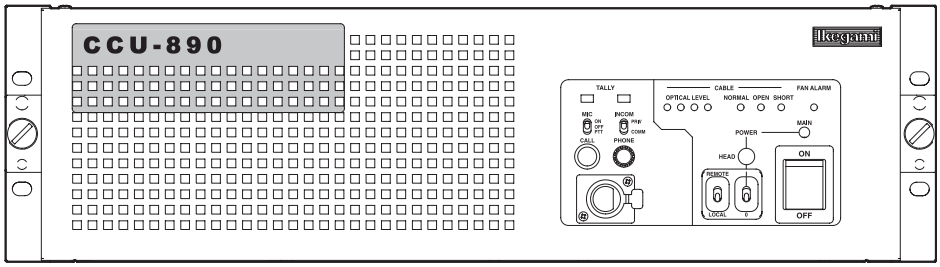



**Products conforming to RoHS directive**

# CCU-890

## Camera Control Unit

## OPERATION MANUAL

Ikegami

CE

**Products conforming to RoHS directive**

# CCU-890

Camera Control Unit

## OPERATION MANUAL




**0804 2nd Edition (U) (E)**


Ikegami

*English*

## Instructions for Disposal of Electric and Electronic Equipment in Private Household

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

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

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

*Deutsch*

## Vorschriften für die Entsorgung von elektrischen und elektronischen Geräten in Privathaushalten

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

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

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

*Français*

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

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

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

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

*Español*

## Instrucciones para eliminar equipos eléctricos y electrónicos de una casa privada

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

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

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

# PRODUCTS CONFORMING TO RoHS DIRECTIVE

Following products described in this manual are products conforming to RoHS directive.
• CCU-890 Camera Control Unit

Products conforming to RoHS directive include products that do not contain specified hazardous substances such as lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) in electrical and electronic equipment excluding following exemption applications based on the EU directive (Directive2002/95/EC).

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

## ● Applications exempted from RoHS directive compliance

Followings applications are permitted as exemptions from RoHS directive compliance.

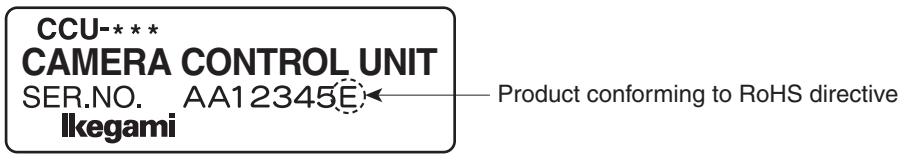
1. Mercury in compact fluorescent lamps not exceeding 5mg per lamp
2. Mercury in straight fluorescent lamps for general purposes not exceeding:
   - halophosphate 10mg
   - triphosphate with a normal lifetime 5mg
   - triphosphate with a long lifetime 8mg
3. Mercury in straight fluorescent lamps for special purposes
4. Mercury in other lamps not specifically mentioned in this Annex
5. Lead in the glass of cathode ray tubes, electronic components and fluorescent tubes
6. Lead as an alloying element in steel containing up to 0.35% lead by weight, aluminum containing up to 0.4% lead by weight and as a copper alloy containing up to 4% lead by weight
7. Lead in following items
   - Lead in high melting temperature type solders (i.e. tin-lead solder alloys containing more than 85% lead)
   - Lead in solders for servers, storage and storage array systems
   - Lead in solders for network infrastructure equipment for switching, signaling, transmission as well as network management for telecommunication
   - Lead in electronic ceramic parts (e.g. piezoelectronic devices)
8. Cadmium plating except for applications banned under Directive 91/338/EEC amending Directive 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations
9. Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators
10. Lead used in compliant pin connector systems
11. Lead as a coating material for the thermal conduction module C-ring
12. Lead and cadmium in optical and filter glass
13. Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80% and less than 85% by weight
14. Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages
15. Decabrominated diphenyl ether (Deca-BDE) in polymeric applications

# MAINTENANCE OF PRODUCTS CONFORMING TO RoHS DIRECTIVE

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

## 1. Identification

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




Label

- Print-circuit board of the products conforming to RoHS directive is manufactured by following methods.
  [1] Blue resist ink is used for the print-circuit board. (The color of conventional print-circuit board is green.)
  [2] Either one of the following marks is indicated by a serigraph or label.


Phase 3A


Phase 3

## 2. Soldering

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

- Recommended solder composition is "Sn/3.0Ag/0.5Cu" or equivalent.
- Separate the soldering iron exclusively for RoHS products and the soldering iron for conventional use.
- Set the temperature of the soldering bit to 350 to 370 degrees Celsius.
  The temperature may need to be adjusted according to the size of the copper foil land on the print-circuit board and the tip width of the soldering bit.
- Finish by a lead-free solder looks dull or whitish compared to conventional solder with lead.
- If the customer mixed the lead-solder with the main body wiring or the circuit board, it becomes guarantee off the subject. Ikegami doesn't guarantee to do the repair work. Because the solder polluted with lead cannot be removed.

## 3. Parts

Be sure to use parts conforming to RoHS directive.

# INFORMATION TO THE USER

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

# SAFETY PRECAUTIONS

This manual describes the precautions using various pictorial symbols for you to use the product safely. Please read these precautions thoroughly before use. The symbols and meanings are as follows:

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

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

***The following symbols are used to indicate the expected injury or hazards when you do not follow the precautions.***

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

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

| | |
|---|---|
|  | Indicates prohibited action. |

## ■ *Handling Precautions*

### ⚠ WARNING

#### Regarding the Product

Do not disassemble or modify the product which is not described in this manual. Doing so may cause fire, electric shock, or injury.

#### Regarding the Power

When you disconnect the cable, be sure to hold the plug and pull. Failure to do so may cause a fire or electric shock due to a damaged cable.

To inspect or operate on the inside of the equipment, turn off the power and wait for one or two minutes before starting work. High voltage is present in some modules and connectors of this product.

### ⚠ CAUTION

#### Regarding the Product

Avoid use or storage in the following conditions:
- Extremely high/low temperature
- In direct sunlight for a long time, or near a heater
- High humidity or dusty
- Exposed to water or other liquid
- Strong vibration or shock
- Strong magnetic field or radio waves
- lightning
- In rain without the rain cover

Be sure to hold the plug and pull when you disconnect the cable.
Condensation that cause malfunction may occur in the equipment.

Avoid moving the equipment suddenly from an extremely cold place to a warm place.
Condensation may occur in the Charged Couple Device (CCD) or other parts.

Do not drop or insert a metal object such as a pin or a foreign object into the equipment.

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

Do not subject the equipment to a strong shock or vibration.
Doing so may cause damage or malfunction of the equipment.
Excessive sound pressure from the headset may cause a hearing loss.

**Regarding the Modules**

Pay attention to the following points when handling the modules:
- Do not let the parts of the modules or the printed wiring pattern to touch the metal parts that can be energized.
- Avoid placing or storing the modules in humid places.
- Do not touch the parts of the modules or the printed wiring pattern with dirty or wet hands. Do not touch them with hands unless necessary.

**Regarding the Power and the Lithium Battery**

Use the product in compliance with the rating of the fuse. Otherwise, a fault can occur.

Do not use an unspecified battery.
Wrong usage of batteries may cause liquid leak, explosion, and heat, and at worst injury or fire.
When changing or discarding a battery, please contact Ikegami's sales and service centers.

## ■ *Maintenance*

**Regarding the product**

Before performing maintenance on the product, be sure to turn off the power for safety and for protection against malfunction.

Clean the product using a dry and soft cloth.

If the product is very dirty, wipe with a cloth moistened with water or neutral detergent and wrung out. If neutral detergent is used, wipe again with a cloth dipped in clear water and wrung out.

## ■ *Regular Maintenance Recommended*

This product includes parts that wear out and have a limited life even in proper use or storage. Therefore, regular maintenance (once every 3 years or 8000 hours use) is recommended to extend the life and safe use of this product for a long time. Please contact Ikegami's sales and service centers or Techno Ikegami Co., Ltd. for the regular maintenance and repair of our products.

# DOCUMENTATION FOR THE PURCHASER/USER

1. Declaration of conformity
   The CE mark means that the following products will meet the Directive 2004/108/EC,2006/95/EC and the Standards EN55103-1 E4, E5 EN55103-2 E4, E5 (for EMC), EN60950-1 (for LVD).
   For European customer.
2. Please use it by less than 10m, when you use cable of MIC1 OUT, MIC2 OUT, AUD TRUNK, INTERCOM, and DIGITAL AUDIO.
3. Please wind the core which is attached to the cable, when the coaxial cable is used for the Network connector.
   (Please refer to the fig.1)

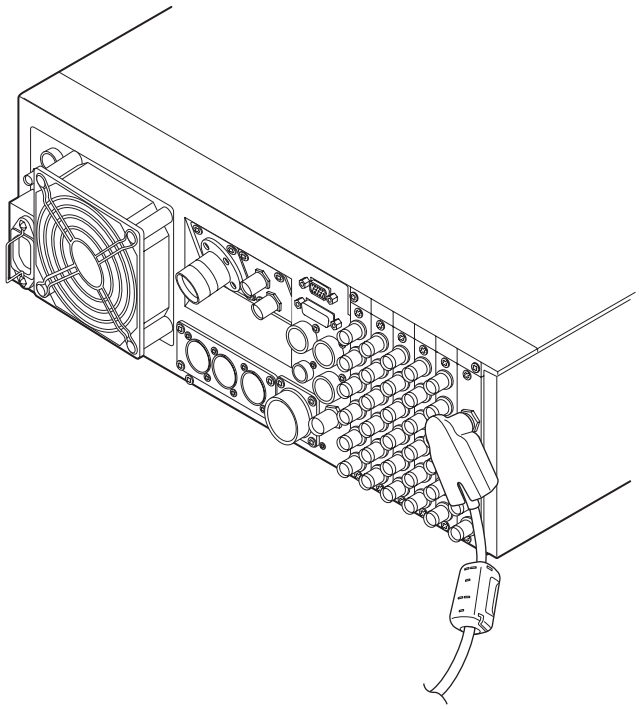


fig.1 (core type: E04SR200935A)

4. We carried out a test in accordance with EN55103-1 Annex B.
   As a result, the value of the inrush current is as follows.

| | inrush current |
|---|---|
| CCU-890+HDK-79EX3+SE-H700+OCP-200+MCP-200 | 16.32A |

# HOW TO READ THE OPERATION MANUAL

This page explains general notes on reading the CCU-890 Operation Manual, and the symbols and notations used in the manual.

## ■ *Notes on the Manual*

- This manual is written for readers with a basic knowledge of handling a broadcast camera, CCU, or MCP.
- The contents of this manual are subject to change without notice in the future.

## ■ *Symbols*

The symbols used in this manual are as follows:

| | |
|---|---|
| ***CAUTION:*** | Things you have to be careful during operation. Be sure to read. |
| ***Note:*** | Supplementary information or guidance |
| ***Reference:*** | Sections where related information is available |

## ■ *Notations*

The following notations are used in this manual.

| | |
|---|---|
| This product, CCU | Indicates CCU-890 Camera Control Unit. |
| Camera head | Indicates general broadcast cameras. |

## ■ *Illustrations and Displays*

The illustrations and displays in the text are provided for explanation and may be slightly different from the actual equipment or image.

## ■ *Related Manuals*

Refer to the operation manuals and maintenance manuals accompanying the camera head, CCU, and each control panel to be used.

## *Structure of Operation Manual*

CCU-890 Camera Control Unit Operation Manual is intended to both safely and smoothly operate the CCU-890. The Operation Manual consists of five chapters. By reading it in sequence, you can smoothly perform a series of steps, from connection to operation.


### *OUTLINE*

Explains the features and the specifications of this product.
If you are not familiar with CCU-890, please start with this chapter.

### *NAME and FUNCTION*

Explains the name and function of each part of the CCU-890.

### *FORMATS and GENLOCK*

Explains the signal formats of the CCU-890 and DUAL LINK specification.

### *EQUIPMENT CONNECTIONS*

Explains how to connect the CCU-890 to monitor, camera head, and so on.
Also explains how to connect this product to camera and the peripheral equipment and examples to operate this product.

### *CCU SETTINGS and ADJUSTMENT*

Explains the menu of the CCU-890 and DIP switch settings on the modules inside of the CCU.

### *TROUBLE SHOOTING and MAINTENANCE*

CCU-890 is equipped with the self-diagnostic function. When the alarm lamp lights during the operation of this product, read here to know the problem. This chapter also explains the regular maintenance such as cleaning of connectors and replacement of fuses.

### *CHANGING INFORMATION*

This manual is written for the standard specifications. Your custom specifications and revision information are addressed in "CHANGING INFORMATION." Read by comparing with the main text of the maintenance manual. ("CHANGING INFORMATION" may be sent to you later on.).

# CCU-890

CAMERA CONTROL UNIT

OPERATION MANUAL

# 1

# OUTLINE

The CCU-890 is a camera control unit to receive high quality images obtained by the camera head without any loss. A camera cable connects between the CCU and the camera head, and the optical serial digital transmission complies with SMPTE292M (International standard). A transmission distance of up to 3,000 m* (for portable camera operation) and 2,000m* (for studio camera operation).

This product is equipped with both D/C (down converters) and U/C (up converters), and enables simultaneous output of HDTV signal and SDTV signal, and therefore simultaneous operation in the HDTV system and the SDTV system is possible. Also, this product is able to output multiple HDTV-format video in 24P operation.

* The maximum cable length varies according to the type of lens and the use of utility power.

# 1.1 Features of This Product

### ■ *Converter Function*

D/C (down converters) and U/C (up converters) for return video are built in to support the SDTV system.

### ■ *24P Format Conversion Function*

By connecting the HDK-79EC portable camera, native 24P, 24SF, and 2-3PD format signals can be output.

### ■ *Audio Signal Embedded in each SDI Output (Embedded Audio Function)*

Audio signals can be embedded in SDI signals of the main output, PM output, and WFM output. Audio signals can be embedded in HD-SDI signals and SD-SDI signals.

### ■ *Frame Synchronizer Mounted to RET Signals*

In conventional CCUs, the return video must be in sync with the camera video. This product includes a frame synchronizer that enables synchronization of asynchronous input video for stable return video regardless of synchronous/asynchronous.
* When the frame synchronizer function is enabled, RET input is limited to 2 channels.

### ■ *Remote Control to Support Network*

In addition to traditional control by serial commands, this product supports control through network connection. Building a system to support network realizes a wide range of operating configurations such as panel assignment. This product can be easily added to the system to support network since the cables to be used for the network are coaxial cables.

### ■ *Interface for Triax Transmission Equipment*

This product mounts an interface for the CB-79HD (CONVERTER BOX) to convert optical transmission into triax transmission.

# 1.2 Specifications

## ■ *Rating and Performance*

| | | |
|---|---|---|
| CCU output format | Camera head format: 1080I/59.94<br>- HDTV signal output<br>1080I/59.94 2:1 interlace<br>- SDTV signal output<br>525I/59.94 2:1 interlace | |
| | Camera head format: 1080I/59.94 2-3 pulldown<br>- HDTV signal output<br>1080I/59.94 2-3 pulldown<br>1080P/23.98 progressive (Currently not supported)<br>1080P/23.98 segment frame<br>- SDTV signal output<br>525I/59.94 2-3 pulldown | |
| | Camera head format: 720P/59.94<br>- HDTV signal output<br>720P/59.94 progressive<br>720P/23.98 progressive (Currently not supported)<br>- SDTV signal output<br>525I/59.94 2:1 interlace | |
| | Camera head format: 1080I/50<br>- HDTV signal output<br>1080I/50 2:1 interlace<br>- SDTV signal output<br>625I/50 2:1 interlace | |
| | Camera head format: 720P/50<br>- HDTV signal output<br>720P/50 progressive<br>- SDTV signal output<br>625I/50 2:1 interlace | |
| Frequency characteristics | | |
| HDTV output signal | CCU output of Y, Pb, Pr signals<br>Output Y signal | Less than 60 Hz Falling characteristic<br>60 Hz to 30 MHz Within ±1.0 dB<br>30 MHz or more Falling characteristic |
| | Output of Pb and Pr signals | Less than 60 Hz Falling characteristic<br>60 Hz to 15 MHz Within ±1.0 dB<br>15 MHz or more Falling characteristic |
| SDTV signal output (when 1080I is down-converted) | CCU output signal Ych | 100 kHz standard<br>Less than 60 Hz Drooping characteristics<br>60 Hz to 4.5 MHz Within ±0.5 dB<br>4.5 MHz to 5 MHz Within ±1.0 dB<br>5 MHz or more Drooping characteristics |
| Audio output signal | Less than 100 Hz Falling characteristic<br>100 Hz to 10 kHz Within ±1.0 dB<br>10 kHz or more Falling characteristic | |
| Performance (when the HDK-79EX is connected) | | |
| S/N ratio (CCU output format: 1080I/59.94) | HDTV : -56dB<br>NTSC : -64dB | |
| Modulation depth | HDTV : Approx. 45% or more (800 TV lines, 27.5 MHz)<br>NTSC : Approx. 90% or more (400 TV lines, 5 MHz) | |
| Limiting resolution (CCU output format: 1080I) | HDTV : 1000 TV lines<br>NTSC : 540 TV lines (ENC output) | |
| Limiting resolution (CCU output format: 720P) | HDTV : 700 TV lines<br>NTSC : 480 TV lines (ENC output)<br>(when the HDK-727P is connected) | |
| Power | | |
| Power voltage | AC 100/110/117/220/234V ±10% | |
| Power consumption | CCU-890 alone<br>Approx. 100VA<br>HDK-79E/79EX/79EXⅡ/79EXⅢ/79EC+2-inch B/W VF (VF46HD series) +CCU-890<br>400 VA or less<br>HDK-790E/790EXⅢ+7-inch COLOR VF (VFC179HD) +CCU-890<br>500 VA or less<br>(Utility power for the camera head is excluded from the above voltage value.) | |

| | | |
|---|---|---|
| Environmental conditions | | |
| | Ambient temperature | Operating temperature : 0°C to +45°C<br>Storage temperature : -30°C to +60°C |
| | Ambient humidity | 30% to 90% without condensation |
| External dimensions | | W483×H133×D454 |
| Weight | | Approx. 28 kg |
| Applied Standards | | |
| | EMC standard | FCC15 Subpart B Class A/EN55103-1, EN55103-2 |
| | Safety standard | EN60950-1 |
| | Quality control | ISO 9001 (JIS Z 9901) |
| Usage Conditions | | |
| | Applicable standard | SMPTE 292M, 296M |

* The specification indicates the performance when the HDK-79EX series (1080I/59.94 format for the camera head) are connected.

