Panasonic

Operating Instructions

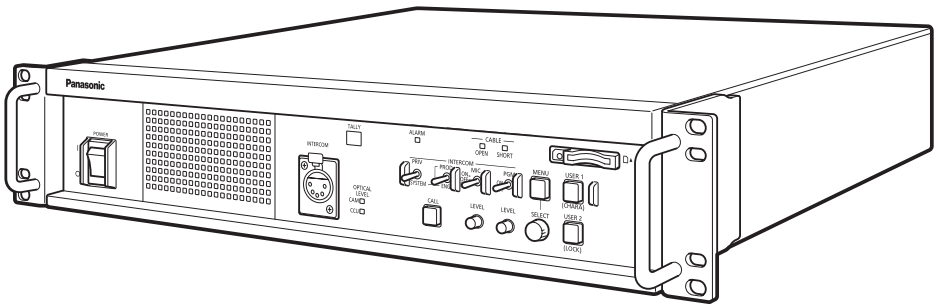
Camera Control Unit

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).

PJ PSJ EJ ESJ

W1020SQ1041 -FJ

ENGLISH

DVQP2430YA

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-3 (A)/NMB-3(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.

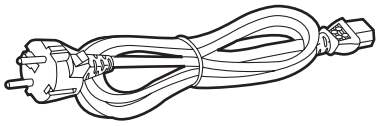
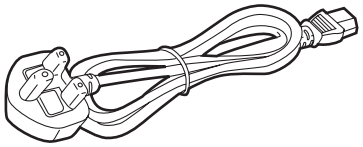
▭ indicates safety information.

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.
	

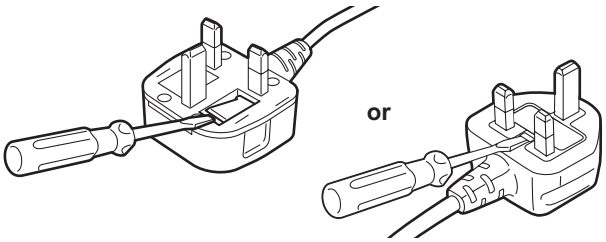
FOR U.K. ONLY

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.

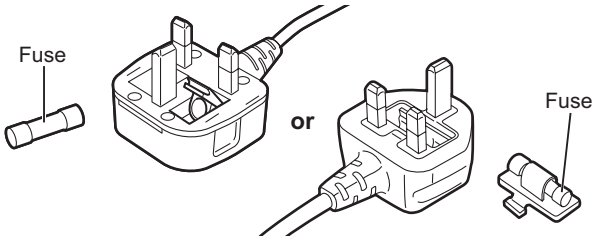
If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local Panasonic Dealer.

How to replace the fuse

1. Open the fuse compartment with a screwdriver.



2. Replace the 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 Corporation, Osaka, Japan
Importer's name and address of pursuant to EU rules:
Panasonic Marketing Europe GmbH
Panasonic Testing Centre
Winsbergring 15, 22525 Hamburg, Germany

Disposal of Old Equipment
Only for European Union and countries with recycling systems
This symbol on the products, packaging, and/or accompanying documents means that used electrical and electronic products must not be mixed with general household waste.
For proper treatment, recovery and recycling of old products, please take them to applicable collection points in accordance with your national legislation.
By disposing of them correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment. For more information about collection and recycling, please contact your local 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 Corporation	Панасонік Корпорейшн
Адреса виробника:	Kadoma, Osaka, Japan	Кадома, Осака, Японія
Країна походження:	Japan	Японія

Імпортер:	ТОВ "ПАНАСОНІК УКРАЇНА ЛТД"
Адреса Імпортера:	провулок Охтирський, будинок 7, місто Київ, 03066, 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.

Abbreviations

The following abbreviations are used in this manual.

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

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

Model number of unit	Model number given in manual
AK-HC3900G	AK-HC3900
AK-HC3900GS	
AK-HRP1000G	AK-HRP1000
AK-HRP1005G	AK-HRP1005
AK-HCU250P	AK-HCU250
AK-HCU250PS	
AK-HCU250E	
AK-HCU250ES	
AK-MSU1000G	AK-MSU1000

Overview

This camera control unit (CCU) is designed to be used with the HD studio camera (AK-HC3900; sold separately).

Connect it to the HD studio camera (hereinafter referred to as the camera) with 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) 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

Disclaimer of warranty

IN NO EVENT SHALL Panasonic Corporation 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 described in the Operating Instructions, refer to the following website.

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

Observe the following points when using and storing this unit.

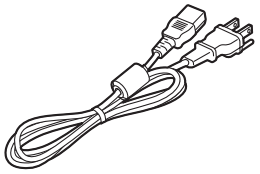
- Avoid high temperature and humidity.
- Avoid water droplets.
- Avoid static electricity.

Accessories

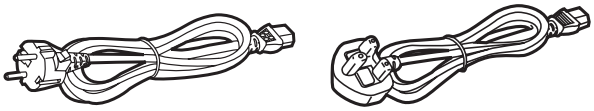
- After removing the product from its container, dispose of the power cable cap (if supplied) and packing materials in an appropriate manner.

Power cable

- for AK-HCU250P / AK-HCU250PS……1

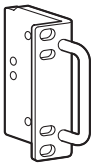


- for AK-HCU250E / AK-HCU250ES……2



Rack mount adapters*1……2

➡ “Mounting the rack mount adapters” (see page 13)



*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/

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

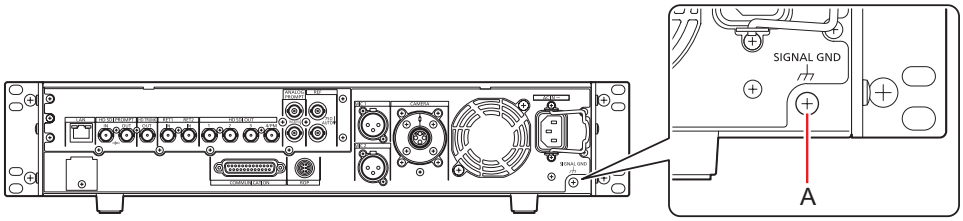
- Be sure to use the power cable supplied with the unit.
- Connect the [SIGNAL GND] terminal on the rear of the unit to the system ground.
- When the unit will not be used for a long time, turn off the [POWER] switch and remove the power plug from the outlet to save power.

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

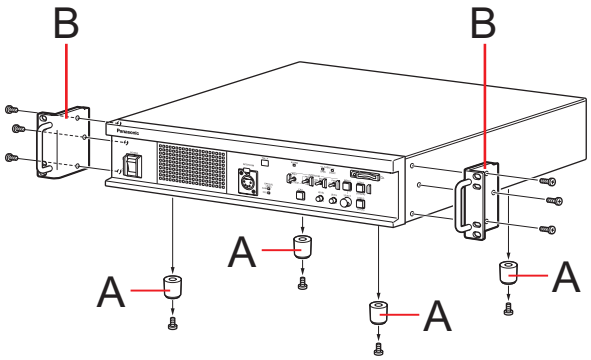
- This unit is designed for indoor use only.
- Do not install the unit in a cold place where the temperature drops below 0 °C (32 °F) or in a hot place where the temperature rises above 40 °C (104 °F).
- Avoid installing the unit where it will be exposed to direct sunlight or near an outlet from which 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).**

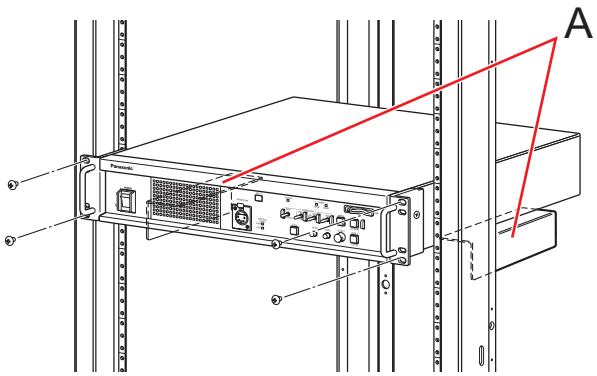
- Mounting screws are not supplied. Use mounting screws removed from the unit using a Phillips screwdriver. Tighten the mounting screws for rack mount adapters using a torque of 110 N·m or more.



