/host name used to access the camera. If the content differs, a security warning screen will be displayed every time the camera is accessed.
- A security warning screen will be displayed if the camera address/host name is changed even when a security certificate has been installed. Reinstall the security certificate.
- When connecting the camera to the Internet, set the address or host name to be accessed from the Internet in [Common Name]. In this case, when accessing the camera locally, a security warning screen is displayed every time the camera is accessed even when a security certificate is installed.
- When the security certificate is correctly installed, an icon of the key will be displayed in the address bar of the web browser accessing the camera.

1. **Accessing the Camera by HTTPS.**
2. **When the security warning screen is displayed, click [Continue to this website (not recommended).].**

The live screen [Live] is displayed.
When the authentication screen is displayed, input the user name and password.
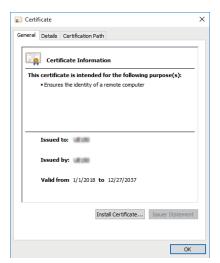
📝 **NOTE**

- When the above screen is displayed after accessing a device apart from the camera or a website, there may be a security problem, so check this carefully.

3. **Click [Certificate error] in the URL and then click [View certificates].**

4. Click [Install Certificate...].

📝 **NOTE**
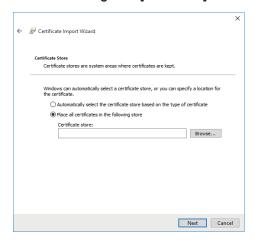
- If [Install Certificate...] is not displayed, close Internet Explorer and restart it by selecting [Run as Administrator]. Right-click on [Start] - [Program] - [Internet Explorer] and click [Execute as Administrator (A)..].

5. Click [Next], which is displayed in the certificate import wizard.

6. Select [Place all certificates in the following store] and click [Browse...].

7. **Select [Trusted Root Certification Authorities] and click [OK].**
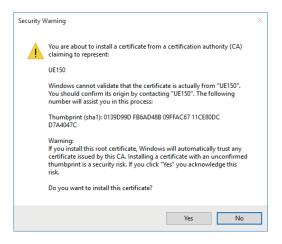
8. **Click [Next].**

9. **Click [Finish].**
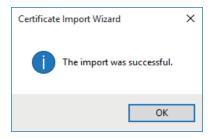
10. **Click [Yes].**

When importing is finished, the "The import was successful." screen is displayed.

11. Click [OK].

Closing the web browser after importing the certificate and reconnecting to it will stop the "Certificate error" screen being displayed.

NTP

Click [NTP] in the Network settings screen [Network].

Make settings for the NTP function.

Confirm the settings with the [Set] button.

___ indicates factory default settings.
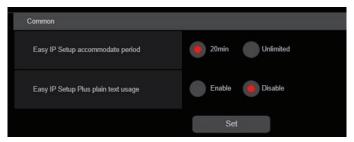
Item	Setting value	Setting details
Server address	192.168.0.123	Input the IP address of the NTP server.
Port	123	Input the port No. of the NTP server.
Time adjustment interval	1h	Selects the interval (1 to 24 hours in 1-hour increments) for acquiring the time from the NTP server.

Common

Click [Common] in the Network settings screen [Network].

Make shared network settings.

Confirm the settings with the [Set] button.

___ indicates factory default settings.

Item	Setting value	Setting details
EasyIP Setup accommodate period	20min. Unlimited	Sets the time allowed for network setting operations from EasyIP Setup Tool Plus. **20min.** Allows camera setting operations on the EasyIP Setup Tool Plus for just 20 minutes after start up of this unit. **Unlimited** Allows camera setting operations on the EasyIP Setup Tool Plus at any time. ● Camera display on the EasyIP Setup Tool Plus is enabled all the time, and the camera screen can be opened. ● Consult the network administrator regarding the address settings for the different servers.
EasyIP Setup Plus plain text usage	Enable Disable	Sets whether to enable or disable encryption of communications when communicating with EasyIP Setup Tool Plus. **Enable** Communications are sent and received as plain messages. **Disable** Communications are sent and received as encrypted messages.

ROP account settings screen [ROP account setting]

Make the settings for user accounts required to connect to ROPs (AK-HRP250 / AK-HRP1000 / AK-HRP1005 / AK-HRP1010 / AK-HRP1015) from this unit in the ROP account settings screen [ROP account setting]. The accounts can also be deleted here. Up to 12 users can be registered.

The ROP account settings screen [ROP account setting] consists of [User list] and [Add user].

User list

Click [User list] in the ROP account settings screen [ROP account setting].

Information about accounts already registered is displayed.

To delete a registered user account, click the [Delete] button to the right of the relevant account.

Add user

Registers a user account.

Item	Setting details

User name	Enter the user name.
	