## ■ *Input Signals*

| Item | Rating | | | |
|---|---|---|---|---|
| GENLOCK signal<br>(HDTV/SDTV supported) | HDTV : | PS | 1Vp-p | 75Ω bridged connection |
| | | or | | |
| | | Tri-sync signal | 0.6Vp-p ± 6dB | 75Ω bridged connection |
| | SDTV : | VBS | 1Vp-p | 75Ω bridged connection |
| | | or | | |
| | | BBS | | 75Ω bridged connection |
| | | or | | |
| | | BBS+10FIELD ID | | 75Ω bridged connection |
| Return signal | HD-SDI | | 4 channels* | 75Ω single end input |
| | SD-SDI/VBS (option) selection | | | |
| | | | 4 channels (2 channels option) | 75Ω single end input |
| Q-TV signal | VBS | | 2 channels 1Vp-p | 75Ω single end input |
| Intercom signal<br>(ENG/PROD) | Select from 4-wire/Clearcom/RTS | | | |
| | 4-wire | | 2 channels 0dBm | 600Ω |
| | Clearcom | | 2 channels -15dBs | 200Ω |
| | RTS | | 2 channels 0dBm | 200Ω |
| PGM (Program sound) | 0dBs standard | | 2 channels | 600Ω/10kΩ |
| AUDIO TRUNK | 0dBs standard | | 1 channel | 600Ω/10kΩ |
| Tally signal | R TALLY, G TALLY | | Select from MAKE/BREAK or POWER supply | |

* 2 channels when the frame synchronizer function is enabled.

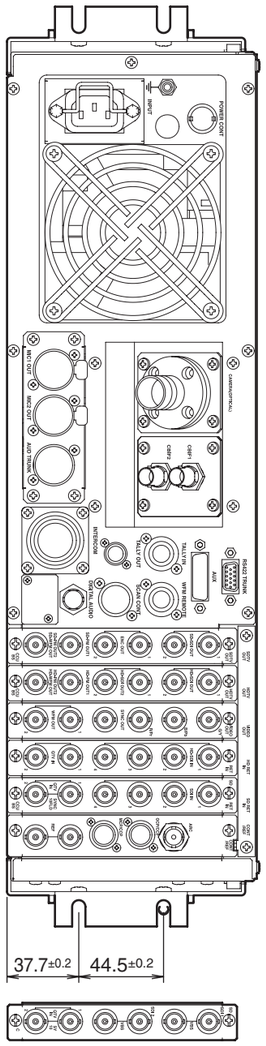
## ■ *Output Signals*

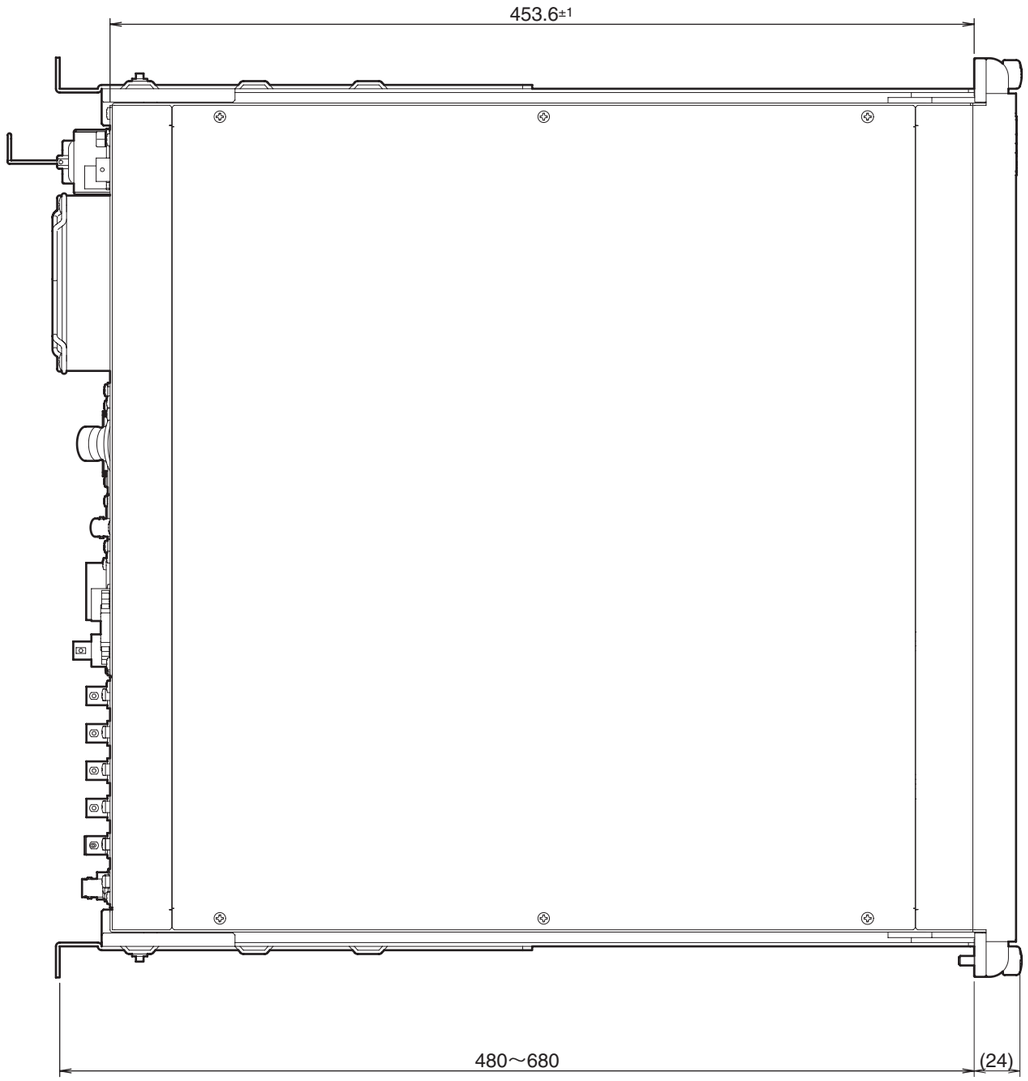
| Item | Rating | | |
|---|---|---|---|
| HD-SDI signal | HD-SDI<br>(BTA S-004B standard) | 4 channels | 75Ω output |
| SD-SDI signal | SD-SDI<br>(SMPTE259M standard) | 2 channels | 75Ω output |
| Synchronization signal | HDTV/SDTV selection | 1 channel | 75Ω output |
| | HDTV tri-sync signal | 0.6Vp-p | |
| | SDTV | 2Vp-p | |
| Component signal | Select a pair from HDTV GBR/YPbPr, SDTV GBR/YCbCr | | |
| | | 1 channel | 75Ω output |
| Composite signal | VBS | 2 channels 1Vp-p | 75Ω output |
| Picture monitor (PM) signal | HD-SDI (R/G/B/Y/ENC)<br>(BTA S-004B standard) | 2 channels | 75Ω output |
| | Select from SD-SDI/SDTV analog signal (R/G/B/Y/ENC)<br>(SMPTE259M standard for SD-SDI signal) | | |
| | | 2 channels | 75Ω output |
| Waveform monitor (WFM) signal | HD-SDI<br>(BTA S-004B standard) | | |
| | | 2 channels | 75Ω output |
| | Select from SD-SDI/SDTV analog signal (R/G/B/Y/ENC for analog signal)<br>(SMPTE259M standard for SD-SDI signal) | | |
| | | 2 channels | 75Ω output |
| Intercom signal<br>(ENG/PROD) | Select from 4-wire/Clearcom/RTS | | |
| | 4-wire | 2 channels | 600Ω |
| | Clearcom | 2 channels | 200Ω |
| | RTS | 2 channels | 200Ω |
| MIC signal | 0dBs standard | 2 channels | Low impedance |
| Tally signal | R TALLY, G TALLY | | |

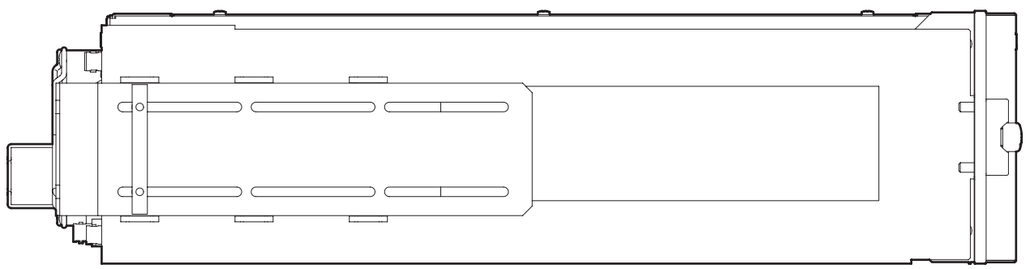
## ■ *Camera Cable*

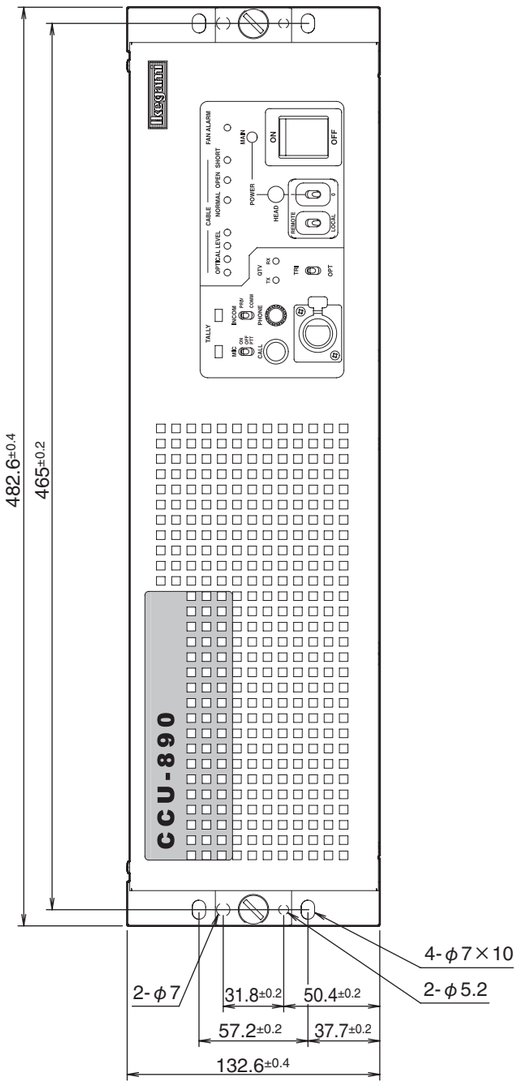
| | |
|---|---|
| Standard cable | 2SM-9.2-37.5 |
| Cable for studio shooting | 2SM-16-37.5 |
| Cable configuration | 2 single-mode quartz fiber optic cables<br>(HEAD -> CCU, CCU -> HEAD one cable for each)<br>4 power cables (One cable has 37.5Ω/km.)<br>2 control cables (One cable has 113Ω/km.) |

# 1.3 External Dimensions Diagram





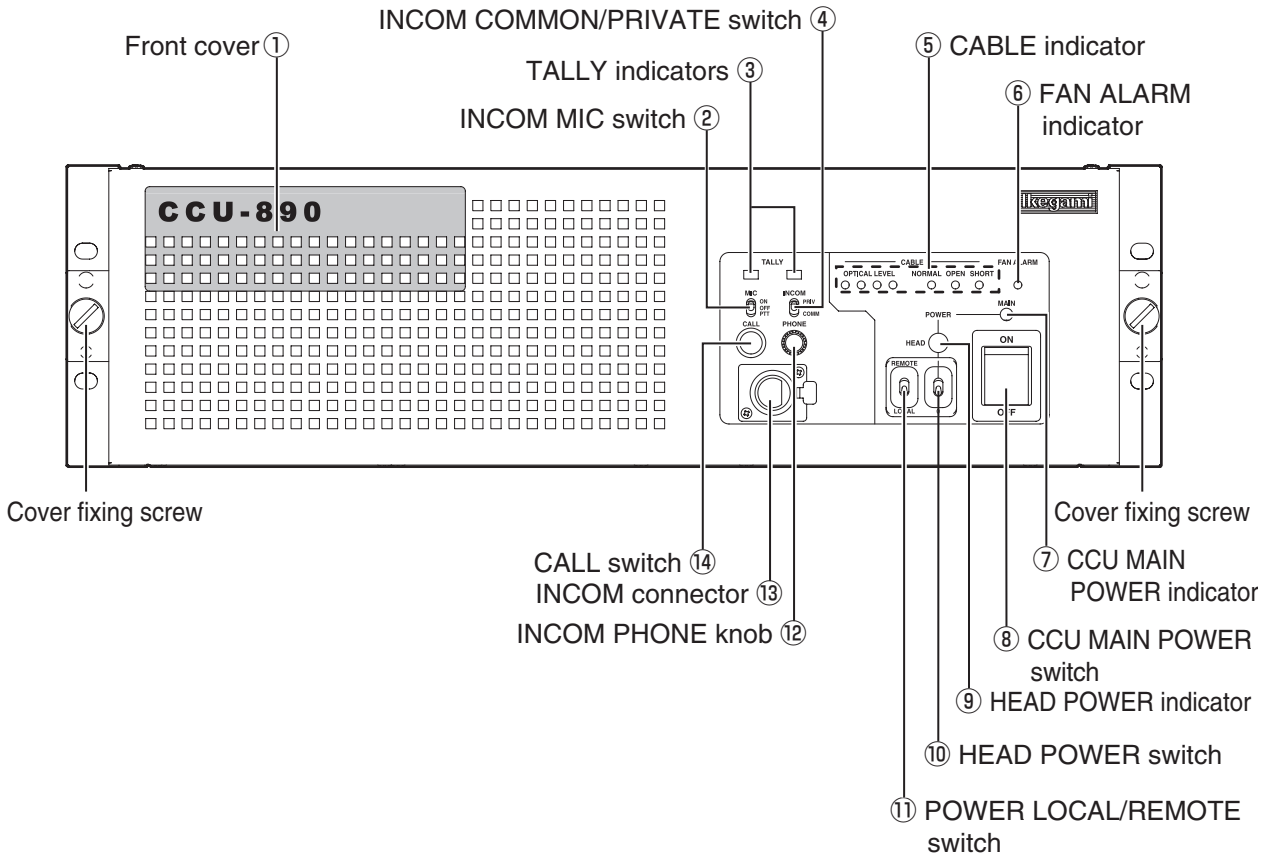
# 2

# NAME and FUNCTION

# 2.1 CCU-890 Front View

This section explains the names and functions of the parts on the front of the CCU-890.

## CCU-890 Front View With the Front Cover On




### ① Front cover

Protection cover on the front of the CCU.

Remove the cover when you need to operate the switches on the front of the module. It is usually used with the cover on.

#### How to remove/install the front cover

To remove the front cover, loosen the fixing screws on both ends of the cover and pull the cover straight off. To install the cover, place the cover in the appropriate position and tighten the screws.

### ② INCOM MIC switch

Selects ON/OFF/PTT for the intercom microphone.

- ON : Turns ON the intercom microphone.
- OFF : Turns OFF the intercom microphone.
- PTT : Turns ON the intercom microphone while this switch is pressed down. (Press To Talk)

### ③ TALLY indicators

Indicators for R TALLY and G TALLY.

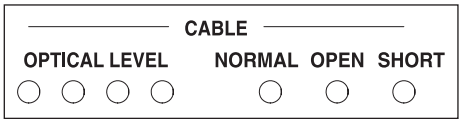
- R TALLY : Lights when the R TALLY signal is input to the TALLY IN connector on the rear of the CCU. It also lights while the CALL switch on the camera head or on any control panel (such as OCP, MCP, and RCP) is pressed.
- G TALLY : Lights when the G TALLY signal is input to the TALLY IN connector on the rear of the CCU.

### ④ INCOM COMMON/PRIVATE switch

Selects the intercom conversation mode.

COMM : Conversation among the camera head, CCU, and system is enabled.
PRIV : Conversation between the camera head and CCU is enabled.

### ⑤ CABLE indicators




### OPTICAL LEVEL indicators

Lighting status varies according to the light reception status of the camera to CCU fiber transmission path. The table below shows indicates status.

| Lighting Status | Light Reception Status | |
|---|---|---|
| Red Yellow Green Green<br>●○○○ | OK | Light reception status is good. |
| Red Yellow Green Green<br>●○○● | ATTENTION | The light reception level is low.<br>Although there is no problem with the reception of signals transmitted, cleaning the fiber connector is may be required, unless attenuation is due to very long cable length. |
| Red Yellow Green Green<br>●○●● | WARNING | The light reception level is very low.<br>There might be a problem with the reception of signals transmitted. Immediate cleaning the fiber connector is recommended. |
| Red Yellow Green Green<br>○●●● | NG | The light cannot be received.<br>There is a problem with the reception of signals transmitted. Cleaning the fiber connector is required; or replace the cable since the camera cable might be broken. |

( ○ : ON/ ● : OFF)

### CABLE indicator

Indicates the status of the camera cable.

NORMAL (green) : Lights when the status is normal.
OPEN (red) : Lights when the camera cable is not connected or there is an "open" in the camera cable.
SHORT (red) : Lights when a short circuit occurs in the camera cable or in the camera connector due to a cause such as water.

### ⑥ FAN ALARM indicator (red)

Lights when one of the fan motors on the rear of the CCU (1 motor) and inside the CCU (2 motors) has stopped.

### ⑦ CCU MAIN POWER indicator (green)

Lights when the CCU main power is ON.

### ⑧ CCU MAIN POWER switch

Switch to turn ON/OFF the CCU main power.

### ⑨ HEAD POWER indicator

Lights when power is supplied from the CCU to the camera head.

### ⑩ HEAD POWER switch

Switch to turn ON/OFF the power supply from the CCU to the camera head.

### ⑪ POWER LOCAL/REMOTE switch

Selects the ON/OFF mode of the CCU main power.

LOCAL : Main power can be turned ON/OFF from the MAIN POWER switch of the CCU.
REMOTE : When the CCU MAIN POWER switch is "ON," CCU main power and the power of the camera head can be turned ON/OFF from the OCP.