A. Setting legs
B. Rack mount adapters

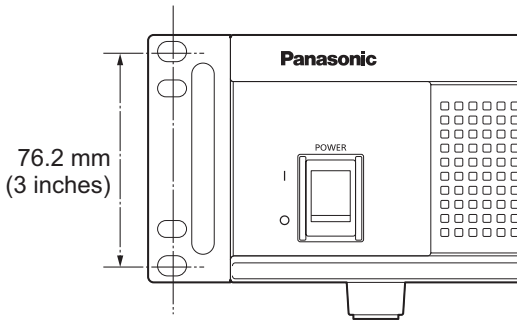
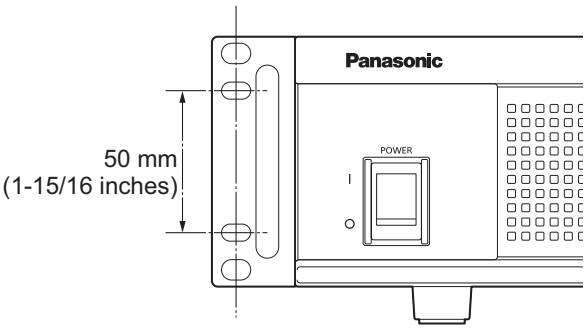
Mounting the unit in a rack

- 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
	

NOTE

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

Connection

System configuration

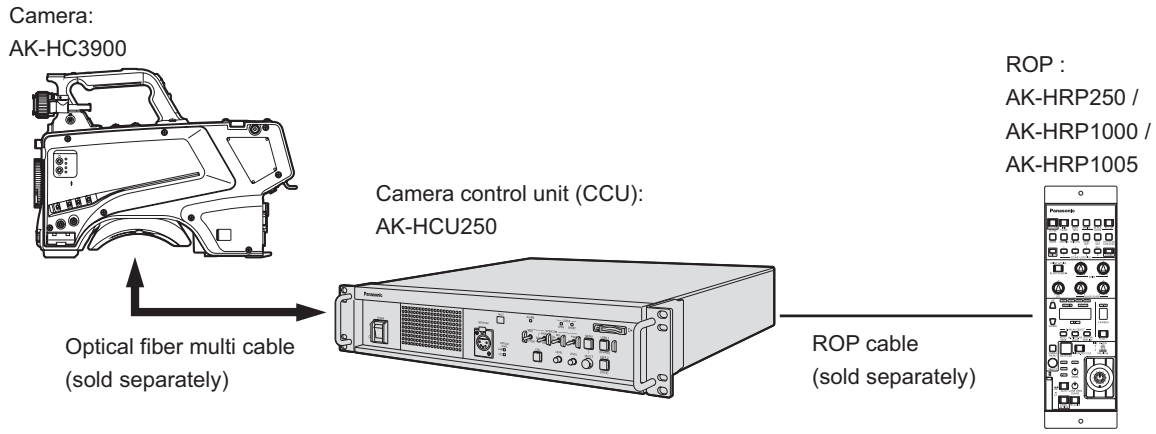
Serial connection

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).

For the connection procedure, see "Equipment connections."

➡ “Equipment connections” (see page 16)



IP connection

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

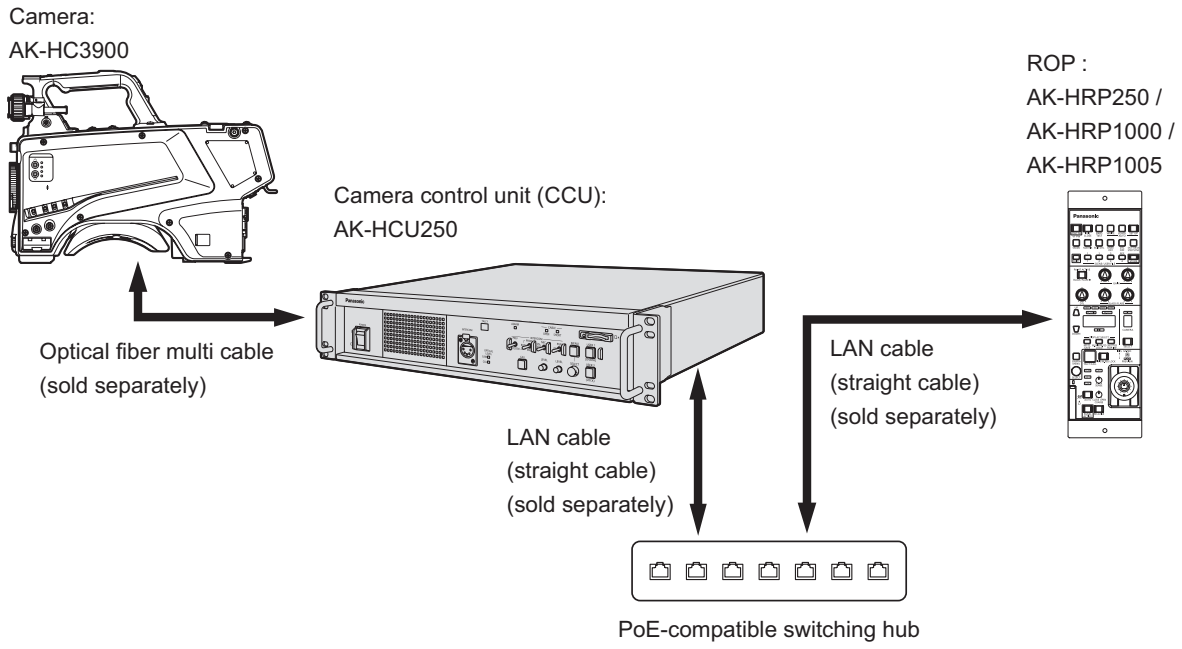
Connect the unit to the ROP (AK-HRP250 / AK-HRP1000 / AK-HRP1005) via a PoE-compatible switching hub using LAN cables (straight cables: sold separately).

- 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 15)

➡ “Equipment connections” (see page 16)



Setting the user account

In order to connect this unit and the ROP (AK-HRP250/AK-HRP1000/AK-HRP1005), 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/

■ **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.