	 ● Maximum number of characters
	 1 to 8 half-size characters
	
	 ● Characters that can be entered
	   ● Half-size numeric characters:
	     0123456789
	   ● Half-size alphabetical characters (upper and lower cases):
	     ABCDEFGHIJKLMNOPQRSTUVWXYZ
	     abcdefghijklmnopqrstuvwxyz
	   ● Symbols:
	     - _ #

Password **Retype password**	Enter the password. ● Maximum number of characters 1 to 31 half-size characters

User management screen [User mng.]

In the User management screen [User mng.], register authentication for users that can access this unit from personal computers and mobile terminals. Up to 3 users can be registered.

The User management screen [User mng.] consists of [User list] and [Add user].

NOTE

● If user authentication fails more than 8 times within a 30-second period from the same IP address (personal computer), access to the unit will be disabled for a certain period.

User list

Click [User list] in the User management screen [User mng.].

Information about accounts already registered is displayed.

To delete a registered user account, click the [Delete] button to the right of the relevant account.

NOTE

● If there is 1 registered account, you cannot delete that account.

Add user

Registers a user account.

Item	Setting details

User name	Enter the user name.
	
	● Maximum number of characters
	  1 to 32 half-size characters
	
	● Characters that can be entered
	  ● Half-size numeric characters:
	    0123456789
	  ● Half-size alphabetical characters (upper and lower cases):
	    ABCDEFGHIJKLMNOPQRSTUVWXYZ
	    abcdefghijklmnopqrstuvwxyz
	  ● Symbols:
	    ! # $ % ' ( ) * + , - . / ? @ [ ] ^ _ ` ~

Password **Retype password**	Enter the password. ● Maximum number of characters 4 to 32 half-size characters

Troubleshooting

Operation

Symptom	Cause and Measure
Cannot turn the power on.	● **Is the power cable connected to the outlet properly?**
Cannot perform operation from an ROP connected with an IP connection.	● **Is the power on?** 　● If the [POWER] lamp of this unit is off, the power of this unit is not turned on.
	● **Is a valid IP address set on the unit?**
	● **Is the unit you want to operate selected correctly?**
	● **Is the ROP connected correctly?** 　● Also refer to the operating instructions for the ROP.
	● **The version of the ROP may need to be upgraded to enable support for the unit.** 　● Consult your dealer.

Reference

Connector pin assignment table

[INTERCOM] connector (page 19: 10)

HA16PRH-5S (Hirose Electric Co., Ltd.)
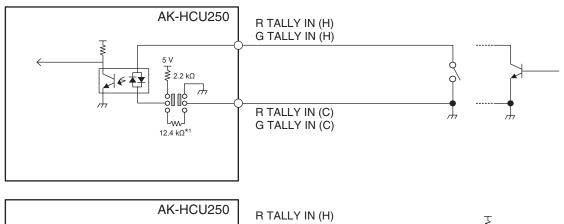
Pin No.	Function	Remarks
1	SHIELD	Carbon MIC: -1 dB
2	TALK	Dynamic MIC: -5 dB
3	SHIELD	• Select from [DYN], [ECM], and [CBN] in the [AUDIO] menu, [CCU INTERCOM TALK] → [MIC TYPE]
4	RECEIVE	
5	NC	
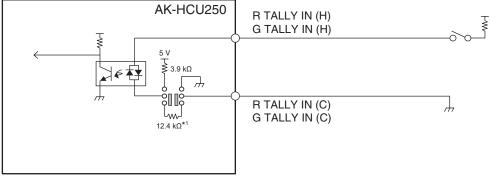
[COMMUNICATION] connector (page 22: 2)

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

Pin No.	Function	Flow of signal	Remarks
1	INCOM ENG OUT (H)	CCU→SYSTEM	0 dBm, 600 Ω (4 W) / 1 V [p-p], 200 Ω (RTS) 4 W/RTS
2	INCOM ENG OUT (C)	CCU→SYSTEM	• Selected using a menu
3	INCOM ENG (GND)		
4	INCOM ENG IN (H)	SYSTEM→CCU	
5	INCOM ENG IN (C)	SYSTEM→CCU	
6	PGM IN (H)	SYSTEM→CCU	0 dBm/-20 dBm, 600 Ω
7	PGM IN (C)	SYSTEM→CCU	• Selected using a menu
8	PGM IN (GND)		
9	GND		
10	NC		
11	R TALLY IN (H)	SYSTEM→CCU	**ON:** Short/TTL(H)/24 V ➡ "Example of tally input connections" (see page 82)
12	R TALLY IN (C)	SYSTEM→CCU	**OFF:** Open/TTL(L)/0 V
13	GND		
14	INCOM PROD OUT (H)	CCU→SYSTEM	0 dBm, 600 Ω (4 W) / 1 V [p-p], 200 Ω (RTS) 4 W/RTS
15	INCOM PROD OUT (C)	CCU→SYSTEM	• Selected using a menu
16	INCOM PROD (GND)		
17	INCOM PROD IN (H)	SYSTEM→CCU	
18	INCOM PROD IN (C)	SYSTEM→CCU	
19	NC		
20	NC		
21	NC		
22	NC		**ON:** Short/TTL(H)/24 V ➡ "Example of tally input connections" (see page 82)
23	NC		**OFF:** Open/TTL(L)/0 V
24	G TALLY IN (H)	SYSTEM→CCU	
25	G TALLY IN (C)	SYSTEM→CCU	