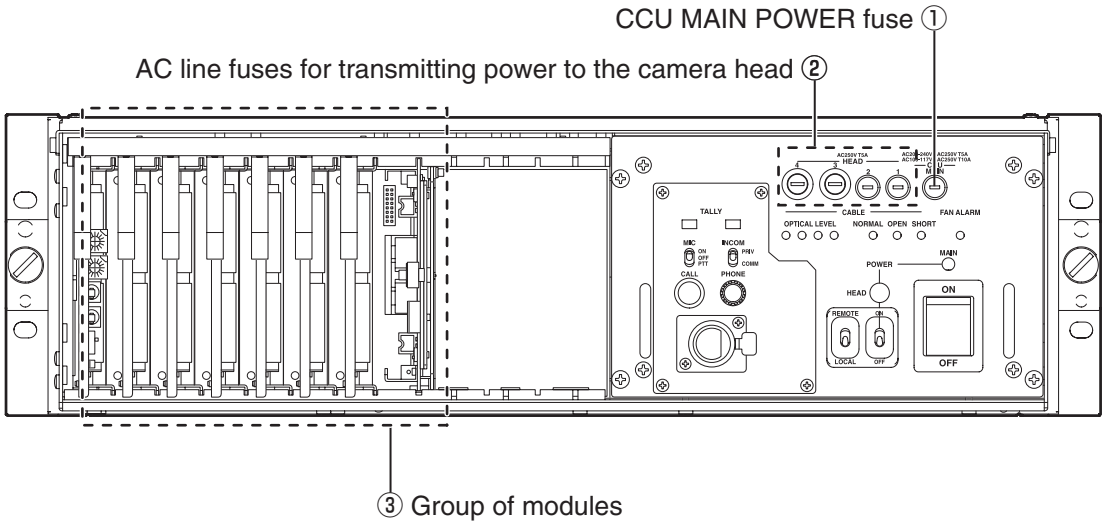
* In this case, support status for the power ON/OFF of the camera head and CCU vary according to the OCP to be used. Refer to the instructions accompanying the OCP to be used.

### ⑫ INCOM PHONE knob
Controls the volume of the intercom receiver.

### ⑬ INCOM connector
Connects the intercom headset. The connector type varies according to the specification.

### ⑭ CALL switch
Only while this switch is pressed, the R TALLY indicators on the camera head and the control panel light.

## CCU-890 Front View With the Front Cover Off




### ① CCU MAIN POWER fuse

Fuse for the CCU main power.

**Fuse to be used**

100V-117V AC input voltage: 250V T10A (rating)
220V-240V AC input voltage: 250V T5A (rating)
("T" in the rating indicates a time lag fuse.)

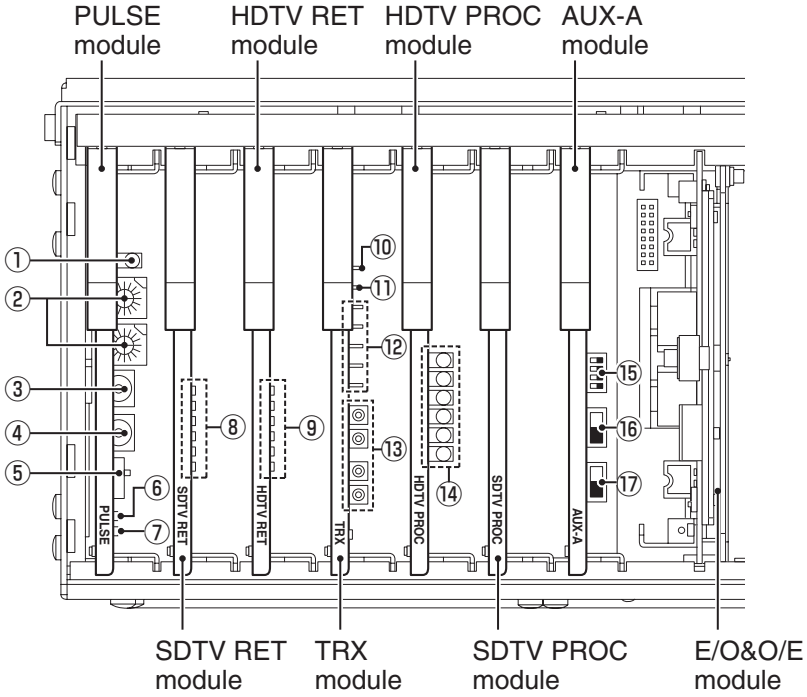
### ② AC line fuses for transmitting power to the camera head

Fuse for AC power line to transmit the power to the camera head. Fuses are inserted to each line on 4 taps.

**Fuse to be used (fuses are all the same.)**

250V T5A (rating)
("T" in the rating indicates a time lag fuse.)

### ③ Group of modules




***CAUTION:***

- The TRX module is connected to the E/O&O/E module with a coaxial cable. When inserting/removing modules, be careful not to catch or hang the cable in other modules.
- The E/O&O/E module is connected to the CCU main body with a fiber optic cable. Do not remove the cable except for the case to replace the module.

## ■ *PULSE Module*

### ① GENLOCK indicator

Lights when the CCU operates in GENLOCK mode (external synchronization).

### ② Network ID set switches

These 2 rotary switches set the network ID. Values on each switch are expressed in hexadecimal. The upper switch is for the higher bit; the lower switch is for the lower bit. Set the network ID from 01h to FFh (1 to 255 in decimal number). For details, refer to the instructions accompanying the HUB to be used.

***CAUTION:***

Each network ID must be unique in the same network. When the network IDs duplicate, malfunction may occur in not only the equipment with duplicated IDs but also equipment connected to the same network.

### ③ MENU switch

Switch to display, confirm, and end the menu.

### ④ SELECT switch

Switch to select the menu.

### ⑤ Do not select this switch while setting this switch to "CP" (factory shipment status).

### ⑥ HDTV HD test point

Test point for the HDTV horizontal drive signals.

### ⑦ HDTV FD test point

Test point for the HDTV frame drive signals.

## ■ *SDTV RET Module*

### ⑧ DC voltage test points

Test points for DC+5V, +3.3V, +9.5V, +5.5V, -5.5V, and -9.5V from the top.

## ■ *HDTV RET Module*

### ⑨ DC voltage test points

Test points for DC+5V, +3.3V, +9.5V, +5.5V, -5.5V, and -9.5V from the top.

## ■ *TRX Module*

### ⑩ HD test point

Test point for the horizontal drive signals synchronizing with the CCU system.

### ⑪ FD test point

Test point for the frame drive signals synchronizing with the CCU system.

### ⑫ DC voltage and GND test points

Test points for DC+5V, +3.3V, +5V, -5V, and GND from the top.

### ⑬ Adjustment volumes for each level of QTV

Adjustment volumes for QTV2 video level, QTV2 DC level, QTV1 video level, and QTV1 DC level from the top.

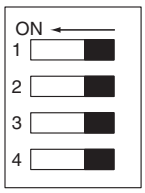
## ■ *HDTV PROC Module*

### ⑭ DC voltage detection indicator

Indicator for DC+5V, +3.3V, +9.5V, +5.5V, -5.5V, and -9.5V from the top.

## ■ *AUX-A Module*

### ⑮ Setting switches for the intercom system




(Switches viewed from the front of the CCU)

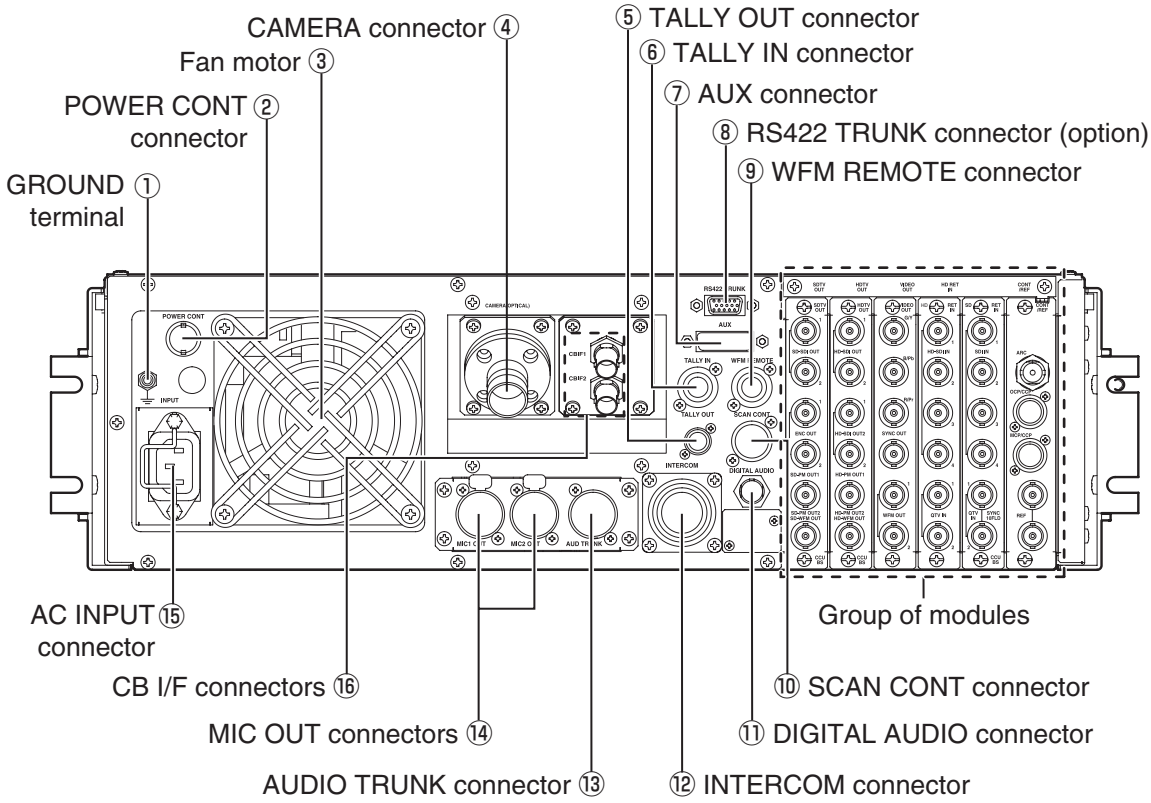
| Switch No. | Switch Function Name | ON | OFF |
|---|---|---|---|
| 1 | ENG RTS/CC | When the ENG line of the system is used for "RTS" or "Clearcom" | When the ENG line of the system is used for "4W" |
| 2 | ENG CC ON | When the ENG line of the system is used for "Clearcom" | When the ENG line of the system is used for "RTS" |
| 3 | PROD RTS/CC | When the PROD line of the system is used for "RTS" or "Clearcom" | When the PROD line of the system is used for "4W" |
| 4 | PROD CC ON | When the PROD line of the system is used for "Clearcom" | When the PROD line of the system is used for "RTS" |

### ⑯ Always place the position of this switch to the lower side.

### ⑰ Always place the position of this switch to the lower side.

# 2.2 CCU-890 Rear View

This section explains the names and functions of the parts on the rear of the CCU-890.




* Depending on the specification, ⑯ CB I/F connectors (optional) changes to the TRIAX connector or blank.

### ① GROUND terminal

Frame ground terminal of the CCU power unit.

### ② POWER CONT connector

This connector is connected to the P.S CONT connector on the OCP via the POWER CONT cable to control ON/OFF of the CCU main power and the power of the camera head from the OCP. In this case, set the POWER LOCAL/REMOTE switch on the front of the CCU to "REMOTE."
Some OCPs do not have the P.S CONT connector.

### ③ Fan motor

Fan motor to cool inside of the CCU.

### ④ CAMERA connector

Connector to connect the camera head via camera cable.

### ⑤ TALLY OUT connector

Outputs TALLY signals for monitor.

### ⑥ TALLY IN connector

Inputs TALLY control signals from the external system.
The TALLY mode is selected by the switch on the AUX-A module. Refer to "5.2 Settings Using Switches on the Module," "TALLY Mode Settings" (page 94) for how to select the mode.

| Tally Call \ Indicator | | Camera | | CCU | | Control Panel | |
|---|---|---|---|---|---|---|---|
| | | R | G | R | G | R | G |
| System | R | ○ | | ○ | | ○ | |
| | G | | ○ | | ○ | | ○ |
| Camera Head* | | | | ○ | | ○ | |
| CCU* | | ○ | | | | ○ | |
| Control Panel* | | ○ | | ○ | | | |

* The indicator lights when the CALL switch on the camera head, CCU, or control panel is pressed. ( ○ : ON)

### ⑦ AUX connector

Connector to control external equipment. This connector is used for a special specification (optional).

### ⑧ RS422 TRUNK connector (option)

Connector for RS-422 communication.

### ⑨ WFM REMOTE connector

Outputs stair signals for the waveform monitor (WFM). By connecting the WFM for NTSC to this connector, the R, G, and B waveforms can be monitored simultaneously (parade display).

### ⑩ SCAN CONT connector

Inputs control signals to control the aspect ratio of SDTV output from the external system.

### ⑪ DIGITAL AUDIO connector

Outputs digital audio signals (75Ω output). The signal conforms to the AES/EBU format.

### ⑫ INTERCOM connector

Connector to connect to the external intercom system.
"24-pin type" or "BTA S-1005B compliant (19-pin) type" are optionally available for the INTERCOM connector.
* "19-pin type" is optional. (The connector is not RoHS-compliant.)

### ⑬ AUDIO TRUNK connector

Input connector for the trunk line for audio signals to be transmitted to the camera head.

### ⑭ MIC OUT connectors

Output the audio signals that are input to the MIC IN connectors on the camera head. (2 channels)

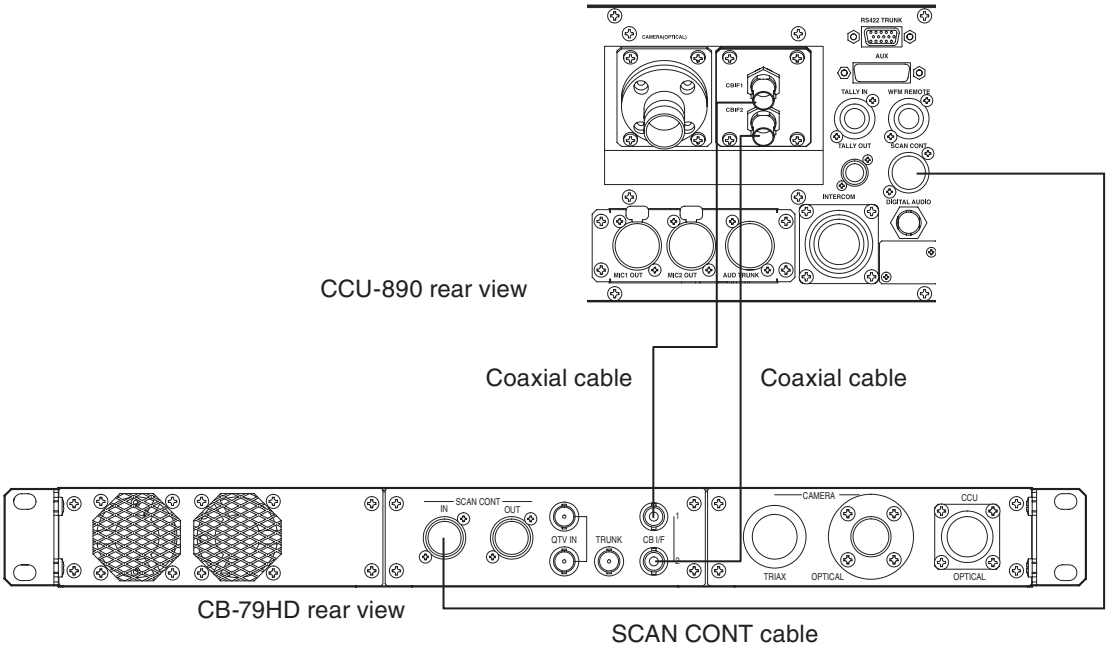
### ⑮ AC INPUT connector

Supplies AC voltage to the CCU.

### ⑯ CB I/F connectors (optional)

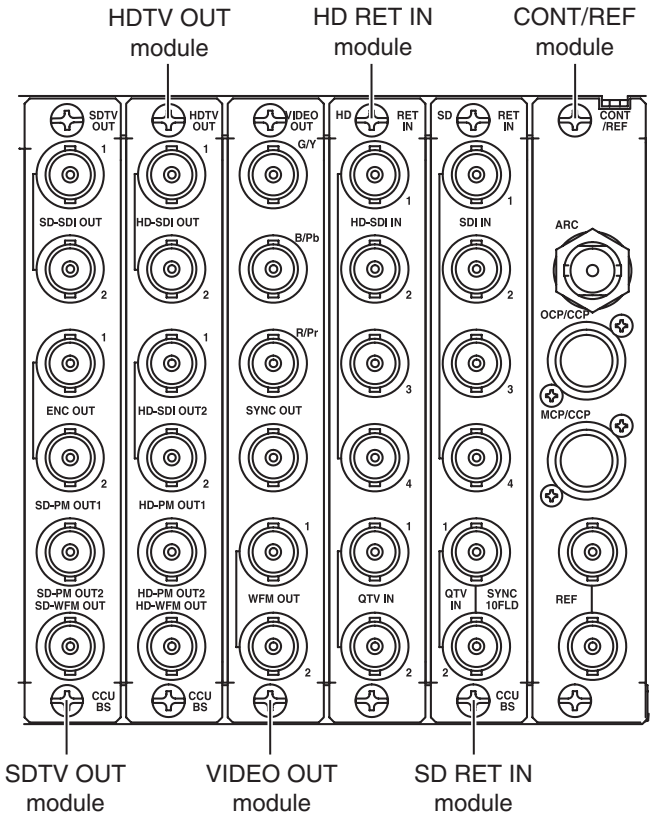
Connectors to connect to the CB-79HD (CONVERTER BOX).
(Depending on the specification, the CB I/F connectors changes to the TRIAX connector or blank.)

### [Connection configuration]

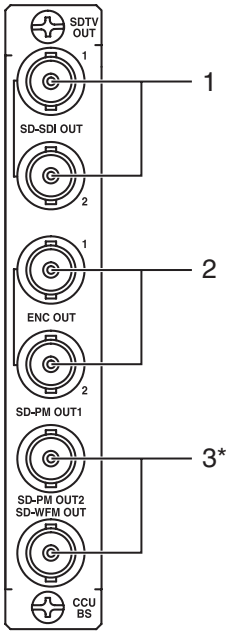



## Modules on the Rear of the CCU-890

Modules on the rear are also the slot type and can be removed/inserted as well as the modules on the front.



## ■ *SDTV OUT Module*




### 1. SD-SDI OUT connectors

Output SD-SDI signals (2 channels).

### 2. ENC OUT connectors

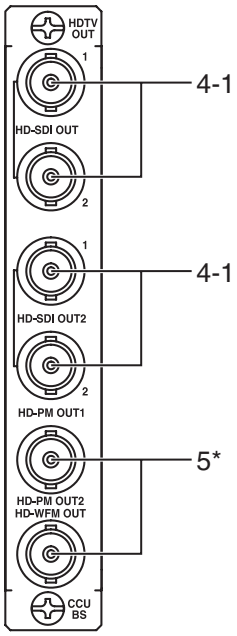
Output ENC signals (2 channels).

### 3. SD-PM OUT connectors

Output video signals for picture monitor (2 channels).
The SD-SDI signal or SDTV analog signal can be selected as the output signal. Select the signal from "PM OUT1" and "PM OUT2" of the CCU menu "DOWN CONV CONT (3/3)."
(First and second channels can be selected separately.)