Procedure for setting with the User Account Setup Software

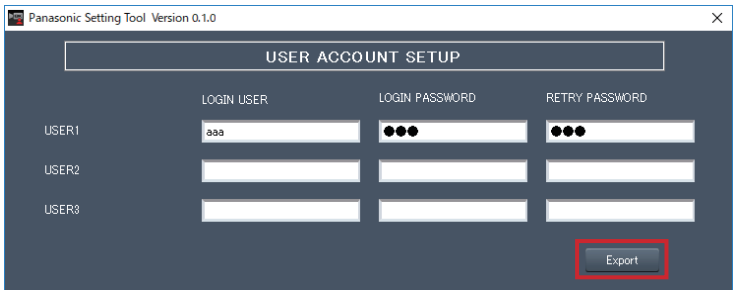


Fig.1

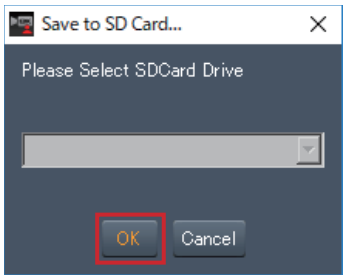


Fig. 2

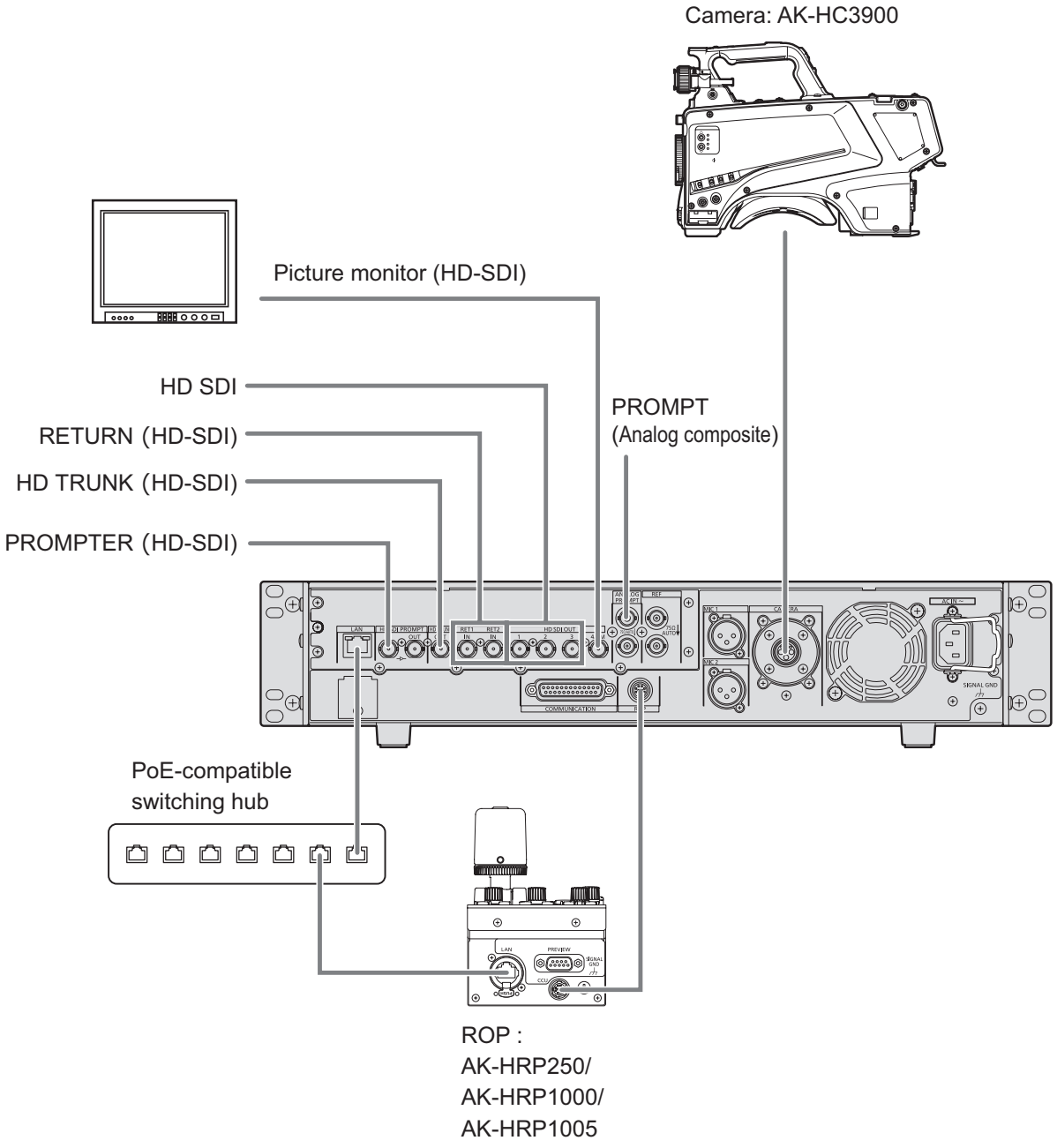
1. **Start User Account Setup Software.**
2. **Enter the account name in the LOGIN USER field and the password in the LOGIN PASSWORD and RETRY PASSWORD fields.**
   You can register user accounts for a maximum of 3 people. (Fig.1)
3. **Click the [Export] button. (Fig.1)**
4. **Select the SD card to save 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].**

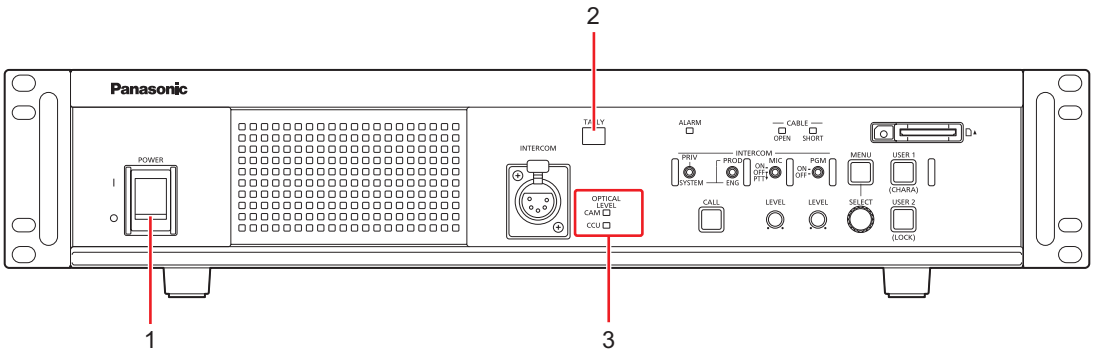
Equipment connections

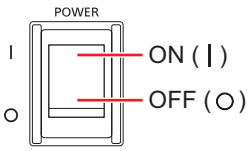
- Before proceeding with the connections, check that the power of the unit and camera is OFF.
- Use the optical fiber multi cable to connect the unit and camera.
  Connect only the AK-HC3900 camera: Do not connect any other model.
- Use a dedicated cable to connect the unit to the ROP.
- When the unit's [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 22)
  When you configure the unit's settings by menu operations, the menu screens are displayed on the picture monitor.
  ➡ "Menu operations" (see page 35)
- 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.



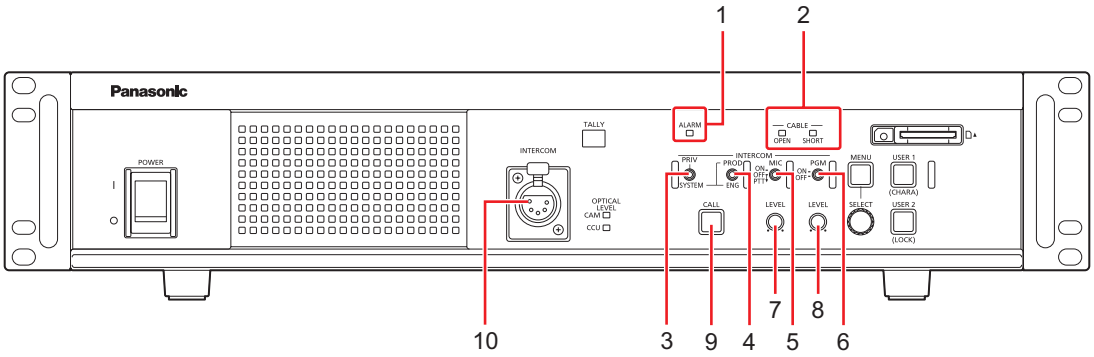
Parts and their functions

Front panel 1



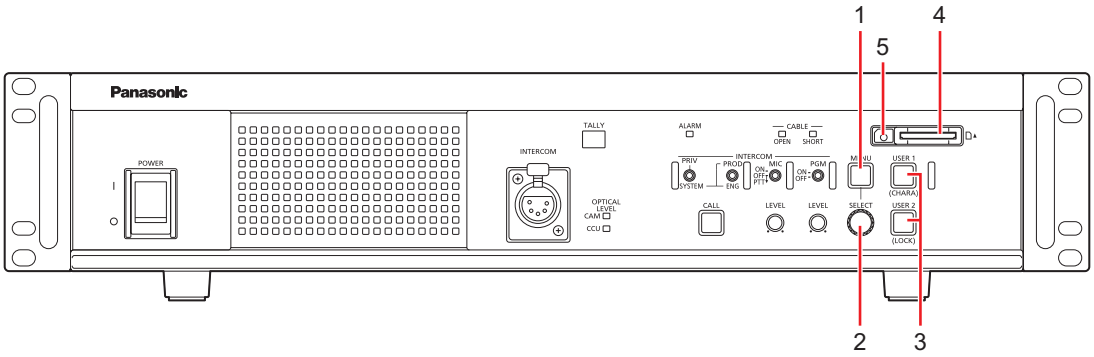
1	**[POWER] switch**	This is the unit's power switch. Move it to the ON position to turn on the power. 
2	**[TALLY] lamps**	The lamp remains lit while tally signals (R) are input.
3	**[OPTICAL LEVEL] indicators**	Indicates the reception status of optical transmission. ● [CAM] indicator Indicates the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

Front panel 2



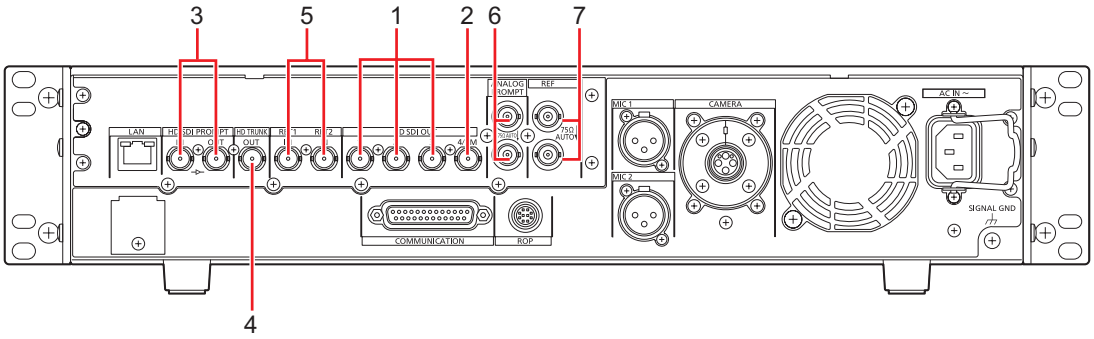
1	**[ALARM] indicator**	● [ALARM] indicator Lights when the unit malfunctions.
2	**[CABLE] indicators**	Lights to indicate the cable connection status. ● [OPEN] indicator This lights when the unit and camera are not connected by the optical fiber multi cable. ● [SHORT] indicator This lights when the 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.