Example of tally input connections

*1: Equivalent circuit

[ROP] connector (page 22: 3)

HR10G-10R-10SC (71) (Hirose Electric Co., Ltd.)

Pin No.	Function	Flow of signal
1	ROP CONT (H)	CCU→ROP
2	ROP CONT (C)	CCU→ROP
3	ROP DATA (H)	ROP→CCU
4	ROP DATA (C)	ROP→CCU
5	NC	
6	NC	
7	NC	
8	NC	
9	+16 V OUT	CCU→ROP
10	GND	

● **Connector of cable**

HR10A-10P-10P (73)
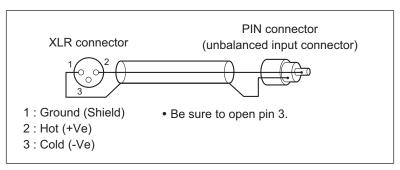
[MIC1] and [MIC2] connectors (page 22: 4)
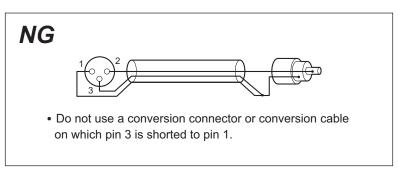
HA16RV-3PG(76) (Hirose Electric Co., Ltd.)

Pin No.	Function	Flow of signal	Remarks
1	SHIELD		0 dBm, 600 Ω
2	HOT	CCU→SYSTEM	
3	COLD	CCU→SYSTEM	

● When connecting to an unbalanced input terminal of an external device, connect to it as shown in the diagram below.

XLR connector

PIN connector
(unbalanced input connector)

1 : Ground (Shield)
2 : Hot (+Ve)
3 : Cold (-Ve)

• Be sure to open pin 3.

● Some commercially available conversion connectors and conversion cables have pin 3 shorted to pin 1.
Using such a conversion connector or conversion cable will cause a failure.

NG

• Do not use a conversion connector or conversion cable
on which pin 3 is shorted to pin 1.

[CAMERA] connector (page 22: 5)

AK-HCU250P/AK-HCU250E: OPS2404-PR (Tajimi Electronics Co., Ltd.)

Pin No.	Function	Flow of signal
1	Optical fiber	CCU → CAM
2	Optical fiber	CAM → CCU
3	DC 190 V (C)	CCU → CAM
4	DC 190 V (H)	CCU → CAM
5	Control line	CCU ←→ CAM
6	Control line	CCU ←→ CAM

AK-HCU250PS/AK-HCU250ES: FXW.3K.93C.TLM (LEMO)
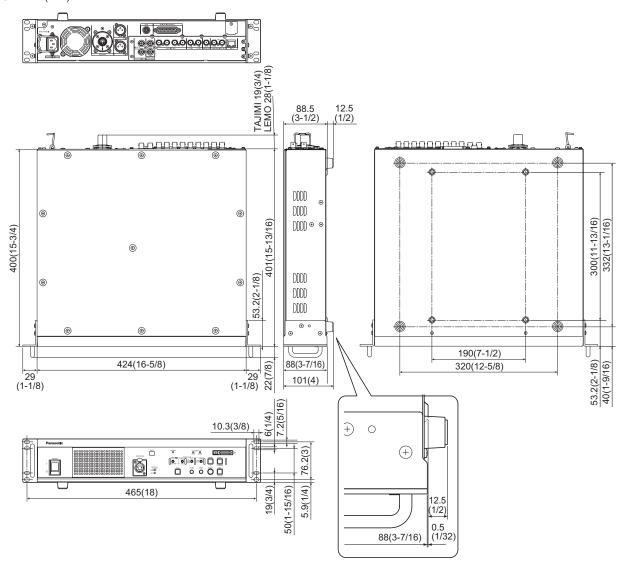
Pin No.	Function	Flow of signal
1	Optical fiber	CCU → CAM
2	Optical fiber	CAM → CCU
3	Control line	CCU ←→ CAM
4	Control line	CCU ←→ CAM
5	DC 190 V (H)	CCU → CAM
6	DC 190 V (C)	CCU → CAM