* This product does not have the SD-WFM OUT (SDTV video signal output for a waveform monitor) function displayed on the SD-PM OUT2 connector.

## ■ *HDTV OUT Module*




### 4-1. HD-SDI OUT 1 connectors

Output HD-SDI signals (2 channels).
Select the output format from "OUT1 FORMAT" of the CCU menu "HDTV CONT (1/2)."
The same format is selected for both channels.

### 4-2. HD-SDI OUT 2 connectors

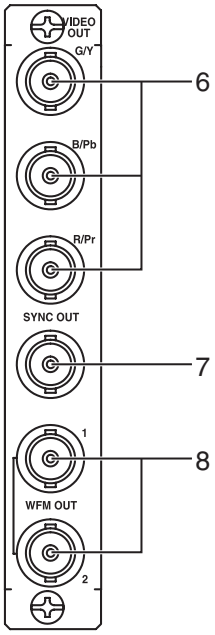
Output HD-SDI signals (2 channels).
Select the output format from "OUT2 FORMAT" of the CCU menu "HDTV CONT (1/2)."
The same format is selected for both channels.

### 5. HD-PM OUT connectors

Output HD-SDI signals for picture monitor (2 channels).
Select the output format from "PM OUT FORMAT" of the CCU menu "HDTV CONT (1/2)."
The same format signals as the HD-SDI OUT 1 output or HD-SDI OUT 2 output can be output.

* This product does not have the HD-WFM OUT (HD-SDI video signal output for a waveform monitor) function displayed on the HD-PM OUT2 connector.

## ■ *VIDEO OUT Module*




### 6. Component output connectors

Output GBR signals or Y + color-difference signals.
When "HDTV" is selected from "ANALOG OUT SEL1" setting of the CCU menu "VIDEO OUT CONT," HDTV GBR or YCbCr signals are output. When "SDTV" is selected, SDTV GBR or YPbPr signals are output. In the same way, GBR signals or Y + color-difference signals can be selected from "ANALOG OUT SEL2" setting of the CCU menu "VIDEO OUT CONT."

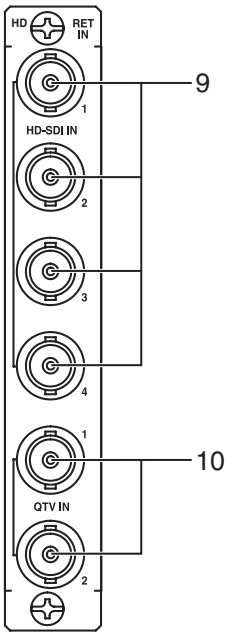
### 7. SYNC OUT connector

Outputs signals for external synchronization.
HDTV Tri-Sync signal or SDTV synchronization signal is selected from "SYNC OUT SEL" setting of the CCU menu "VIDEO OUT CONT."

### 8. WFM OUT connectors

Output video signals for the waveform monitor (2 channels).
The HD-SDI signal, SD-SDI signal, or SDTV analog signal can be selected as the output signal. (First and second channels can be selected separately.)
Select the signal from "WFM OUT1" and "WFM OUT2" of the CCU menu "VIDEO OUT CONT."

## ■ *HD RET IN Module*




### 9. HD-SDI RET IN connectors

Input return signals to the camera head (4 channels).
Supports HD-SDI signals. Active through connection is not available.

***Note:***

When "ON" is selected from "FRAME SYNCHRO" of the CCU menu "RET VIDEO FORMAT," 2 channels are used for the input. In this case, the input to the third and fourth channels is disabled.

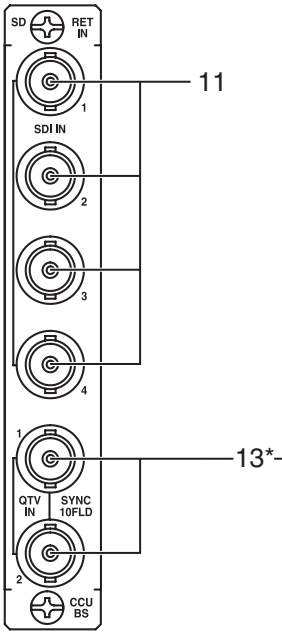
### 10. QTV IN connectors

Input QTV signals to be transmitted to the camera head (2 channels).
Format is SDTV analog composite signal.

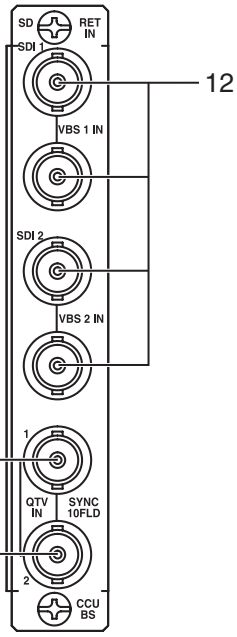
## ■ *SD RET IN Module*

* The rear panel for the RET4 channel specification is different from that for the RET2 channel specification. (The RET2 channel specification is optional.)

RET4 channel specification




RET2 channel specification




* When the SD RET IN module is installed to this product, the QTV IN (QTV signal input) function is disabled for this connector.

### 11. SDTV RET IN connectors [RET4 channel specification]

Input return signals to the camera head (4 channels).
Supports SD-SDI signals. Active through connection is not available.

***Note:***

When "ON" is selected from "FRAME SYNCHRO" of the CCU menu "RET VIDEO FORMAT," 2 channels are used for the input. In this case, the input to the third and fourth channels is disabled.

### 12. SDTV RET IN connectors [RET2 channel specification]

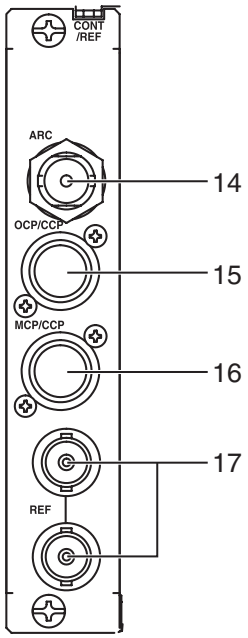
Input return signals to the camera head (2 channels).
Support SD-SDI signals and analog VBS. Bridged connection is available for VBS.

### 13. SYNC 10FIELD connectors

Bridged connection is available. Input signals necessary for synchronizing the phase of 23.98 signals and 2-3 pulldown signals. Following signals can be input.

- Signals output from the SYNC OUT connector of another CCU-890. However, in this case, select "1080P23." from "SYNC OUT SEL" setting and "ON" from "SYNC 2-3ID ADD" setting of the CCU menu "VIDEO OUT CONT."
- SYNC signals in 1080I59 format (when synchronization signals are supplied from external equipment).

## ■ *CONT/REF Module*




### 14. Connector for network commands

Connector for network to connect to the CP HUB (separately sold) via a coaxial cable. For details, refer to the instructions accompanying the CP HUB to be used.

***CAUTION:***

- Use an F-type conversion plug for connection. In addition, use 75Ω coaxial cable and terminator at each end of the overall path.
- Handle the connector with extreme care since a malfunction may occur when the connector comes into contact with the frame etc.
- Use an F-type conversion plug covered with insulation cover etc.

### 15. OCP/CCP connector

Connector to connect to the OCP via a CP cable.

### 16. MCP/CCP connector

Connector to connect to the MCP or CSU via a CP cable.

### 17. REF connectors

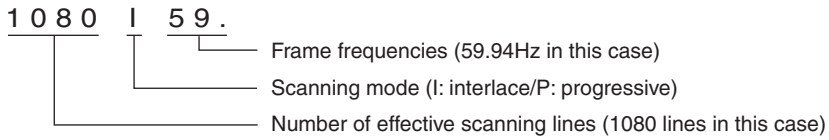
Input external synchronization signals (HDTV PS/S or SDTV VBS/BBS). Signals to which 10 field ID signals conforming to SMPTE318M are added can be input to the VBS/BBS.
Bridged connection is available.

# 3

# FORMATS and GENLOCK

# 3.1 HDTV Format

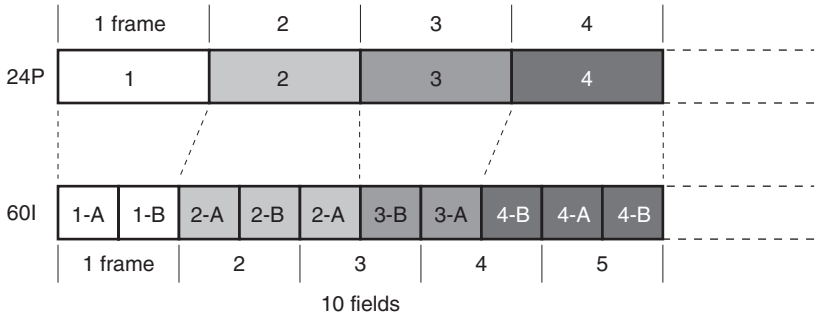
This section explains the HDTV formats displayed on the CCU menu and the self-diagnosis with some examples.






## ■ *2-3 Pull Down*

2-3 pull down is a method of converting a 24-frame (24P) video into a 60-field (60I) video.




(A: odd field, B: even field)

## ■ *Segmented Frame*

Segmented frame is a method for converting a progressive video separated for 1 line each into an interlaced video.

# 3.2 GENLOCK System

This section explains input/output connectors and connection examples of the GENLOCK system for this product.

## Input Connectors

REF connectors and SYNC 10FLD connectors are explained here.
The phase of output signals can be synchronized with the reference signals input to the REF connectors and SYNC 10FLD connectors.

### ■ *REF connectors*

Three types of signals below can be input to the REF connectors.
① HDTV PS/S
② SDTV VBS/BBS
③ BBS + 10 FIELD ID

### ■ *SYNC 10FLD connectors*

When the output format is 1080I/59.94 (2-3 pulldown), 1080P/23.98, or 1080P/23.98 (segment frame), the phase of 23.98P and 2-3 pulldown signals can be synchronized by inputting the following signals.

**• When the phase of 2-3 pulldown signal of another CCU-890 is synchronized by using a CCU-890 as master**

HDTV tri-sync signals with 10 FIELD ID output from the SYNC OUT connector of another CCU-890

**• When the phase of 23.98P and 2-3 pulldown signals is synchronized with the reference signals**

Synchronization signals in 23.98P format
(When synchronization signals in 59.94I format are input to the REF connectors of the CCU, the synchronization signals in 23.98/P format must be in phase of the synchronization signals in 59.94I format.)

## Output Connectors

SYNC OUT connector and ENC OUT connectors are explained here.

### ■ *SYNC OUT connector*

SYNC OUT connector outputs synchronization signals. The format to be selected varies depending on the output video signal. (Select a format from the menu.)

| HD-SDI OUT1/OUT2 FORMAT | Synchronization Signal Format to be Selected |
|---|---|
| 1080I59. | 1080I59./SDTV |
| 1080I59.PD | 1080I59./1080P23.SF/1080P23./SDTV |
| 1080P23.SF | |
| 1080P23. | |
| 720P59. | 720P59./720P23./SDTV |

In addition, when a format other than 1080I59. and 720P59. is selected, whether to add 2H pulse every 10 FIELD (this is different form the 10 FIELD ID specified by SMPTE 318M.; however. this is also called "10 FIELD ID" here.) can be selected.

### ■ *ENC OUT connector*

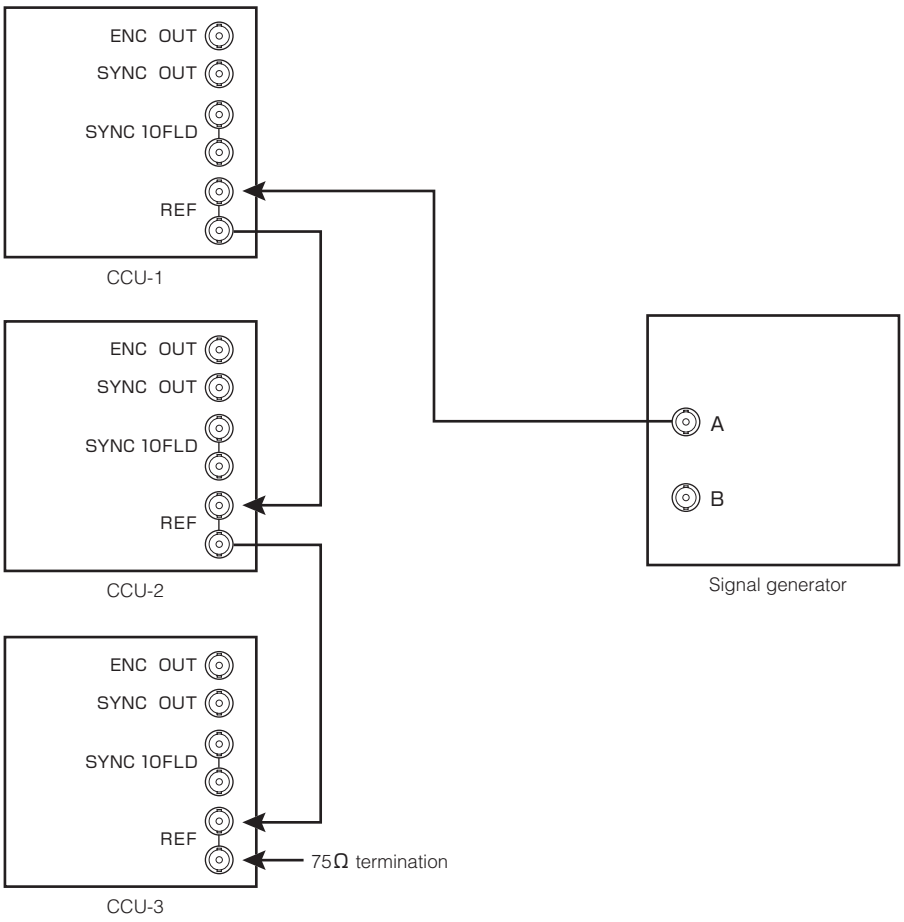
10 FIELD ID can be added to the ENC signal. (The 10 FIELD ID described here indicates the ID specified by SMPTE 318M.)

***Note:***

When the format of the camera head is 1080I/59.94 (2-3 pulldown), the phase of 2-3 pulldown signal needs to be synchronized even if the 2-3 pulldown signal is not used for the CCU output since the 2-3 pulldown signal is transmit and received between the camera head and the CCU.

## ■ *Operating configurations*

### ● When format conversion is not performed




**Condition of signals output by the signal generator in this case**

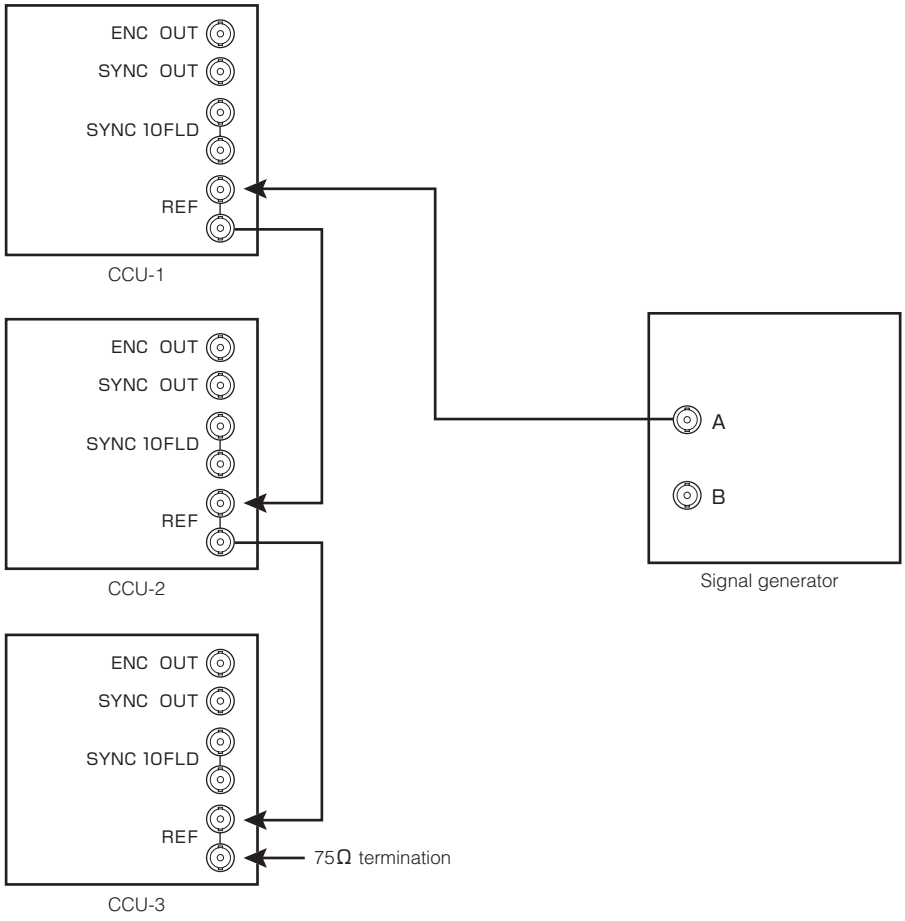
A: HDTV tri-sync signals whose format is the same as the camera head or NTSC BBS

## ● When format conversion is performed

The following four patterns use 1080I/59.94 or 1080P/23.98 as a format of the camera head.
In addition, 1080P/23.98 is used as the output of the format conversion.