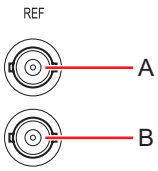
Front panel 3



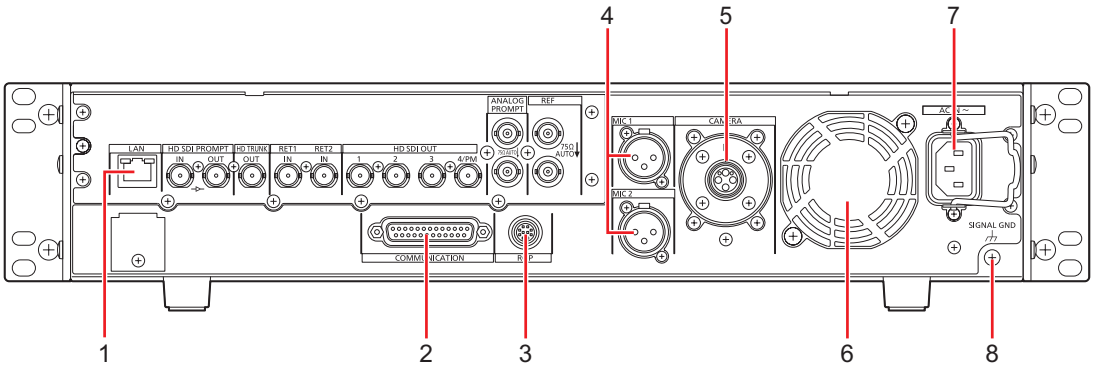
1	**[MENU] button**	When you hold down the [MENU] button, the menu screen is displayed on the picture monitor and the [MENU] button lights. If you hold down the [MENU] button while the menu is displayed, the menu closes and the [MENU] button turns off. ➡ “Menu operations” (see page 35)
2	**[SELECT] dial**	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 35)
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 49)
4	**Memory card slot**	Insert a memory card (sold separately). A memory card can be used to set this unit. ➡ “SD CARD” (see page 53)
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.  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 59)

Rear panel 2



1	**[LAN] connector**	It is the LAN connector (RJ45) for connecting the ROP (AK-HRP250 / AK-HRP1000 / AK-HRP1005) 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)

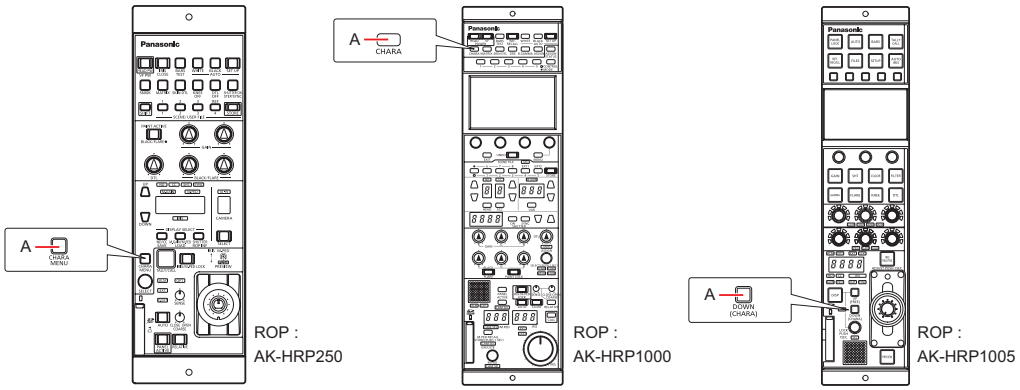
Picture monitor displays

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.



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.

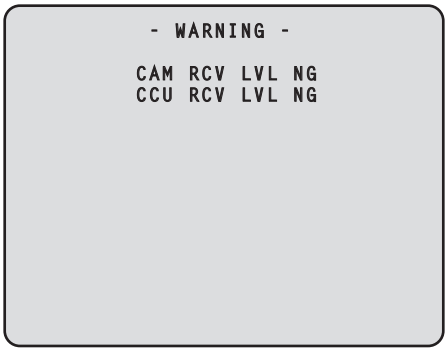
Priority	Screen	ROP connected	
		Yes	No
High ↑ ↓ **Low**	Warning displays	Warnings are automatically displayed when trouble is detected. ● Self-recovery. ● The warning displays are cleared. ● Press the [CHARA] button of the ROP No display→(WARNING)→ IRIS →Status displays→ Status1 → Status2 → Status3 → 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.



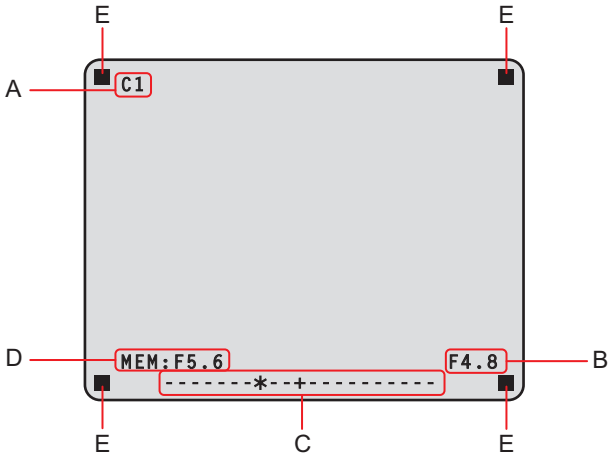
- Warning information displayed is cleared when the status returns to normal.
- To manually clear the warning information display, hold down the [CHARA] button of the ROP.

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

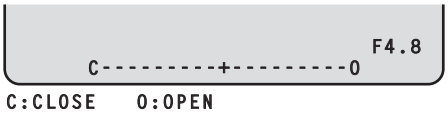
When the information is not displayed on the picture monitor, display it by pressing the [CHARA] button of the ROP.



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

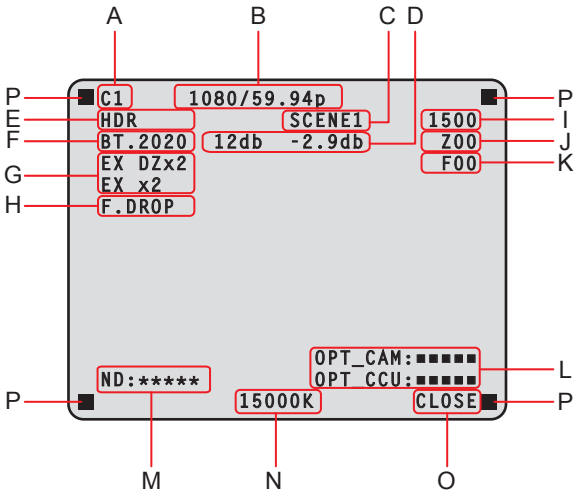
From the IRIS display screen, press the [CHARA] button of the ROP to display the “status display screen”.

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 ….

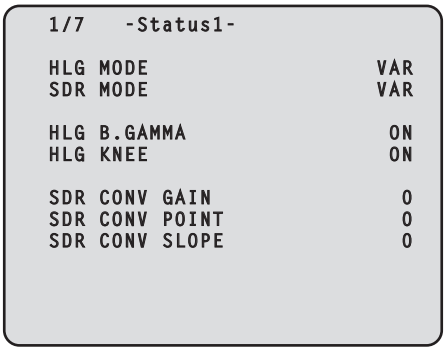
Status display screen



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

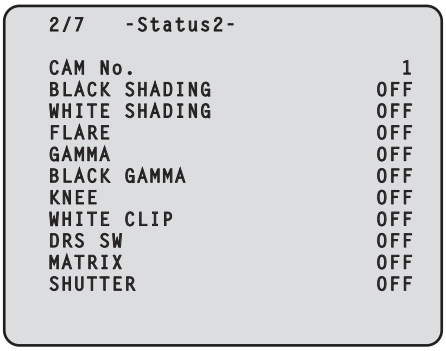
- Set each item to be displayed on the [PM VIEW SETTING] screen that can be accessed by selecting [MAINTENANCE] on the CCU menu.
- The camera format indicates the format of the signal output from the camera.
- Pressing the [CHARA] button of the ROP from the status display screen displays the “status 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.