G/L specifications

FORMAT/ CCU MODE	REF-IN							
	1080/59i	1080/23PsF	525/59i	720/59p	1080/50i	625/50i	720/50p	No input
HD/HD_HDR(59.94)								
1080/59.94p	✓	×	✓	×	×	×	×	-
1080/59.94i	✓	×	✓	×	×	×	×	-
1080/23.98p over 59.94i	✓	✓	✓	×	×	×	×	-
1080/29.97PsF	✓	×	✓	×	×	×	×	-
1080/23.98PsF	×	✓	✓	×	×	×	×	-
720/59.94p	×	×	✓	✓	×	×	×	-
HD/HD_HDR(50)								
1080/50p	×	×	×	×	✓	✓	×	-
1080/25PsF	×	×	×	×	✓	✓	×	-
720/50p	×	×	×	×	×	✓	✓	-

Appearance

Unit: mm (inch)

TAJIMI 19(3/4)
LEMO 28(1-1/8)

88.5 (3-1/2) 12.5 (1/2)

400(15-3/4)

401(15-13/16)

53.2(2-1/8)

424(16-5/8)

29 (1-1/8)   29 (1-1/8)   22(7/8)

88(3-7/16)

101(4)

300(11-13/16)

332(13-1/16)

190(7-1/2)

320(12-5/8)

53.2(2-1/8)

40(1-9/16)

10.3(3/8)

6(1/4)

7.2(5/16)

76.2(3)

Panasonic

465(18)

19(3/4)

50(1-15/16)

5.9(1/4)

12.5 (1/2)

0.5 (1/32)

88(3-7/16)

Specifications

General

Power supply	AK-HCU250P/AK-HCU250PS : 100 V - 120 V AC (∿), 50 Hz/60 Hz AK-HCU250E/AK-HCU250ES : 100 V - 240 V AC (∿), 50 Hz/60 Hz
Current consumption	3 A
Capacity for supplying power to a camera	DC (⎓) 190 V , 0.6 A

☐ indicates safety information.

Operating temperature	0 °C to 40 °C (32 °F to 104 °F)
Humidity	10% to 90% (no condensation)
Storage temperature	-20 °C to 60 °C (-4 °F to 140 °F)
Dimensions (Width×Height×Depth)	424 mm × 88 mm × 401 mm (16-5/8 inches × 3-7/16 inches × 15-13/16 inches) (excluding protrusions)
Weight	Approx. 7.4 kg (16.28 lb) (main unit only)

Basic items

System format	1920x1080/59.94p/50p/29.97p/25p/23.98p

Image input/output sections

<HD SDI1-3> terminal	BNC × 3 3G/1.5G-SDI: 0.8 V [p-p], 75 Ω
<HD SDI PM> terminal	BNC × 1 1.5G-SDI: 0.8 V [p-p], 75 Ω
<RET IN1-2> terminal	BNC × 2 3G/1.5G-SDI: 0.8 V [p-p], 75 Ω
<HD SDI PROMPTER IN> terminal	BNC × 1 3G/1.5G-SDI: 0.8 V [p-p], 75 Ω
<HD SDI PROMPTER OUT> terminal	BNC × 1 3G/1.5G-SDI: 0.8 V [p-p], 75 Ω
<HD TRUNK OUT> terminal	BNC × 1 3G/1.5G-SDI: 0.8 V [p-p], 75 Ω
<REF> terminal	BNC × 2 <Input> 3-value sync/1 V VBS signal [p-p], 75 Ω <Loop-through output> 3-value sync/1 V VBS signal [p-p], 75 Ω
<ANALOG PROMPT IN> terminal	BNC × 1 VBS signal: 1 V [p-p], 75 Ω
<ANALOG PROMPT OUT> terminal	BNC × 1 VBS signal: 1 V [p-p], 75 Ω

Audio output sections

<MIC1-2> terminal	XLR x 2, 3-pin male 0dBm/600 Ω

Intercom section

<INTERCOM> terminal	XLR x 1, 5-pin female

Other input/output sections

<CAMERA> terminal	Optical fiber multi connector × 1 AK-HCU250P/AK-HCU250E: Tajimi Electronics Co., Ltd., AK-HCU250PS/AK-HCU250ES: LEMO
<ROP> terminal	10 pins × 2
<COMMUNICATION> terminal	25 pins × 1
<LAN> terminal	RJ45 × 1

The symbols on this product (including the accessories) represent the following:

∿	AC
⎓	DC
Ⅰ	Power on
○	Power off

NOTE

- For details on the maximum lengths of connection cables, consult your dealer.

Inrush current, measured according to European standard EN55103-1, on initial switch-on: 3 A, after a supply interruption of 5 s: 80 A

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MEMO