### - Pattern 1

The case that NTSC BBS + 10 FIELD ID (SMPTE 318M-compliant) signals can be supplied from the signal generator

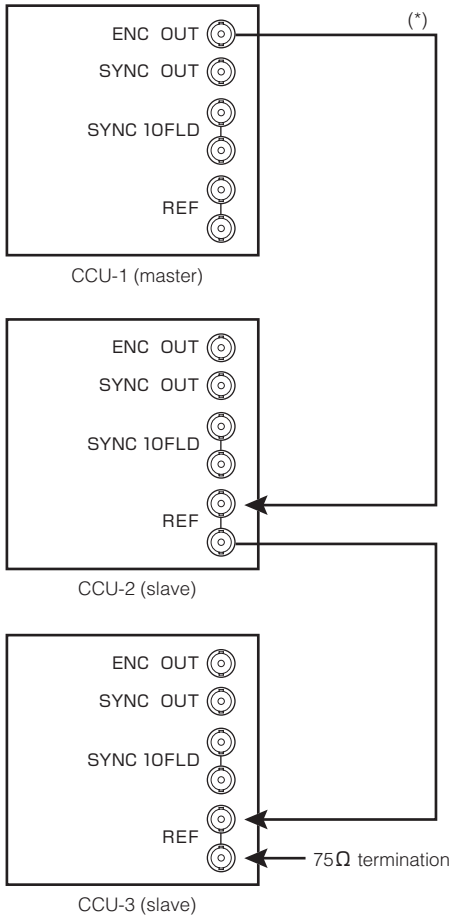



**Condition of signals output by the signal generator in this case**

A: NTSC BBS + 10 FIELD ID (SMPTE 318M-compliant)

**- Pattern 2**

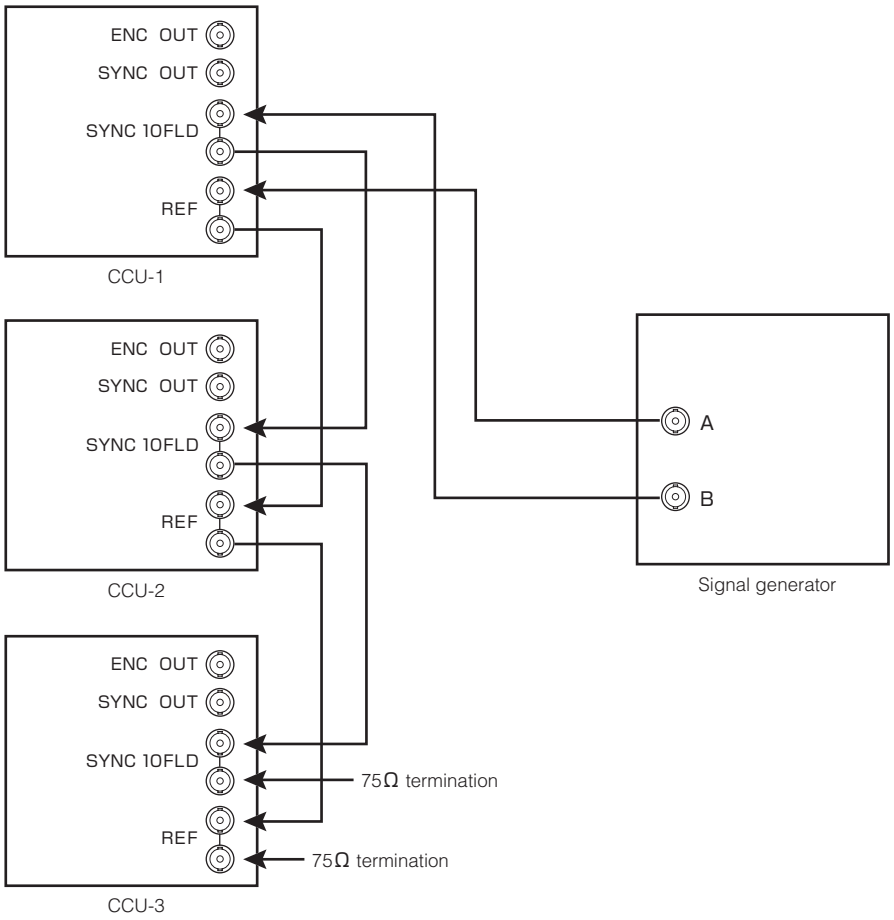
One of CCUs is placed as master when the signal generator is not used.




* In this case, add 10 FIELD ID signals (SMPTE 318M-compliant) to the ENC signal output.
(Set the item "10 FIELD ID SIG" of the CCU menu "DOWN CONV CONT (1/3)" to ON.)

**- Pattern 3**

The case that synchronization signals of two types of formats can be supplied from the signal generator



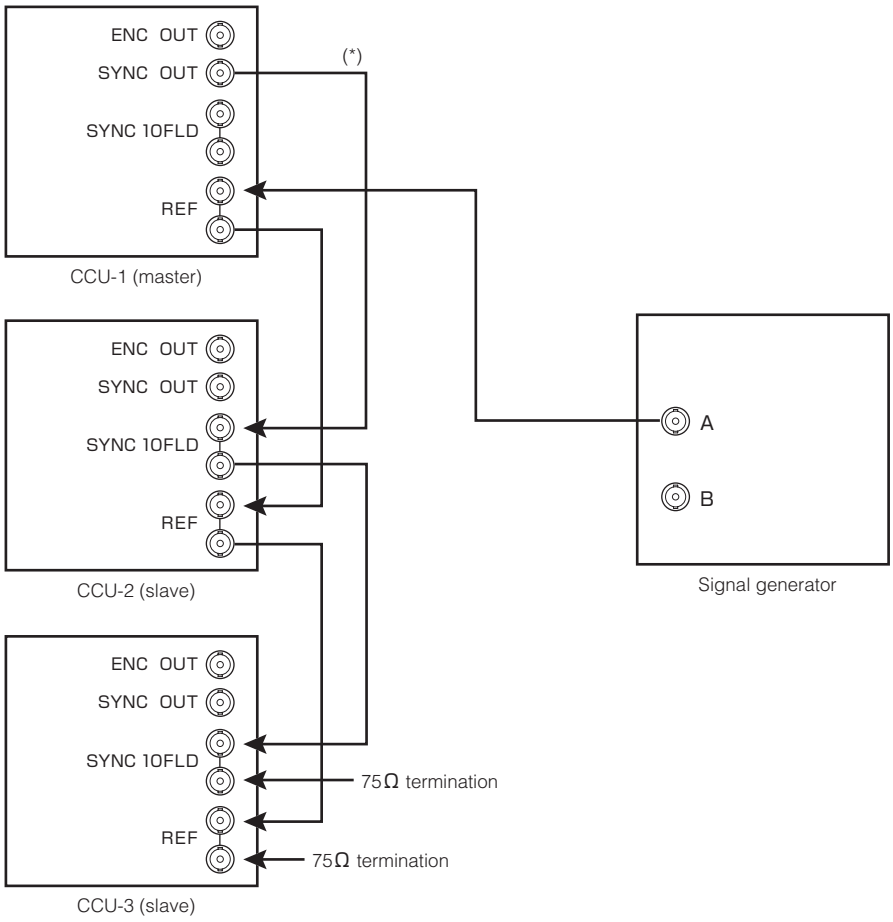

**Condition of signals output by the signal generator in this case**

A: HDTV tri-sync signals of 1080I/59.94 format or NTSC BBS

B: HDTV tri-sync signals of 1080P/23.98 format
(However, the 10-field interval for 1080I/59.94 format needs to be synchronized with the 4-frame interval for 1080P/23.98 format.)

**- Pattern 4**

The case that only synchronization signals of one type of format can be supplied from the signal generator




**Condition of signals output by the signal generator in this case**

A: HDTV tri-sync signals of 1080I/59.94 format, HDTV tri-sync signals of 1080P/23.98 format, or NTSC BBS

* In this case, add 10 FIELD ID signals to the signal output for external synchronization.
(Set the item "SYNC 2-3ID ADD" of the CCU menu "VIDEO OUT CONT" to ON.)

# 3.3 DUAL LINK (HS TYPE) Specification for the CCU

To use the DUAL LINK (HS TYPE) specification (optional) for a CCU, conditions ① through ③ among 4 conditions below must be satisfied. In addition, the camera head connected to the CCU must have DUAL LINK (HS TYPE) specification.

Condition ① : The E/O&O/E module is a dedicated optional board for DUAL LINK.
Condition ② : A second HDTV PROC module is mounted in the slot on the SDTV PROC module in the front of the CCU.
Condition ③ : A second HDTV OUT module is mounted in the slot on the SDTV OUT module at the rear.
Condition ④ : The VIDEO OUT module on the rear is a dedicated optional board for DUAL LINK.
(Condition ④ is not mandatory.)

When configurations for ① to ② and ④ are incomplete, it will be notified by the self diagnostic information. For the self diagnostic information, refer to "CCU Self Diagnostic Information" (page 106).

***CAUTION:***

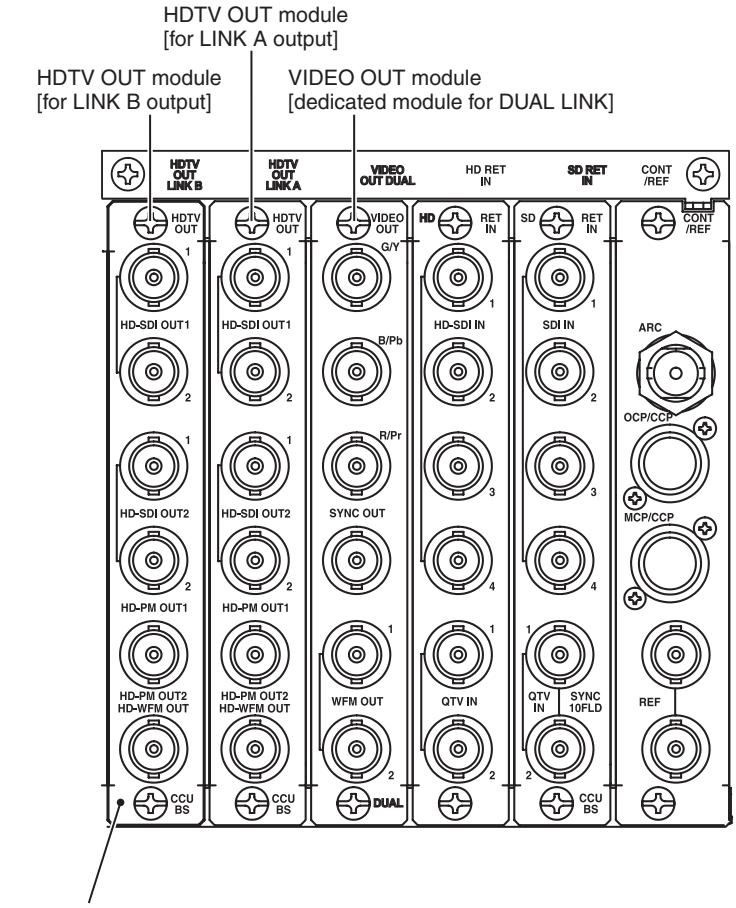
The DUAL LINK (HS TYPE) CCU cannot multiplex audio signals to the following outputs.

- HD-SDI
- HD-SDI PM
- HD-SDI WFM

***Note:***

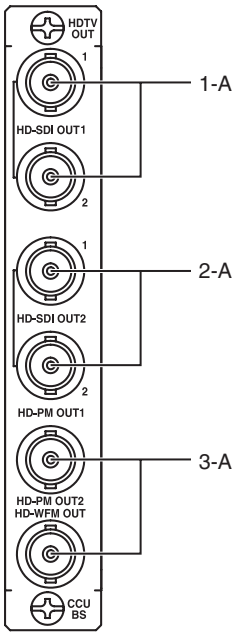
For the DUAL LINK (HS TYPE) CCU, a part of the CCU menu and the self diagnostic information is changed.

# Rear Module Configuration at DUAL LINK (HS TYPE) Specification




The HDTV OUT module is mounted to the slot for the SDTV OUT module.

## ■ *HDTV OUT Module [for LINK A Output]*




### 1-A. HD-SDI OUT connectors [LINK A]

Output HD-SDI signals (2 channels).
Select the output format from "OUT1 FORMAT" of the CCU menu "HDTV CONT (1/2)." The same format is selected for both channels.
(When the format selected in "OUT1 FORMAT" is confirmed, the same format is used for "OUT2 FORMAT.")

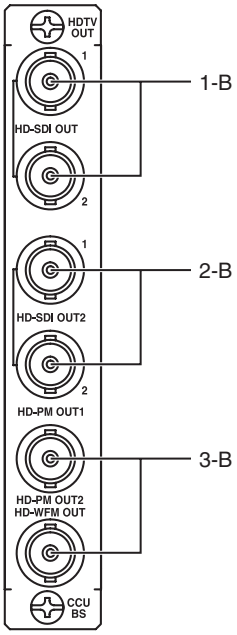
### 2-A. HD-SDI OUT connectors [LINK A]

Output HD-SDI signals (2 channels).
Select the output format from "OUT2 FORMAT" of the CCU menu "HDTV CONT (1/2)." The same format is selected for both channels.
(When the format selected in "OUT2 FORMAT" is confirmed, the same format is used for "OUT1 FORMAT.")

### 3-A. HD-PM OUT connectors [LINK A]

Output HD-SDI signals for picture monitor (2 channels).
The same format signals as the HD-SDI OUT 1 output or HD-SDI OUT 2 output can be output.

## ■ *HDTV OUT Module [for LINK B Output]*




### 1-B. HD-SDI OUT connectors [LINK B]

Output HD-SDI signals (2 channels).
The same format signals selected in LINK A can be output.

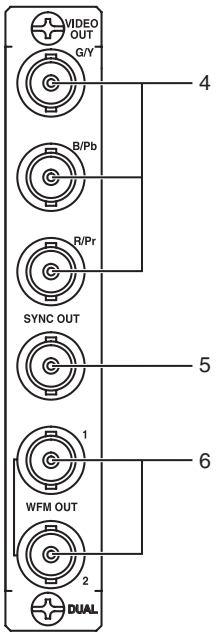
### 2-B. HD-SDI OUT connectors [LINK B]

Output HD-SDI signals (2 channels).
The same format signals selected in LINK A can be output.

### 3-B. HD-PM OUT connectors [LINK B]

Output HD-SDI signals for picture monitor (2 channels).
The same format signals selected in LINK A can be output.

## ■ *VIDEO OUT Module [Dedicated Module for DUAL LINK]*




### 4. Component output connectors

Output GBR signals or Y + color-difference signals. Only LINK A of the HDTV signals is output.
GBR signals or Y + color-difference signals can be selected from "ANALOG OUT SEL" of the CCU menu "VIDEO OUT CONT."

### 5. SYNC OUT connector

Outputs signals for external synchronization. Only LINK A of the HDTV Tri-Sync signals is output.

### 6. WFM OUT connectors

Output video signals for the waveform monitor (2 channels).
Only the HD-SDI signals are output. LINK A or LINK B can be selected from "WFM OUT1" and "WFM OUT2" of the CCU menu "VIDEO OUT CONT."

# Video Format Available for DUAL LINK (HS TYPE) Specification

The video format can be selected from "OUT1 FORMAT" or "OUT2 FORMAT" of the CCU menu "HDTV CONT (1/2)." Available formats are as follows.

- 1080I119. (Currently not supported)
- 720P59.
- 720P119.
- 1080I59.
- 1080P59.
- 1080I59.PD
- 1080P23.SF
- 1080P23.

Among these formats, "1080I119.,""720P119.," and "1080P59." are called "DUAL format."
"1080I119." format can be connected to the BLT video servers. (To be supported)
"720P119." format can be connected to the EVS video servers.

# EQUIPMENT CONNECTIONS

4

# 4.1 Preparation

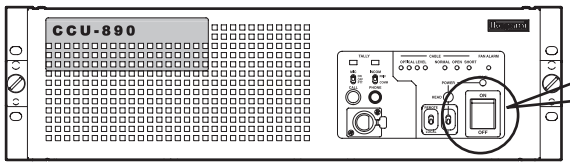
## Product Use Environment

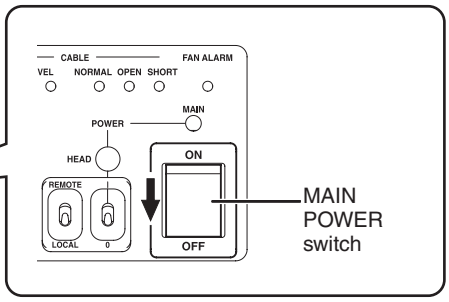
Please read THE SAFETY PRECAUTIONS in the beginning of this document and follow the precautions for use.

## Make sure the Power Switch is OFF

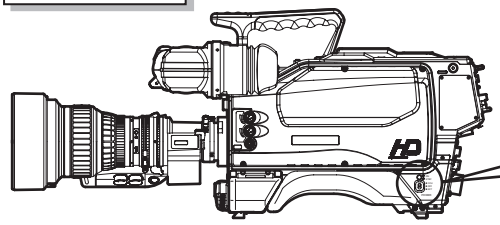
Please make sure that the power switch is "OFF" before connecting this product and peripheral equipment such as the camera head.

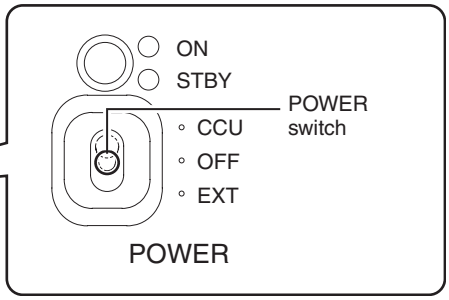
CCU front view




Camera right view






* HDK-79EXⅢ is used as an example of the camera head for explanation.
Refer to the instructions accompanying the camera head to be used for the locations of the POWER switches and switch settings.

# 4.2 Power Supply

This section explains how to supply power from the CCU-890 to the camera head.

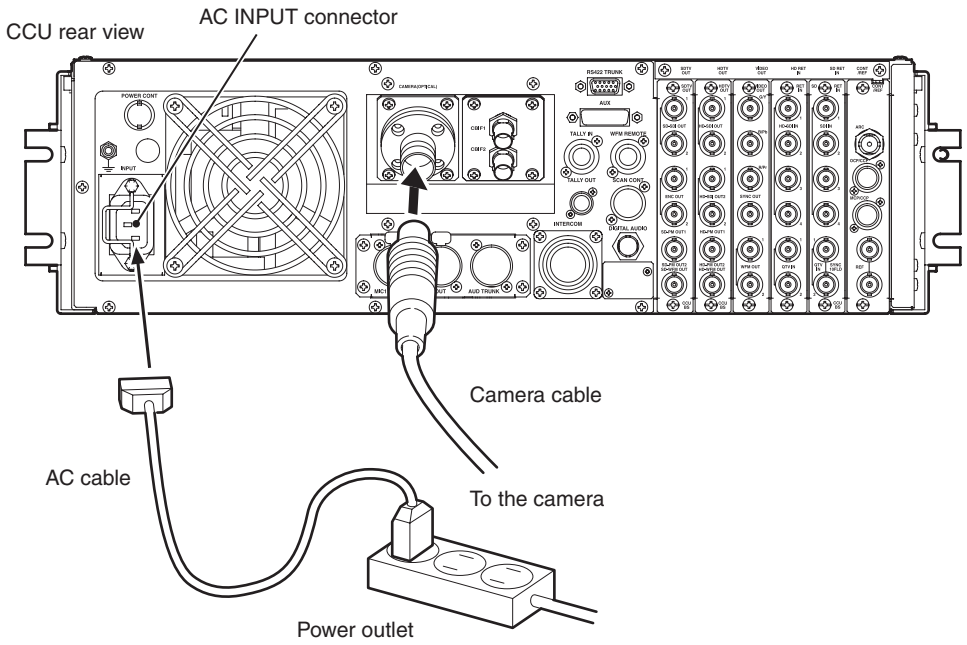
**1** Make sure the MAIN POWER switch of the CCU is "OFF."