Status displays (page 1 of 7)



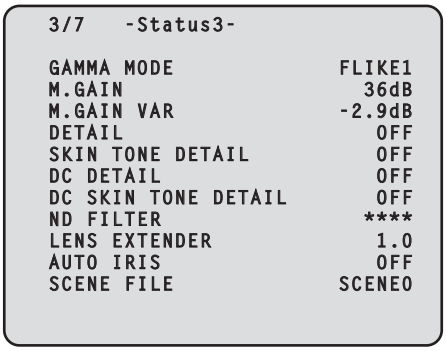
Item	Display range	Remarks
HLG MODE	FIX VAR	The HLG mode is displayed here.
SDR MODE	FIX VAR	The SDR mode is displayed here.
HLG B.GAMMA	OFF ON	The status of black gamma when HLG is enabled is displayed here.
HLG KNEE	OFF ON	The status of knee when HLG is enabled is displayed here.
SDR CONV GAIN	–12 –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)



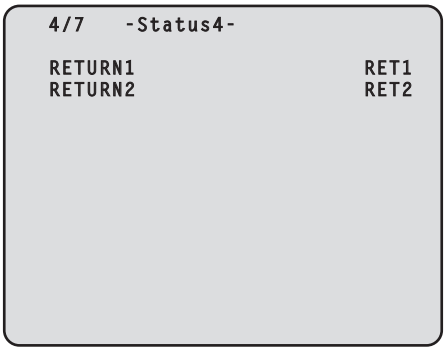
Item	Display range	Remarks
CAM No.	1 to 99	The camera number is displayed here.
BLACK SHADING	OFF ON	The status of the black shading is displayed here.
WHITE SHADING	OFF ON	The status of the white shading is displayed here.
FLARE	OFF ON	The status of the FLARE is displayed here.
GAMMA	OFF ON	The status 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)



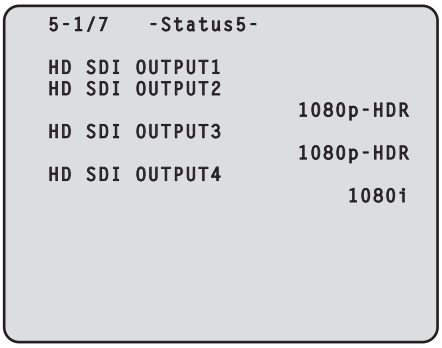
Item	Display range	Remarks
GAMMA MODE	HD FILMLIKE1 FILMLIKE2 FILMLIKE3 FILM REC VIDEO REC	The selected gamma type is displayed here.
M.GAIN	-6dB to 36dB	The gain increase value is displayed here.
M.GAIN VAR	-2.9dB to +2.9dB	The gain offset value is displayed here.
DETAIL	OFF ON	The status of DETAIL is 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.
SCENE FILE	OFF --- 1 to 8	The selected scene file is displayed here.

Status displays (page 4 of 7)



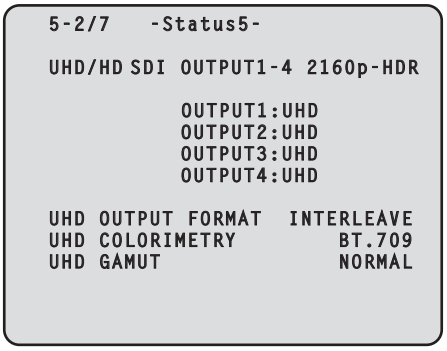
Item	Display range	Remarks
RETURN1	RET1 RET2	The input assignment for return signals is displayed here.
RETURN2		

Status displays (page 5-1 of 7)



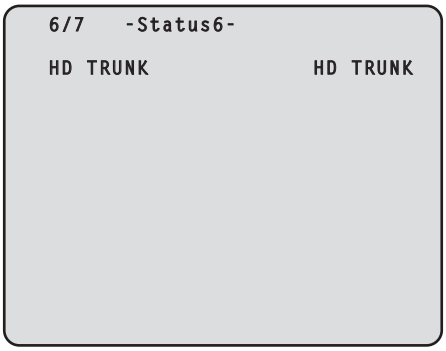
Item	Display range	Remarks
HD SDI OUTPUT1	1080p/1080i/1080-29.97PsF/ 1080-23.98PsF/1080-23.98p over 59.94i/ 720p/1080p-HDR/1080i-HDR/ 1080-29.97PsF-HDR/1080-23.98PsF-HDR/ 1080-23.98p over 59.94i-HDR/ 1080-25PsF/1080-25PsF-HDR	The output formats for connectors HD SDI OUTPUT1, HD SDI OUTPUT2, and HD SDI 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)



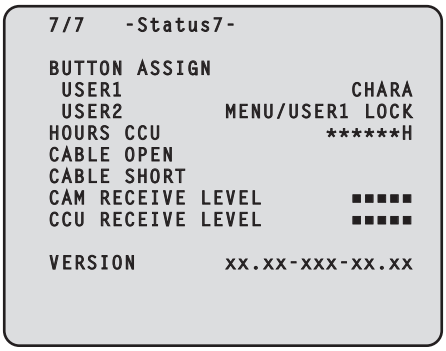
Item	Display range	Remarks
UHD/HD SDI OUTPUT1-4	2160p/2160-29.97PsF/2160-29.97p/ 2160-23.98PsF/2160-23.98p/ 2160p-HDR/2160-29.97PsF-HDR/ 2160-29.97p-HDR/2160-23.98PsF-HDR/ 2160-23.98p-HDR/2160-25PsF-HDR/ 2160-25p-HDR/1080p/1080i/ 1080-29.97PsF/1080-23.98PsF/ 1080-23.98p over 59.94i/ 1080-23.98p over 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)



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)



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].

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

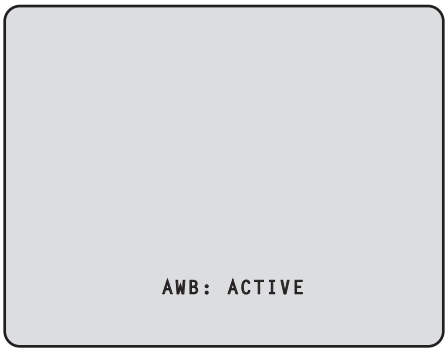
When the following operation is performed while no menu is displayed on the picture monitor, information on the operation performed appears at the bottom of the screen.

- 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].

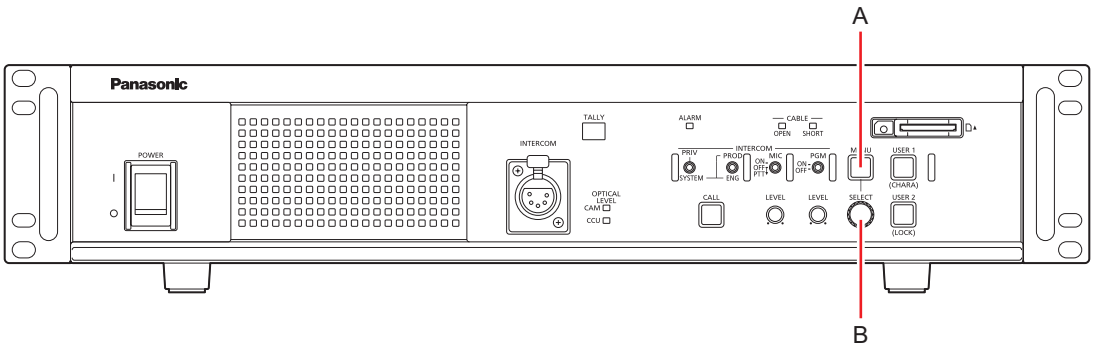


Item	Display description
AWB	AWB : OK
	AWB : ACTIVE
	AWB : G/B/R NG
	AWB : BREAK
ABB	ABB : OK
	ABB : ACTIVE
	ABB : G/B/R NG
	ABB : LENS OPEN
	ABB : BREAK

CCU menu

Menu operations

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

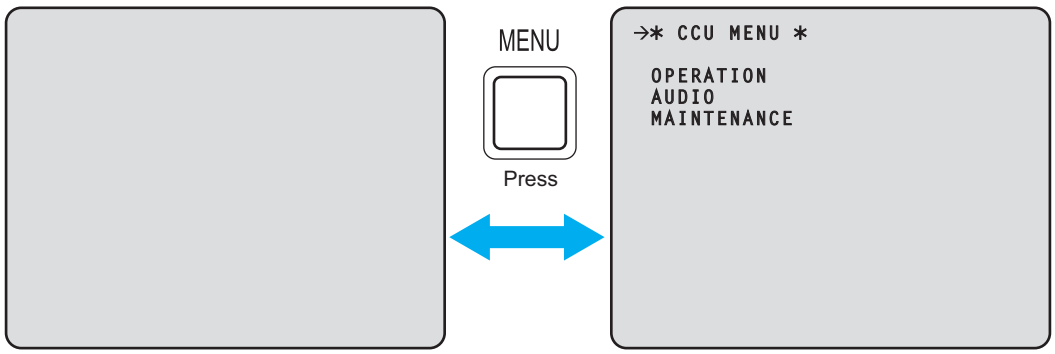


A. [MENU] button
B. [SELECT] dial

Displaying and hiding the menus

Menus are displayed or hidden by the following procedure.