**2** Connect the AC cable to the AC INPUT connector on the rear of the CCU.

**3** Insert the AC plug into the power outlet.

**4** Connect a camera cable to the CAMERA connector on the rear of the CCU, and connect the other end of the camera cable to the camera head.

Refer to "4.3 CCU and Camera Head Connection" (page 41) for how to connect the camera cable to the camera head.




This completes the connection procedure for supplying power from the CCU-890 to the camera. Two methods of power supply to the camera head are available with this configuration.
a) To control the power ON/OFF from the CCU
b) To control the power ON/OFF from the OCP (remote control)

## ■ *To Control Power ON/OFF from CCU*

You can control the power ON/OFF of the camera head from the CCU.

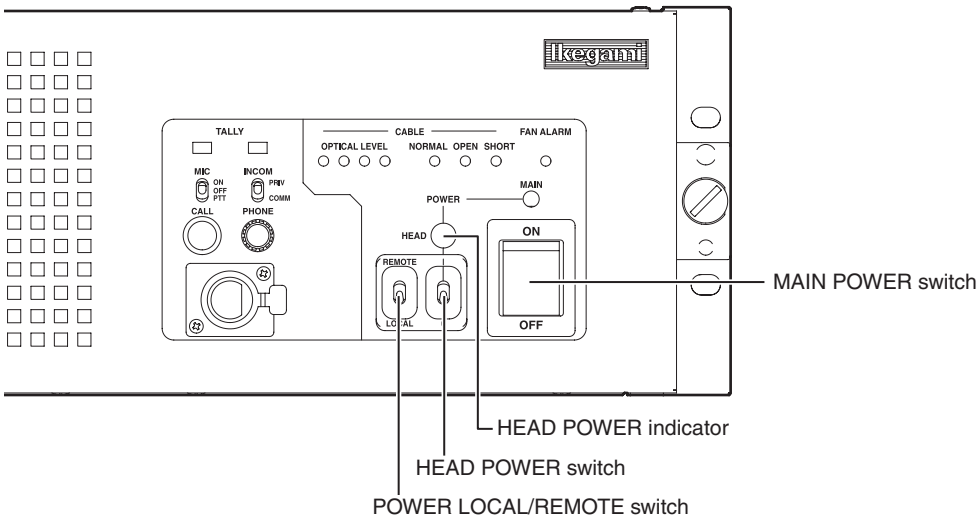
**1** Set the MAIN POWER switch on the front of the CCU to "ON," and set the POWER switch of the camera head to "CCU."

This turns on the power of the CCU, but no power is supplied to the camera head yet.

**2** Set the POWER LOCAL/REMOTE switch on the front of the CCU to "LOCAL," and set the HEAD POWER switch to "ON."

The power is supplied to the camera head, and the HEAD POWER indicator lights.

CCU front view

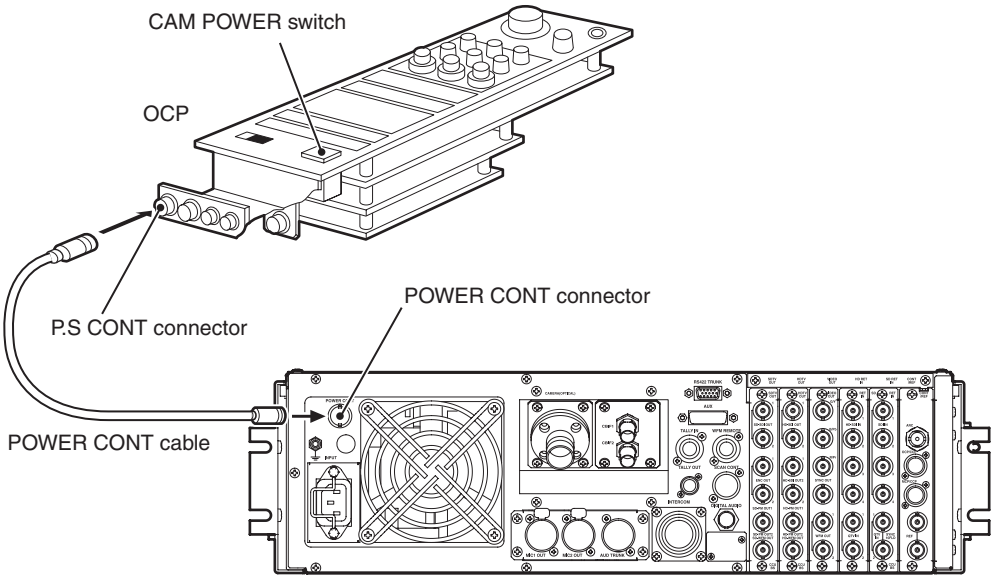



Setting the HEAD POWER switch on the front of the CCU to "ON/OFF" enables control of the power supply to the camera head.

## ■ *To Control Power ON/OFF from OCP (Remote Control)*

You can control the power ON/OFF of both the camera head and the CCU from the OCP.

***1*** Connect the POWER CONT connector on the rear of CCU and the P.S CONT connector on the OCP via the POWER CONT cable.




CCU rear view

***2*** Set the MAIN POWER switch on the front of the CCU to "ON."

***3*** Set the POWER LOCAL/REMOTE switch on the front of the CCU to "REMOTE."

The power of the CCU is turned off.

***4*** Set the CAM POWER switch on the OCP to "ON."

The power of the CCU is turned on, and the power is simultaneously supplied to the camera head.

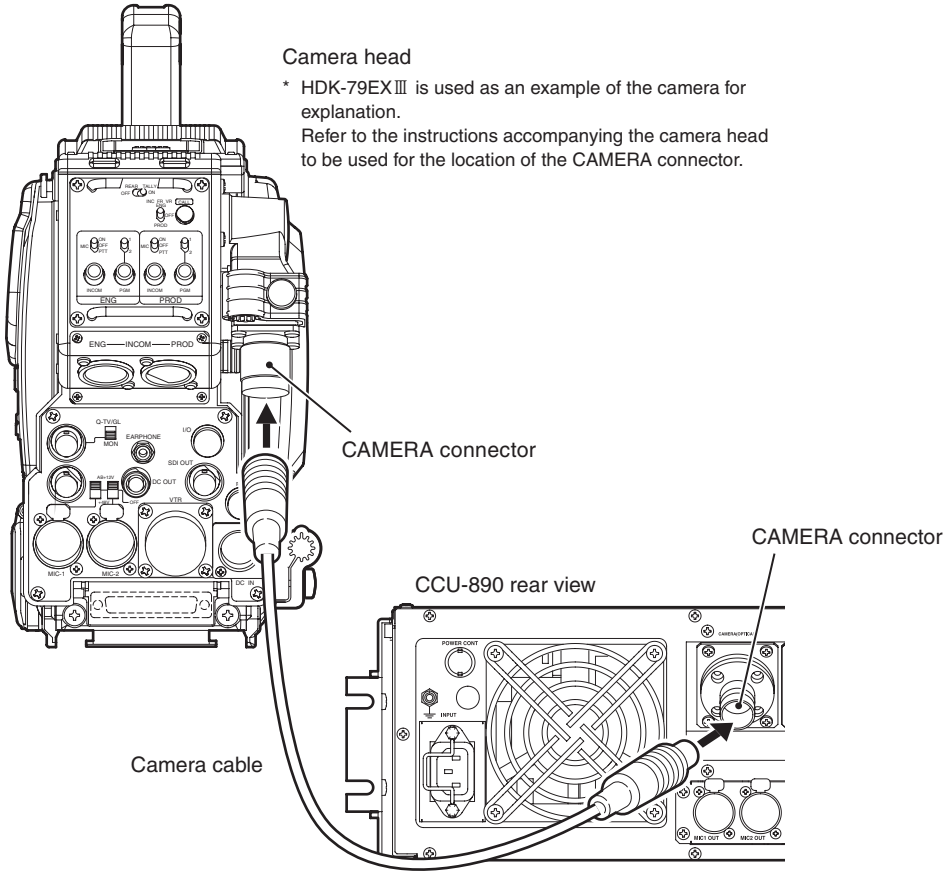
***Note:***

Some OCP does not have the P.S CONT connector. When an OCP that does not have the P.S CONT connector is used, only ON/OFF of the power supply for the camera head is controlled without controlling the power ON/OFF of the CCU.

# 4.3 CCU and Camera Head Connection

This section explains how to connect the CCU-890 to the camera.

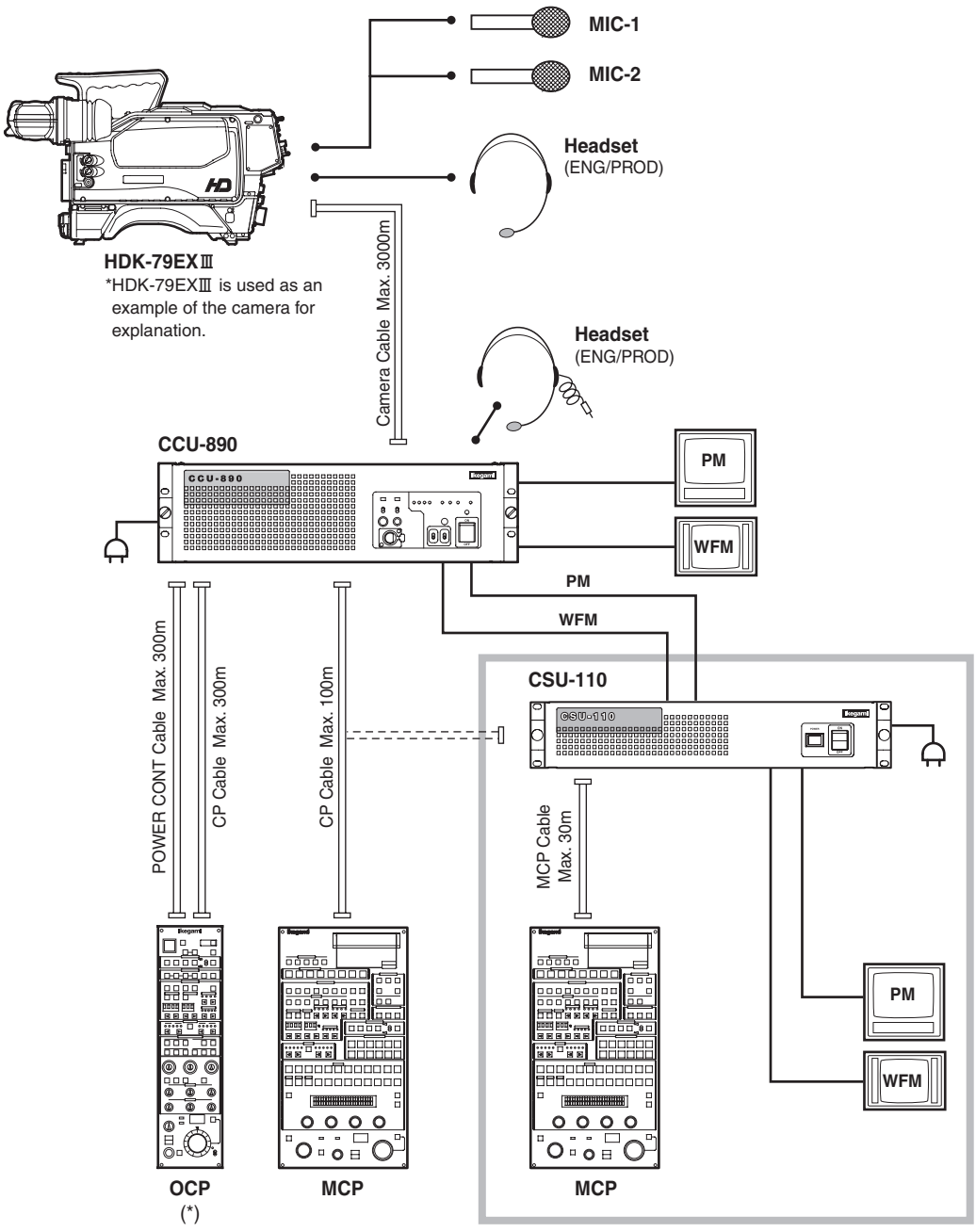
**1** Connect the CAMERA connector on the rear of the CCU to the CAMERA connector on the camera head via a camera cable.




***CAUTION:***

- The camera cable has a plug on one end and a jack on the other end. Make sure the difference before connection.
- Do not forcibly bend the camera cable nor apply excessive force to the camera cable.
- Refer to the instructions accompanying the cable or camera head to be used for how to handle the camera cable.

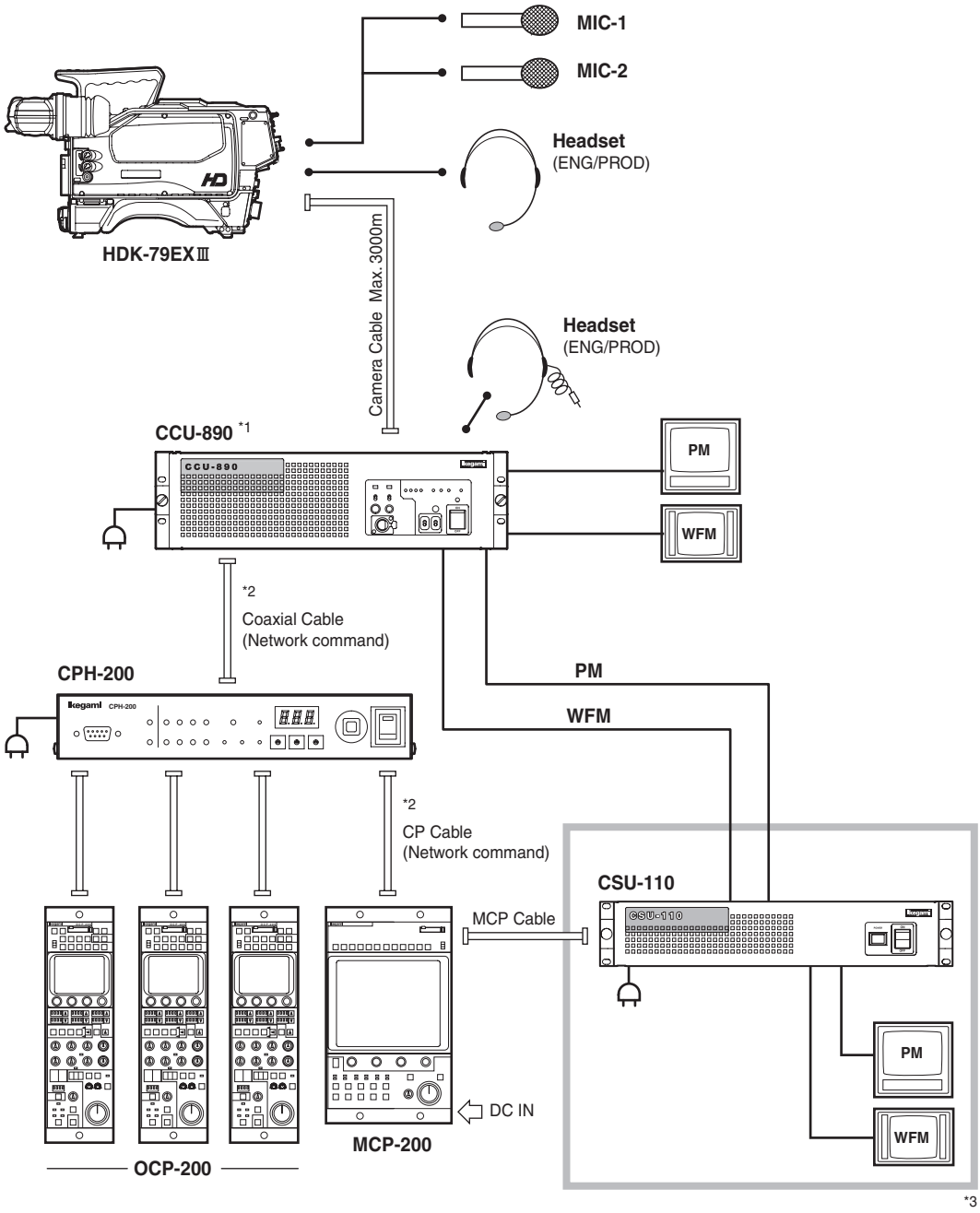
# 4.4 System Setup Diagram




Multiple Camera Operation

* When the OCP-200 is used, the maximum CP cable length is 80m.

## ■ *Network Operation*




*1 The CCU-890 can be operated when the network ID of the rotary switch on the PULSE module on the front of the CCU corresponds to the CCU No. set by an OPC or MCP.

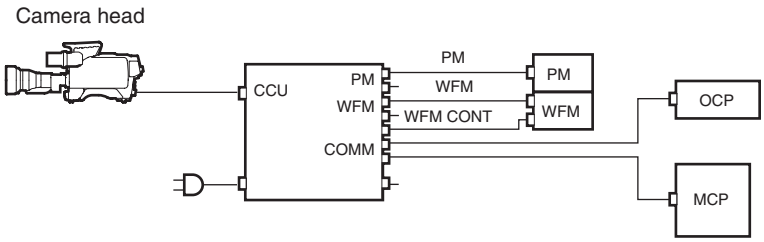
*2 For the maximum and minimum extension length of the cables, refer to "BSH-200/CPH-200 Setup Manual."

*3 For network operation, commands can be selected from an OCP, MCP, or CPH. For video signals, the operating configuration to select the signals from the CSU-110 is also accepted.
However, an external power supply (DC voltage) is required when the MCP-200 is used and the extension length of the cables is long.

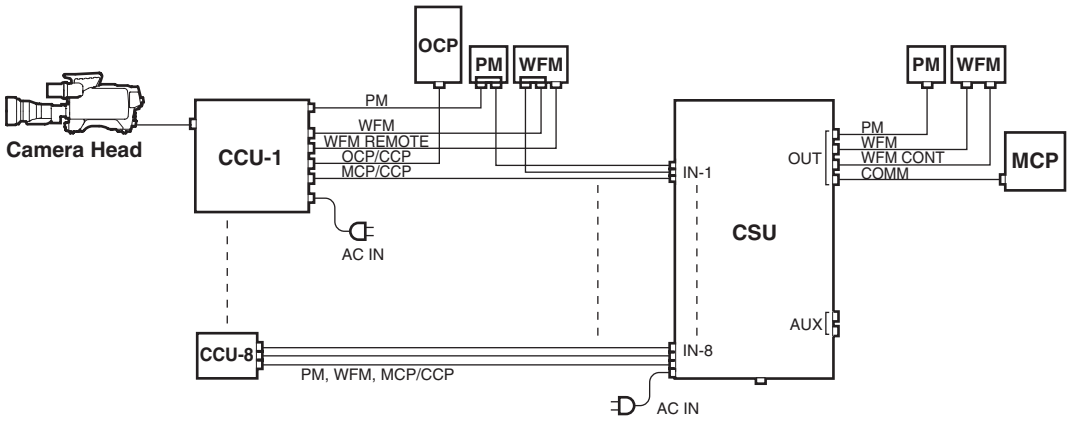
# 4.5 Operating Systems

You can choose and operate each control panel to be connected to the CCU-890, for your purpose.