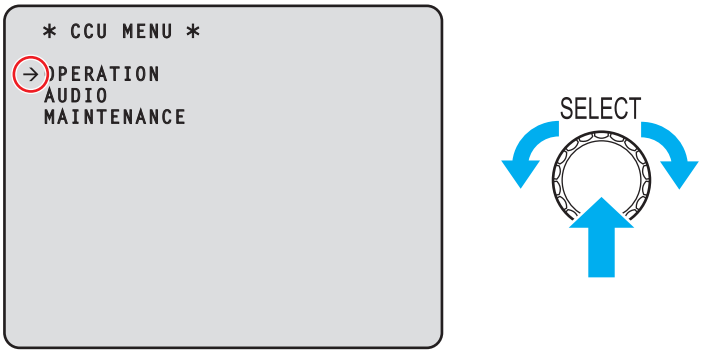
1. **Press the [MENU] button.**
   The [MENU] button lights and the menu (CCU MENU) is displayed.
   If you press the [MENU] button while the menu is displayed, the menu closes and the [MENU] button turns off.



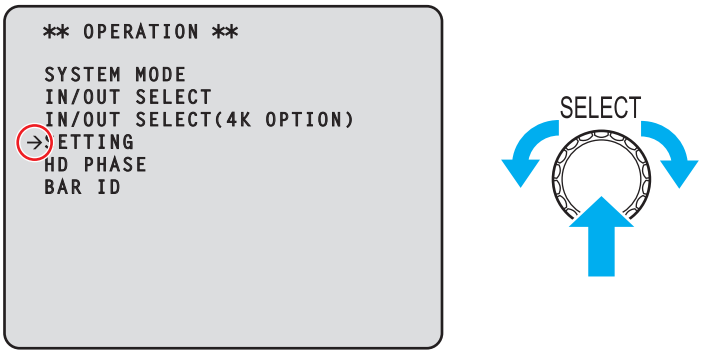
Basic menu operations

Menu items are selected and set by the following procedure.

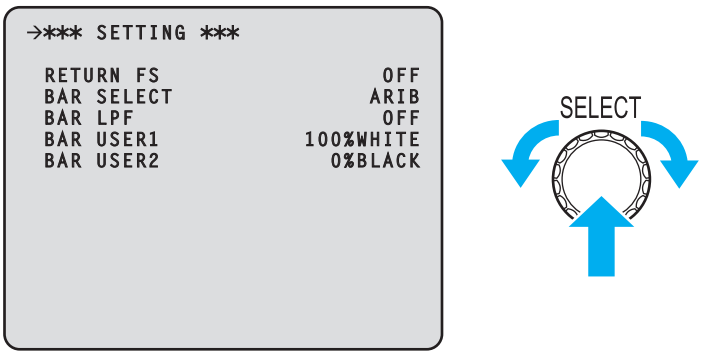
1. **Turn the [SELECT] dial while in the [CCU MENU], select [OPERATION] or [MAINTENANCE], and then press the [SELECT] dial.**
   A list of menu items included in the selected item ([OPERATION] or [MAINTENANCE]) is displayed.
   - When the [SELECT] dial is turned clockwise, the cursor moves down; conversely,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



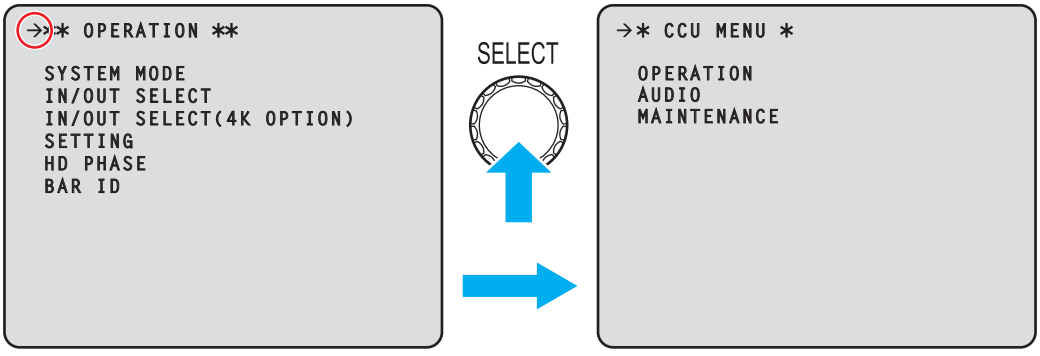
2. **Turn the [SELECT] dial to move the cursor to the menu item you want to set, and then press the [SELECT] dial.**



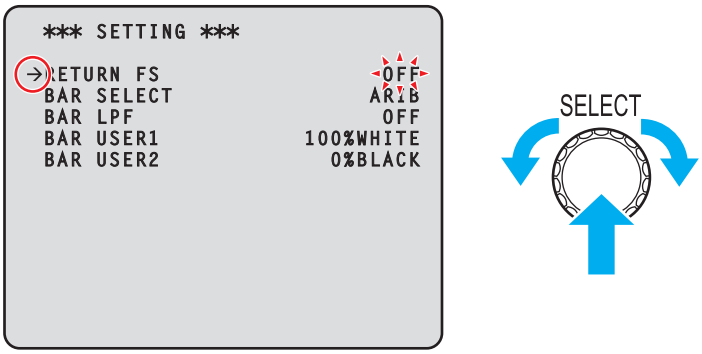
The setting screen one level below the selected menu item appears.



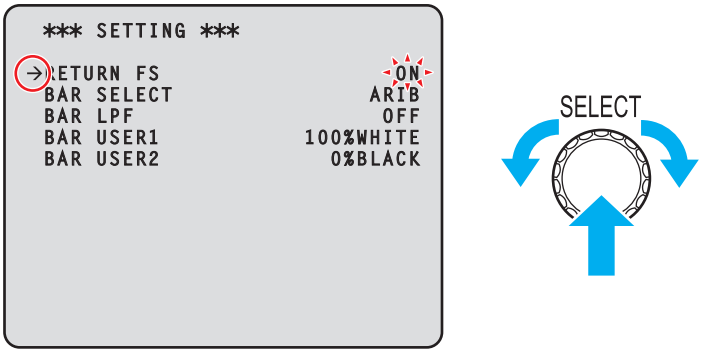
- Moving the cursor to the menu title and then pressing the [SELECT] dial redisplays [CCU MENU].



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.



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.

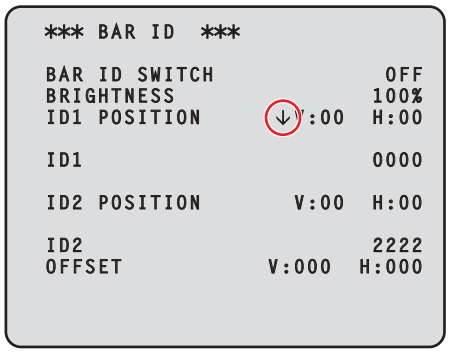


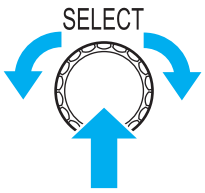
When the setting value is confirmed and the flashing stops, you can move the cursor.

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.

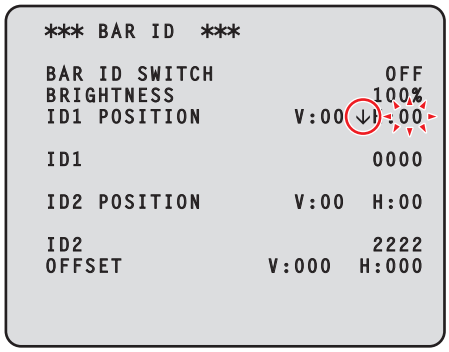
Operation with menu items that have multiple setting items on one line

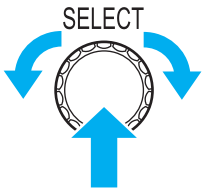
1. **Turn the [SELECT] dial to move the cursor to the menu item you want to set, and then press the [SELECT] dial.**
   The cursor becomes "↓" and you can use the [SELECT] dial to move the cursor to a setting item in the selected menu item.



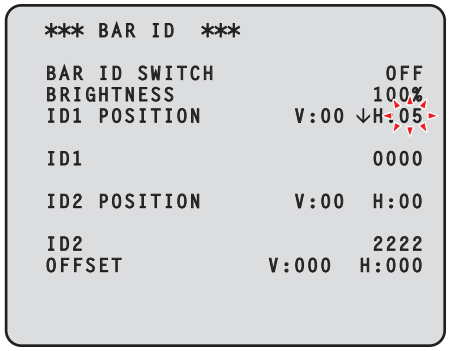


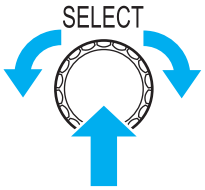
2. **Turn the [SELECT] dial to move the cursor to the item you want to set, and then press the [SELECT] dial.**
   The setting value of the selected item starts flashing and you can change it.