## ■ *Example of Standard Configuration (1 camera head)*

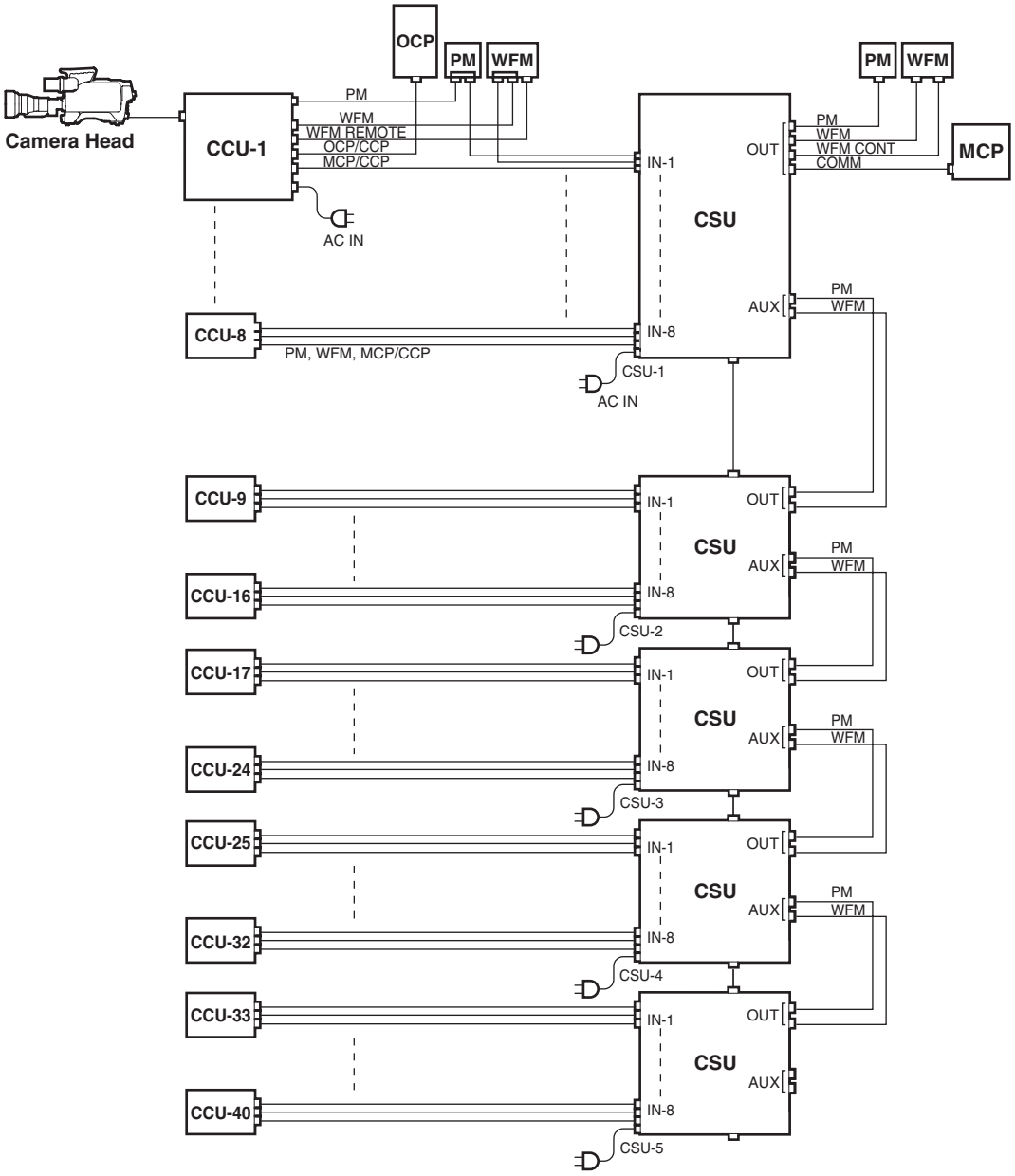



## ■ *Example of Configuration Up to 8 Camera Heads*



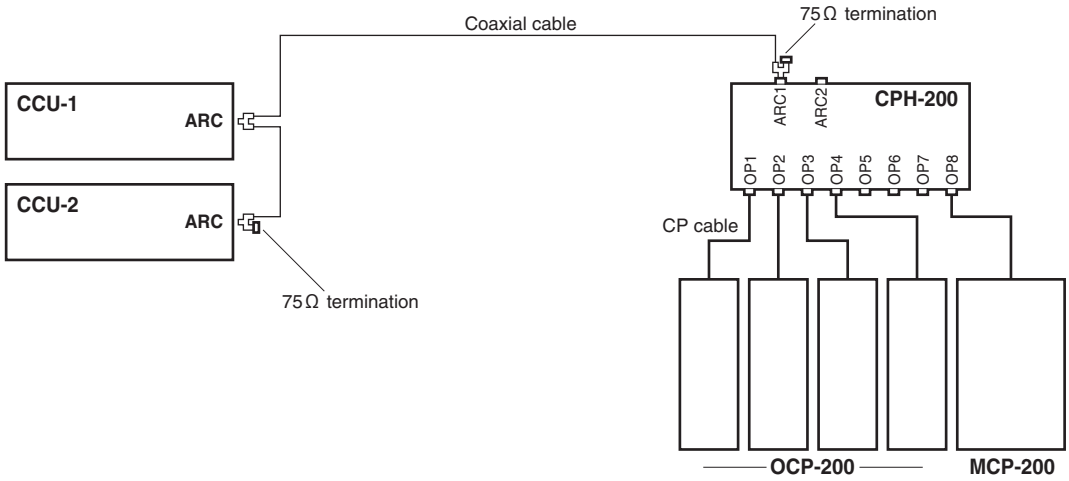
## ■ *Example of Configuration Up to 40 Camera Heads*

The number of camera head to be selected varies according to the MCP to be used.



## ■ *Network Connection (Basic bus connection)*

This connection configuration is available only for network-enabled CCU/BS such as the CCU-890.

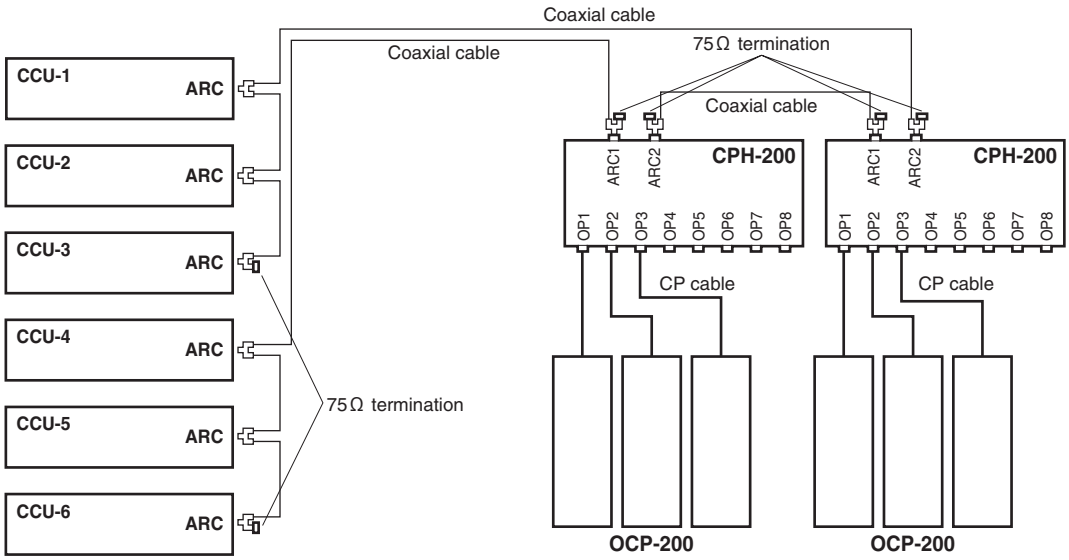



***Note:***

- The OCP/CCP connector and MCP/CCP connector on the CCU cannot be used with the network connector at the same time in this configuration.
- This product cannot be connected to the BSH-200 (BS HUB).

## ■ *Network Connection (Expansion bus connection)*

This connection configuration is available only for network-enabled CCU/BS such as the CCU-890.




***Note:***

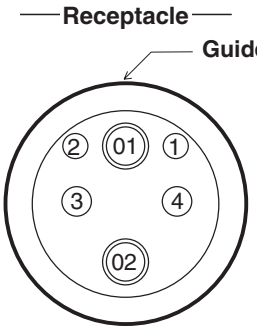
- The OCP/CCP connector and MCP/CCP connector on the CCU cannot be used with the network connector at the same time in this configuration.
- This product cannot be connected to the BSH-200 (BS HUB).

# 4.6 External Connections

## ■ *CAMERA Connector*

Used to connect the camera head to its CCU.
Two types of CAMERA connector are available.

### [3K Series]

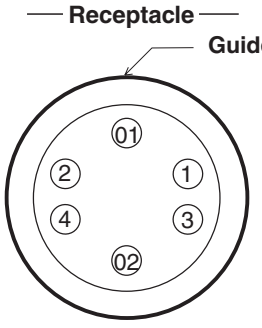



Insertion Side

**Camera head side : FXW. 3K.**
**Cable side : PUW. 3K.**

| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| ⑪ | OPT H - C | Optical signal Camera -> CCU | IN | |
| ⑫ | OPT C - H | Optical signal CCU -> Camera | OUT | |
| ① | MTL C - H | Control signal CCU -> Camera | OUT | |
| ② | MTL H - C | Control signal Camera -> CCU | IN | |
| ③ | AC (H) | AC voltage (H) supplied from CCU to the camera head | OUT | |
| ④ | AC (C) | AC voltage (C) supplied from CCU to the camera head | OUT | |

### [OPS Series]



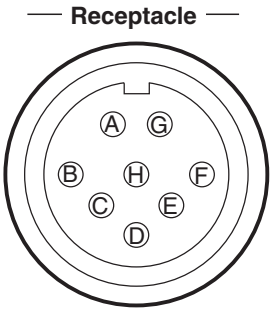

Insertion Side

**Camera head side : OPS-PR**
**Cable side : OPS-J**

| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| ⑪ | OPT H - C | Optical signal Camera -> CCU | IN | |
| ⑫ | OPT C - H | Optical signal CCU -> Camera | OUT | |
| ① | AC (C) | AC voltage (C) supplied from CCU to the camera head | OUT | |
| ② | AC (H) | AC voltage (H) supplied from CCU to the camera head | OUT | |
| ③ | MTL H - C | Control signal Camera -> CCU | IN | |
| ④ | MTL C - H | Control signal CCU -> Camera | OUT | |

## ■ *POWER CONT Connector*

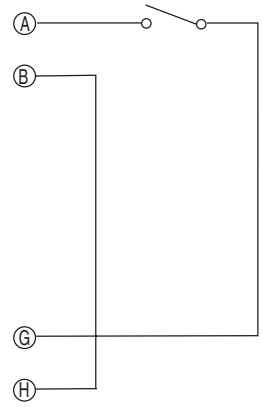
Used to control ON and OFF of the power of the camera head and the CCU from the OCP.




**Insertion Side**

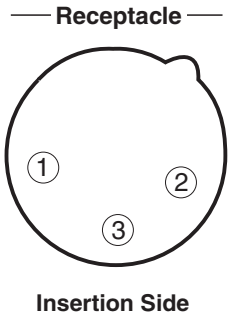
**Camera head side : R05-R8F**
**Cable side : R05-PB8M (8-pin male plug)**

| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| Ⓐ | PWR CONT (H) | CCU power ON/OFF control signal input (H) | IN | |
| Ⓑ | HP ON / OFF | Camera head power ON/OFF control signal input | IN | |
| Ⓒ | N . C | ——————— | — | |
| Ⓓ | N . C | ——————— | — | |
| Ⓔ | N . C | ——————— | — | |
| Ⓕ | N . C | ——————— | — | |
| Ⓖ | PWR CONT (C) | CCU power ON/OFF control signal input (C)) | IN | |
| Ⓗ | GND | Ground for camera head power ON/OFF control signal | GND | |



## ■ *MIC-1 OUT Connector and MIC-2 OUT Connector*

Used for microphone output.

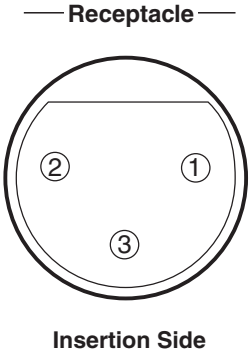



**Camera head side : HA16RM-3PE (76)**
**Cable side : XLR-3-11C (3-pin female plug) or equivalent**

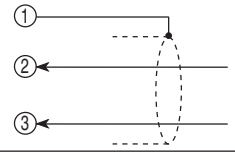
| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| ① | MIC (S) | Shield for MIC output | GND | |
| ② | MIC (H) | MIC (H) line balanced output | OUT | |
| ③ | MIC (C) | MIC (C) line balanced output | OUT | |

## ■ *AUD TRUNK Connector*

Used to receive AUDIO TRUNK line signal.



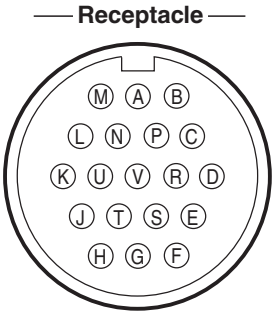

**Camera head side : HA16PRM-3SE (71)**
**Cable side : XLR-3-12C (3-pin male plug) or equivalent**

| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| ① | SHIELD | Shield for AUDIO TRUNK signal | GND |  |
| ② | AUD T IN (H) | AUDIO TRUNK (H) line balanced input | IN | |
| ③ | AUD T IN (C) | AUDIO TRUNK (C) line balanced input | IN | |

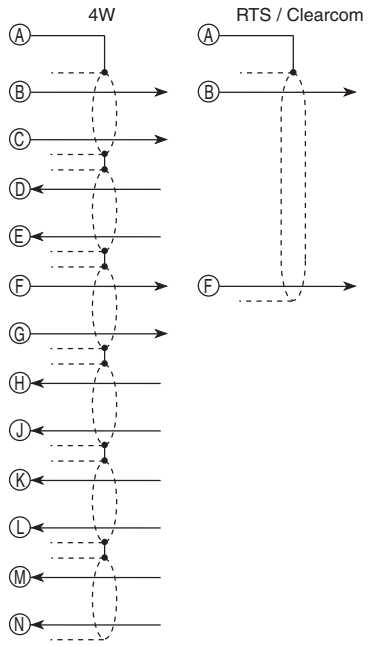
## ■ *INTERCOM Connector*

Used to connect an external intercom system.
Two types of INTERCOM connector are available.

### [BTA S-1005B-compliant type] (*option)



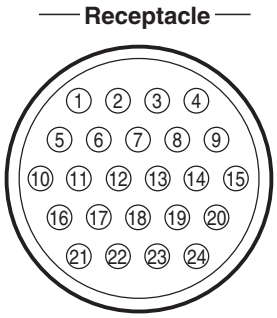

**Camera head side : KPT 02E14-19P**
**Cable side : KPT 06F14-19S (19-pin female plug) or equivalent**

| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| Ⓐ | SHIELD | Shield for each intercom and audio signal | GND |  |
| Ⓑ | PROD C - S (H) | PROD intercom output (H) from CCU to system | OUT | |
| Ⓒ | PROD C - S (C) | PROD intercom output (C) from CCU to system | OUT | |
| Ⓓ | PROD S - C (H) | PROD intercom input (H) from system to CCU | IN | |
| Ⓔ | PROD S - C (C) | PROD intercom input (C) from system to CCU | IN | |
| Ⓕ | ENG C - S (H) | ENG intercom output (H) from CCU to system | OUT | |
| Ⓖ | ENG C - S (C) | ENG intercom output (C) from CCU to system | OUT | |
| Ⓗ | ENG S - C (H) | ENG intercom input (H) from system to CCU | IN | |
| Ⓙ | ENG S - C (C) | ENG intercom input (C) from system to CCU | IN | |
| Ⓚ | PGM - 1 (H) | PGM-1 audio input (H) | IN | |
| Ⓛ | PGM - 1 (C) | PGM-1 audio input (C) | IN | |
| Ⓜ | PGM - 2 (H) | PGM-2 audio input (H) | IN | |
| Ⓝ | PGM - 2 (C) | PGM-2 audio input (C) | IN | |
| Ⓟ | N . C | ———————— | — | |
| Ⓡ | R TALLY (+) | R TALLY signal input (+) | IN | |
| Ⓢ | G TALLY (+) | G TALLY signal input (+) | IN | |
| Ⓣ | N . C | ———————— | — | |
| Ⓤ | N . C | ———————— | — | |
| Ⓥ | TALLY COM | Ground for R TALLY signal input or G TALLY signal input | GND | |



When only one external line is provided, the ENG line is used.