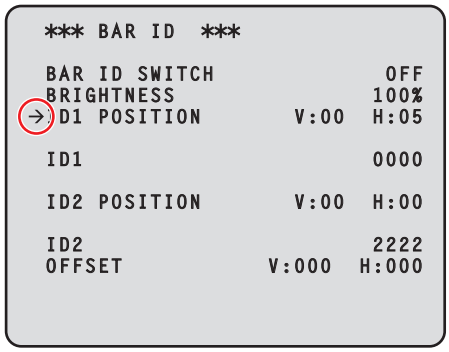
3. **Turn the [SELECT] dial to change the value, and then press the [SELECT] dial.**
   Turning the [SELECT] dial changes the setting value and pressing the [SELECT] dial confirms the setting value.





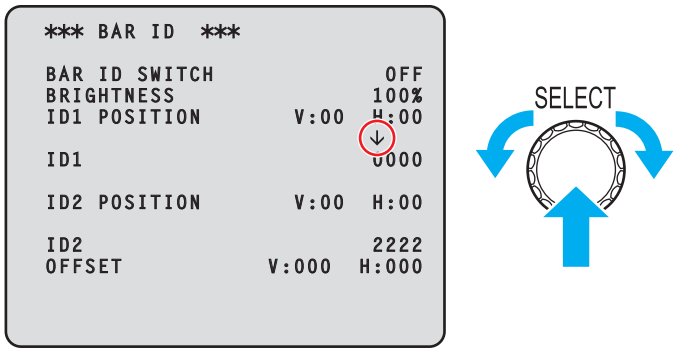
When the setting value is confirmed and the flashing stops, you can move the cursor.

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.

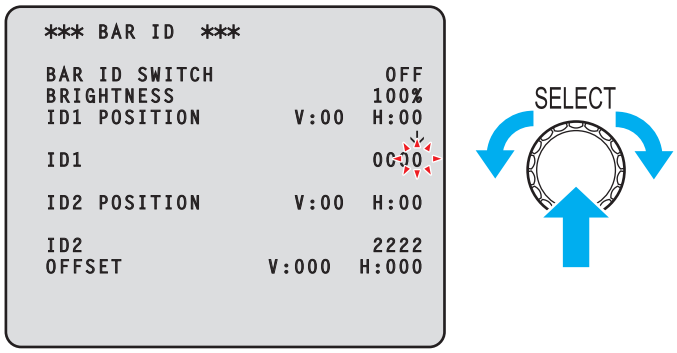


Text input

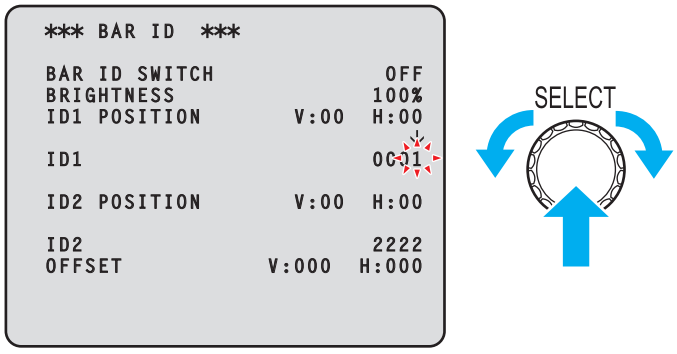
1. **Turn the [SELECT] dial to move the cursor to the menu item where text is to be input, and then press the [SELECT] dial.**
   The cursor display changes as indicated by "↓". By turning the [SELECT] dial, you can move the cursor to the next (previous) character position.



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.

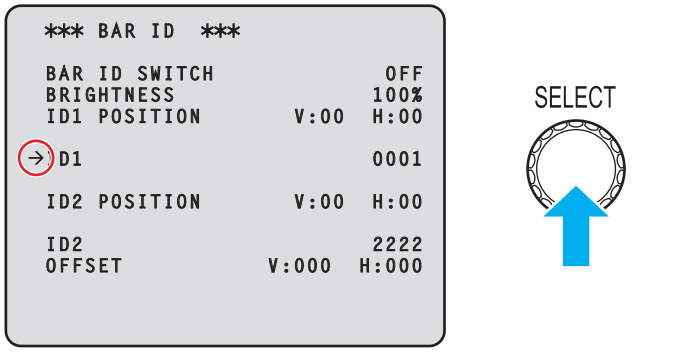


3. **Turn the [SELECT] dial to change the character, and then press the [SELECT] dial.**
   Turning the [SELECT] dial changes characters, and pressing the [SELECT] dial confirms character changes.



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.



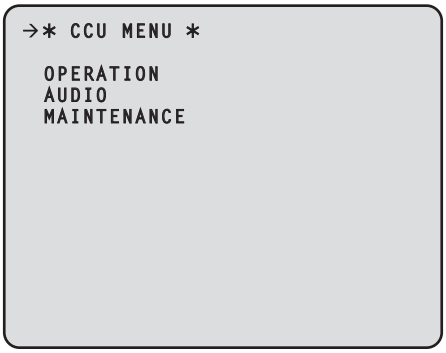
NOTE

- 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).

Menu composition

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

Select one of the menus.



Item	Content	Details page
OPERATION	Makes settings for items such as the system format and input and output.	➡ “OPERATION” (see page 42)
AUDIO	Makes AUDIO related settings.	➡ “AUDIO” (see page 46)
MAINTENANCE	Makes MAINTENANCE related settings.	➡ “MAINTENANCE” (see page 48)

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 42)
IN/OUT SELECT	Sets the external input/output and the operation mode for each connection.	➔ “IN/OUT SELECT” (see page 43)
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 43)
SETTING	Makes settings for items such as the color bar and delay time for the return signal.	➔ “SETTING” (see page 44)
HD PHASE	Makes Genlock phase settings.	➔ “HD PHASE” (see page 44)
BAR ID	Makes settings related to the IDs superimposed on color bar.	➔ “BAR ID” (see page 45)

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 46)
CCU INTERCOM TALK	Makes settings for the microphone of the intercom.	➡ “CCU INTERCOM TALK” (see page 46)
INTERCOM	Makes settings for the intercom.	➡ “INTERCOM” (see page 47)
PGM	Makes settings for PGM.	➡ “PGM” (see page 47)

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 48)
SETUP	Sets the SW&BUTTON and various connection related settings.	➡ “SETUP” (see page 49)
ND NAME	Sets the ND filter name.	➡ “ND NAME” (see page 50)
NETWORK	Makes settings for establishing IP connections.	➡ “NETWORK” (see page 50)
VERSION	Displays the version.	➡ “VERSION” (see page 50)
PM VIEW SETTING(1/2)	Sets what is displayed on the PM.	➡ “PM VIEW SETTING(1/2)” (see page 51)
PM VIEW SETTING(2/2)	Sets what is displayed on the PM.	➡ “PM VIEW SETTING(2/2)” (see page 51)
PM OPERATION STATUS	Sets what is displayed on the PM when there is a change in status.	➡ “PM OPERATION STATUS” (see page 52)
SYSTEM	Initializes the unit and displays connection status with the ROP.	➡ “SYSTEM” (see page 52)
SD CARD	Operations on SD cards.	➡ “SD CARD” (see page 53)
ACCOUNT SETTING	Makes settings for user accounts.	➡ “ACCOUNT SETTING” (see page 53)
UPDATE	This is the page for updating the software version.	➡ “UPDATE” (see page 53)

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.

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.

___ 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.
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.
MAC ADDRESS	Display only	Displays the MAC address.

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

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 NO	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	NONE 1 to 12	Set the list number to be deleted.
	DELETE NO.2	NONE 1 to 12	Set the list number to be deleted.
	DELETE NO.3	NONE 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.

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 18: 10)

HA16PRH-5S (Hirose Electric Co., Ltd.)

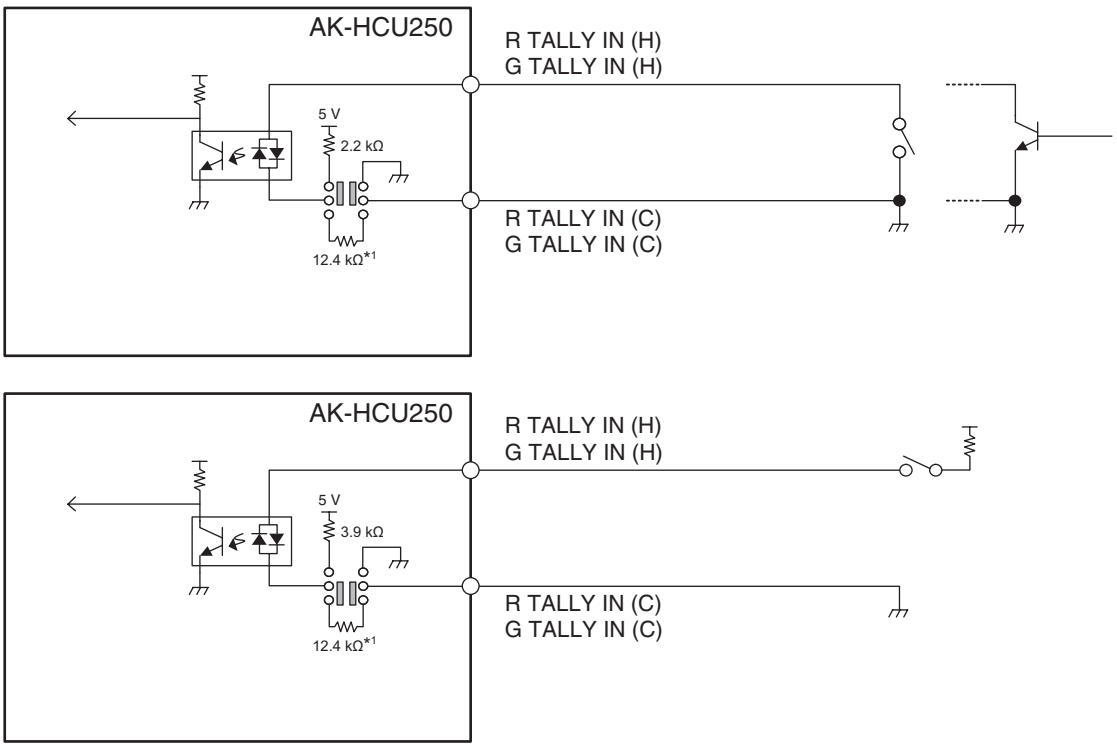
Pin No.	Function	Remarks
1	SHIELD	Carbon MIC: -1 dB Dynamic MIC: -5 dB ● Select from [DYN], [ECM], and [CBN] in the [AUDIO] menu, [CCU INTERCOM TALK] → [MIC TYPE]
2	TALK	
3	SHIELD	
4	RECEIVE	
5	NC	

[COMMUNICATION] connector (page 21: 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 ● Selected using a menu
2	INCOM ENG OUT (C)	CCU→SYSTEM	
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 ● Selected using a menu
7	PGM IN (C)	SYSTEM→CCU	
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 56) **OFF:** Open/TTL(L)/0 V
12	R TALLY IN (C)	SYSTEM→CCU	
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 ● Selected using a menu
15	INCOM PROD OUT (C)	CCU→SYSTEM	
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 56) **OFF:** Open/TTL(L)/0 V
23	NC		
24	G TALLY IN (H)	SYSTEM→CCU	
25	G TALLY IN (C)	SYSTEM→CCU	

Example of tally input connections



*1: Equivalent circuit

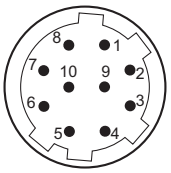
[ROP] connector (page 21: 3)

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)

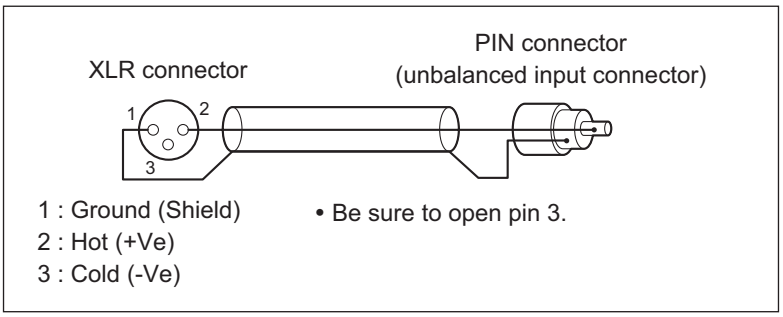


[MIC1] and [MIC2] connectors (page 21: 4)

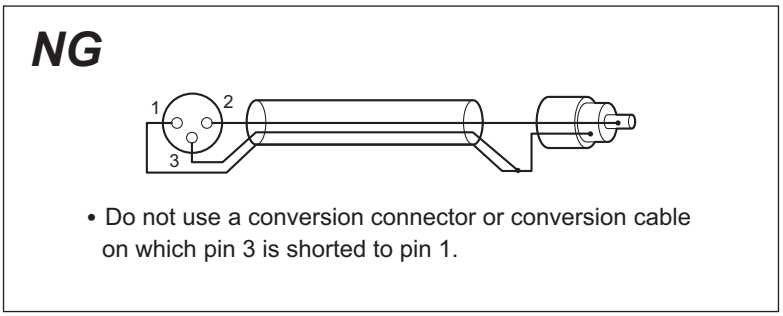
HA16RV-3PG(76) (Hirose Electric Co., Ltd.)

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.



- 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.



[CAMERA] connector (page 21: 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)

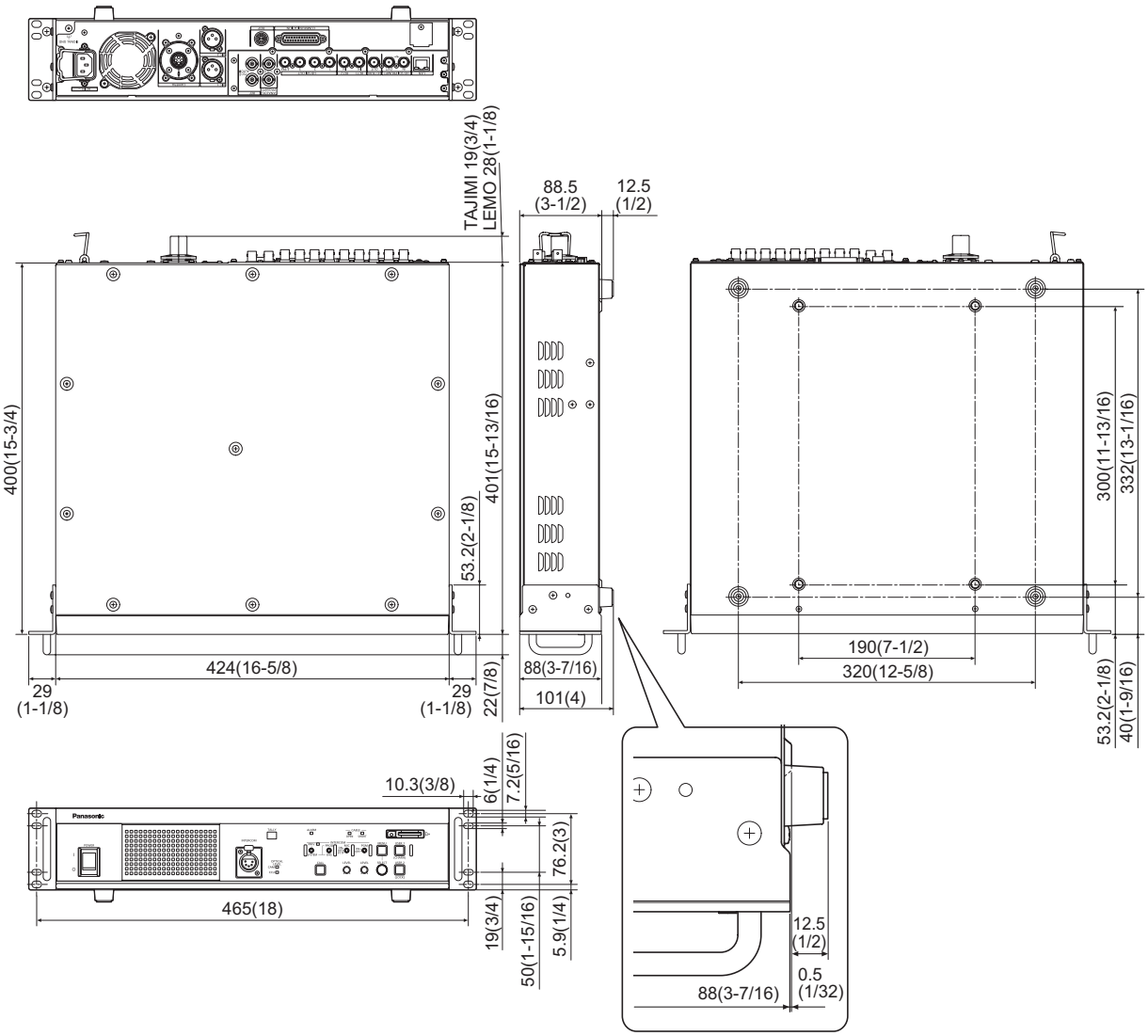
Pin No.	Function	Flow of signal
1	Optical fiber	CCU → CAM
2	Optical fiber	CAM → CCU
3	Control line	CCU ←→ CAM
4	Control line	CCU ←→ CAM
5	DC 190 V (H)	CCU → CAM
6	DC 190 V (C)	CCU → CAM

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)



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
|	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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T

U

V

W

MEMO

Panasonic Corporation
Web Site: https://www.panasonic.com