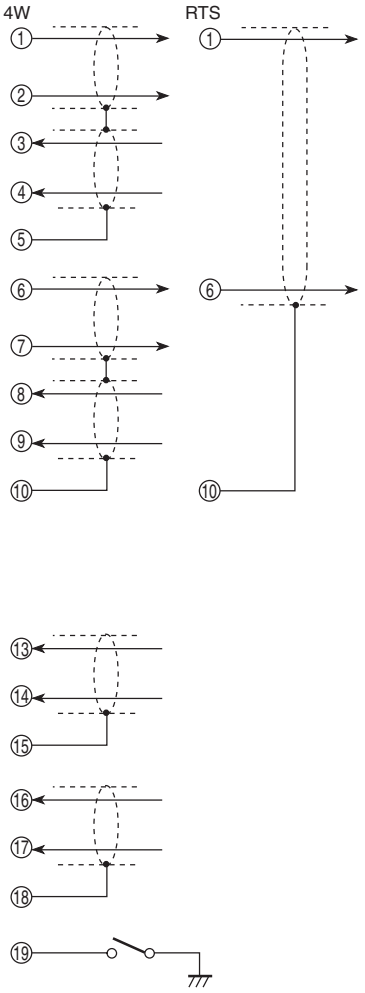
## [24-pin type]




Insertion Side

**Camera head side : TRC01-C25R24MA**
**Cable side : TRC01-25P24FA (24-pin female plug) or equivalent**

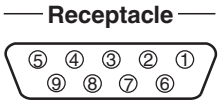
| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| ① | PROD C - S (H) | PROD intercom output (H) from CCU to system | OUT | |
| ② | PROD C - S (C) | PROD intercom output (C) from CCU to system | OUT | |
| ③ | PROD S - C (H) | PROD intercom input (H) from system to CCU | IN | |
| ④ | PROD S - C (C) | PROD intercom input (C) from system to CCU | IN | |
| ⑤ | PROD (S) | Shield for PROD intercom | GND | |
| ⑥ | ENG C - S (H) | ENG intercom output (H) from CCU to system | OUT | |
| ⑦ | ENG C - S (C) | ENG intercom output (C) from CCU to system | OUT | |
| ⑧ | ENG S - C (H) | ENG intercom input (H) from system to CCU | IN | |
| ⑨ | ENG S - C (C) | ENG intercom input (C) from system to CCU | IN | |
| ⑩ | ENG (S) | Shield for ENG intercom | GND | |
| ⑪ | N . C | ——— | — | |
| ⑫ | N . C | ——— | — | |
| ⑬ | PGM - 1 (H) | PGM-1 audio input (H) | IN | |
| ⑭ | PGM - 1 (C) | PGM-1 audio input (C) | IN | |
| ⑮ | PGM - 1 (S) | Shield for PGM-1 audio | GND | |
| ⑯ | PGM - 2 (H) | PGM-2 audio input (H) | IN | |
| ⑰ | PGM - 2 (C) | PGM-2 audio input (C) | IN | |
| ⑱ | PGM - 2 (S) | Shield for PGM-2 audio | GND | |
| ⑲ | REMOTE ISOLATE OFF | ON/OFF for REMOTE ISOLATE<br>OFF: OPEN, ON: GND | IN | |
| ⑳ | N. C | ——— | — | |
| ㉑ | N. C | ——— | — | |
| ㉒ | N. C | ——— | — | |
| ㉓ | N. C | ——— | — | |
| ㉔ | N. C | ——— | — | |




When the intercom system to be connected is one line, the ENG line is used.

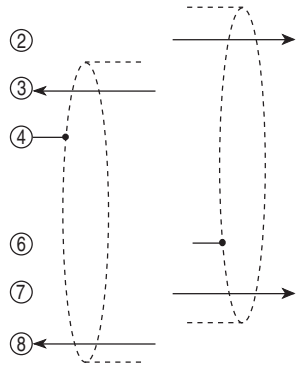
## ■ *RS422 TRUNK Connector*

This is an input/output connector for RS422 serial communication standard.



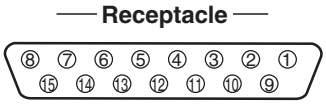

**Insertion Side**

**Camera head side : DE-9SF-T-N**
**Cable side : D-sub connector (9-pin male plug and inch screws)**

| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| ① | N . C | ——— | — |  |
| ② | TR1 OUT (-) | Digital data output (-) | OUT | |
| ③ | TR1 IN (+) | Digital data input (+) | IN | |
| ④ | IN (S) | SHIELD | — | |
| ⑤ | N . C | ——— | — | |
| ⑥ | OUT (S) | SHIELD | — | |
| ⑦ | TR1 OUT (+) | Digital data output (+) | OUT | |
| ⑧ | TR1 IN (-) | Digital data input (-) | IN | |
| ⑨ | GND | Ground for input/output signal | GND | |

## ■ *AUX Connector*

Used to control external devices (to support the special specification).

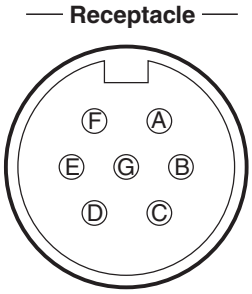



**Camera head side : DA-15SF-T-N**
**Cable side : D-sub connector (15-pin male plug and inch screws)**

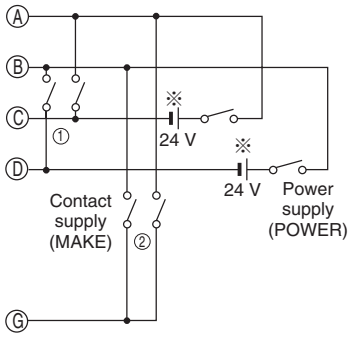
| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| ① | WFM CT0 | Control signal output | OUT | |
| ② | WFM CT1 | Control signal output | OUT | |
| ③ | WFM CT2 | Control signal output | OUT | |
| ④ | N . C | ——————— | — | |
| ⑤ | PREVIEW SW | Preview signal output (ON: GND) | — | |
| ⑥ | PREVIEW COM | Common preview signal output | — | |
| ⑦ | N . C | ——————— | — | |
| ⑧ | WFM CT3 | Control signal output | OUT | |
| ⑨ | GND | Ground for control signal output | RET | |
| ⑩ | N . C | ——————— | (OUT) | |
| ⑪ | N . C | ——————— | — | |
| ⑫ | WFM CT4 | Control signal output | OUT | |
| ⑬ | WFM CT5 | Control signal output | OUT | |
| ⑭ | WFM CT6 | Control signal output | OUT | |
| ⑮ | WFM CT7 | Control signal output | OUT | |

## ■ *TALLY IN Connector*

**Used to receive tally control signal.**




**Camera head side : PRC 03-25A10-7M**
**Cable side : PRC 03-12A10-7F10.5 or equivalent**

| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| Ⓐ | R TALLY (+) | R TALLY input (+) | IN |  |
| Ⓑ | G TALLY (+) | G TALLY input (+) | IN | |
| Ⓒ | TALLY (-) | TALLY input (-) | IN | |
| Ⓓ | TALLY (-) | TALLY input (-) | IN | |
| Ⓔ | Y TALLY (+) | Y TALLY input (+) | IN | |
| Ⓕ | $\overline{\text{HPIND}}$ | HEAD POWER ON indicator output | OUT | |
| Ⓖ | GND | Common TALLY | GND | |



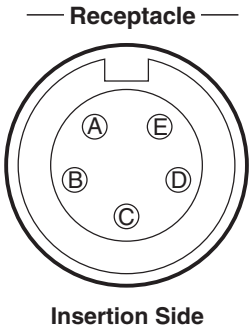
- Control DC input voltage (*) is in a nonpolarized state.
- MAKE can use either of ① and ② .
- Set the tally input mode (MAKE/POWER) by the switch on the AUX-A module.
- $\overline{\text{HPIND}}$ function is output from the open collector.

***Note:***

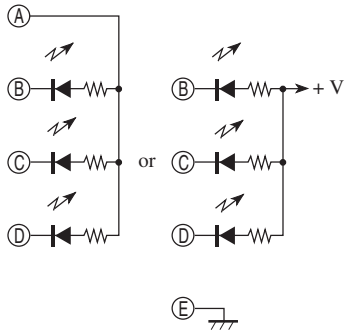
Y TALLY only supports contact supply (MAKE). Power supply (POWER) is currently not supported.

## ■ *TALLY OUT Connector*

Used to send TALLY control signal.




**Camera head side : PRC05-RB5F1**
**Cable side : PRC 05-P5M or equivalent**

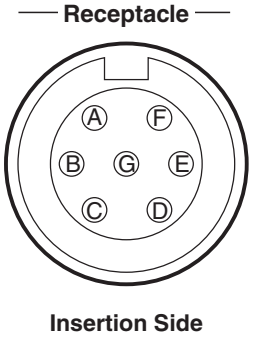
| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| Ⓐ | +12 V OUT | +12V power output | OUT |  |
| Ⓑ | R TALLY | R TALLY output (ON: GND) | OUT | |
| Ⓒ | Y TALLY/COM TALLY | Y TALLY output or COMMON TALLY output (ON: GND) | OUT | |
| Ⓓ | G TALLY | G TALLY output (ON: GND) | OUT | |
| Ⓔ | TALLY GND | Ground for TALLY signal | GND | |



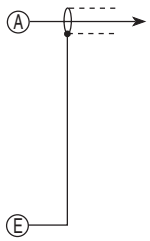
- Select one from Y TALLY output or COMMON TALLY output for the pin C.
  Use of COMMON TALLY OUT enables to control both R TALLY and G TALLY simultaneously.

## ■ *WFM REMOTE Connector*

Used to send STAIR waveform signal for waveform monitor. (for NTSC waveform monitor)




**Camera head side : PRC 03-25A10-7F**
**Cable side : PRC 03-12A10-7M10.5 or equivalent**

| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| Ⓐ | STAIR OUT | STAIR signal output | OUT |  |
| Ⓑ | SEQ ON | Output of control signal which selects SEQ | OUT | |
| Ⓒ | NC | ——————— | — | |
| Ⓓ | -15 V RET | -15 V RET voltage | RET | |
| Ⓔ | GND | Ground for WFM control signal | GND | |
| Ⓕ | EXPAND | Ground for EXPAND control signal | OUT | |
| Ⓖ | -15 V IN | -15V input voltage | IN | |

Depending on the waveform monitor to be used, the method for the external connection varies.
Cable connection examples for some waveform monitors are shown below.

**[1730/1731]**

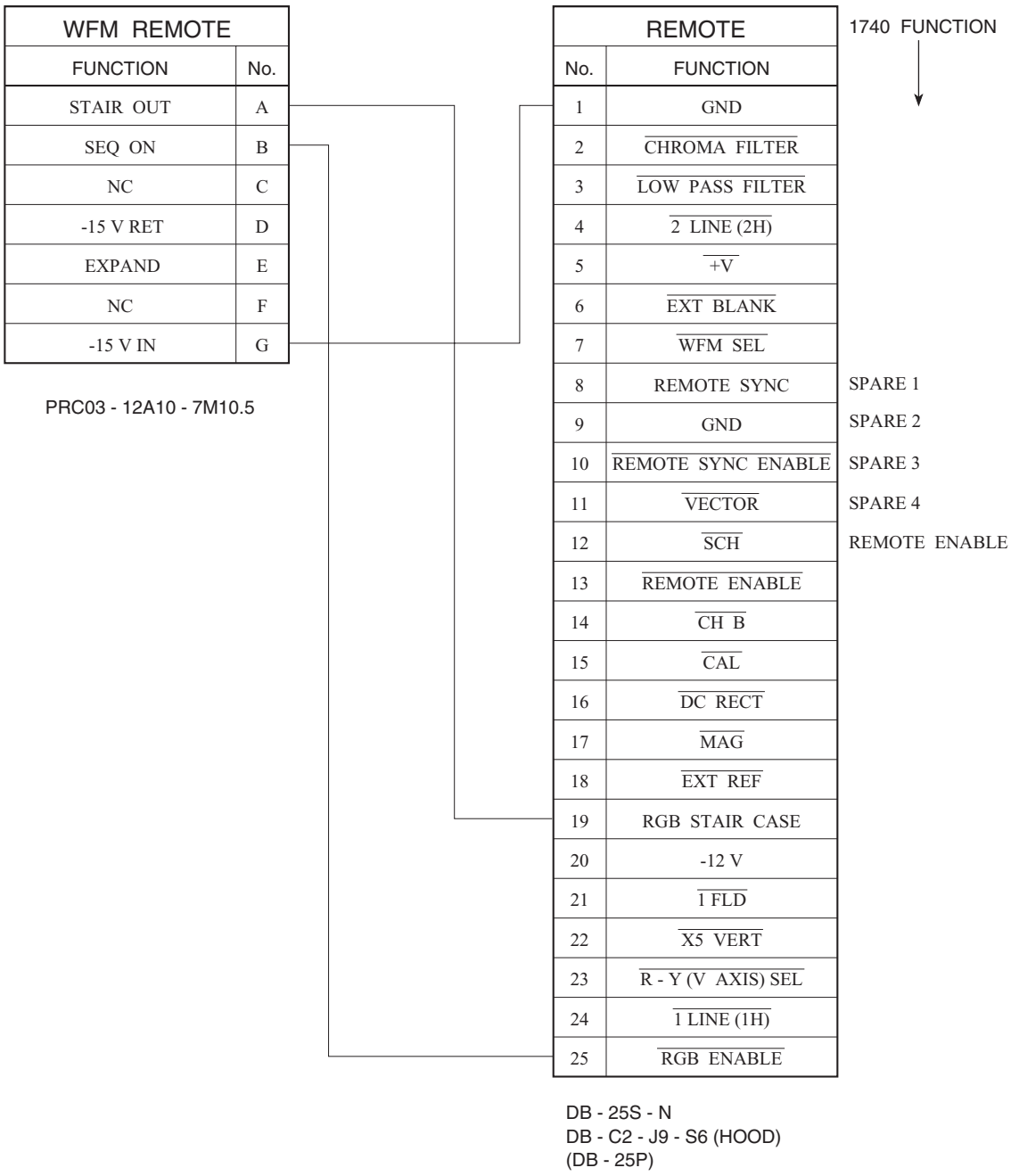
| WFM REMOTE | |
|---|---|
| FUNCTION | No. |
| STAIR OUT | A |
| SEQ ON | B |
| NC | C |
| -15 V RET | D |
| EXPAND | E |
| NC | F |
| -15 V IN | G |

PRC03 - 12A10 - 7M10.5

| REMOTE | |
|---|---|
| No. | FUNCTION |
| 1 | RGB STAIR |
| 2 | $\overline{\text{RGB ENABLE}}$ |
| 3 | $\overline{\text{1 LIN / 1 FLD}}$ |
| 4 | $\overline{\text{REMOTE SYNC ENABLE}}$ |
| 5 | $\overline{\text{RECALL 2}}$ |
| 6 | $\overline{\text{RECALL 3}}$ |
| 7 | $\overline{\text{RECALL 1}}$ |
| 8 | $\overline{\text{RECALL 4}}$ |
| 9 | GND |
| 10 | REMOTE SYNC IN |
| 11 | $\overline{\text{STORE}}$ |
| 12 | $\overline{\text{PRESET 4}}$ |
| 13 | $\overline{\text{PRESET 1}}$ |
| 14 | $\overline{\text{PRESET 2}}$ |
| 15 | $\overline{\text{PRESET 3}}$ |

DA-15P : JAE or AMP
DA-C1-J10-36 (HOOD) : JAE or
206471-1 (HOOD) : AMP

**[1740/1741/1750/1751]**



**[1740A/1750A]**

| WFM REMOTE | |
|---|---|
| FUNCTION | No. |
| STAIR OUT | A |
| SEQ ON | B |
| NC | C |
| -15 V RET | D |
| EXPAND | E |
| NC | F |
| -15 V IN | G |

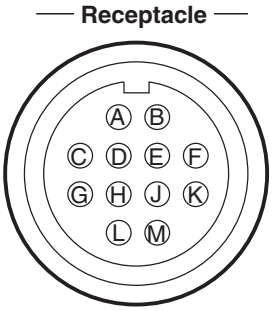
PRC03 - 12A10 - 7M10.5

| REMOTE | |
|---|---|
| No. | FUNCTION |
| 1 | RGB/YRGB STAIR CASE |
| 2 | GND |
| 3 | STAIR CASE / EXT |
| 4 | EXT BLANK IN |
| 5 | REMOTE SYNC IN |
| 6 | REMOTE SYNC ENABLE |
| 7 | GND |
| 8 | +Y AUDIO IN |
| 9 | -Y AUDIO IN |
| 10 | -X AUDIO IN |
| 11 | +X AUDIO IN |
| 12 | +TIME CODE IN |
| 13 | -TIME CODE IN |
| 14 | GND |
| 15 | NC |
| 16 | NC |
| 17 | PRESET1 |
| 18 | PRESET2 |
| 19 | PRESET3 |
| 20 | PRESET4 |
| 21 | PRESET5 |
| 22 | PRESET6 |
| 23 | PRESET7 |
| 24 | PRESET8 |
| 25 | STORE |

DB - 25P - N
DB - C8 - J10 - B2-1 (HOOD)
(DB - 25S)

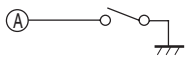
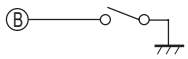
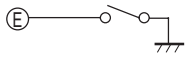
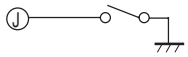
## ■ *SCAN CONT Connector*

Used to receive control signal from an external system.




**Insertion Side**

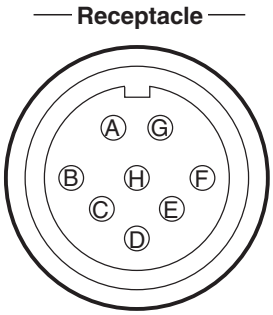
**Camera head side : PRC05-RB12F1**
**Cable side : PRC05-PB12M1**

| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| Ⓐ | SW'BLE ENABLE | Enables the function which switches the aspect ratio<br>Enable: GND, Disable: OPEN | IN |  |
| Ⓑ | 16 : 9 ON | Control over switch of aspect ratio (valid only when pin Ⓐ is grounded) 16:9 : GND, 4:3 : OPEN | IN |  |
| Ⓒ | N . C | ——— | — | |
| Ⓓ | N . C | ——— | — | |
| Ⓔ | LETTER BOX ON | Control over letter box<br>ON : GND, OFF : OPEN | IN |  |
| Ⓕ | N . C | ——— | — | |
| Ⓖ | N . C | ——— | — | |
| Ⓗ | N . C | ——— | — | |
| Ⓙ | TRIAX ON | CCU triax specification control signal (ON: GND) | — |  |
| Ⓚ | N . C | ——— | — | |
| Ⓛ | +12 V | DC +12V power output | OUT | |
| Ⓜ | GND | Ground for DC +12V power output | GND | |

- TRIAX ON for the pin J is an optional function.

## ■ *OCP/CCP Connector and MCP/CCP Connector*

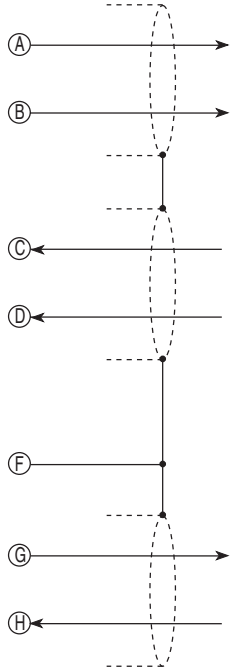
Used to connect each type of control panel.




**Insertion Side**

**Camera head side : RPC05-RB8F1**
**Cable side : PRC05-PB8M or equivalent**

| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| Ⓐ | HED (+) | Digital data input (+) from CCU to control panel | OUT | |
| Ⓑ | HED (-) | Digital data input (-) from CCU to control panel | OUT | |
| Ⓒ | HEC (+) | Digital data input (+) from control panel to CCU | IN | |
| Ⓓ | HEC (-) | Digital data input (-) from control panel to CCU | IN | |
| Ⓔ | +12 V | DC +12V power output for control panel | OUT | |
| Ⓕ | +12 V RET | DC +12V power RET | GND | |
| Ⓖ | INC C-CP | Audio signal output from CCU to control panel | OUT | |
| Ⓗ | INC CP-C | Audio signal input from control panel to CCU | IN | |



# CCU SETTINGS and ADJUSTMENT

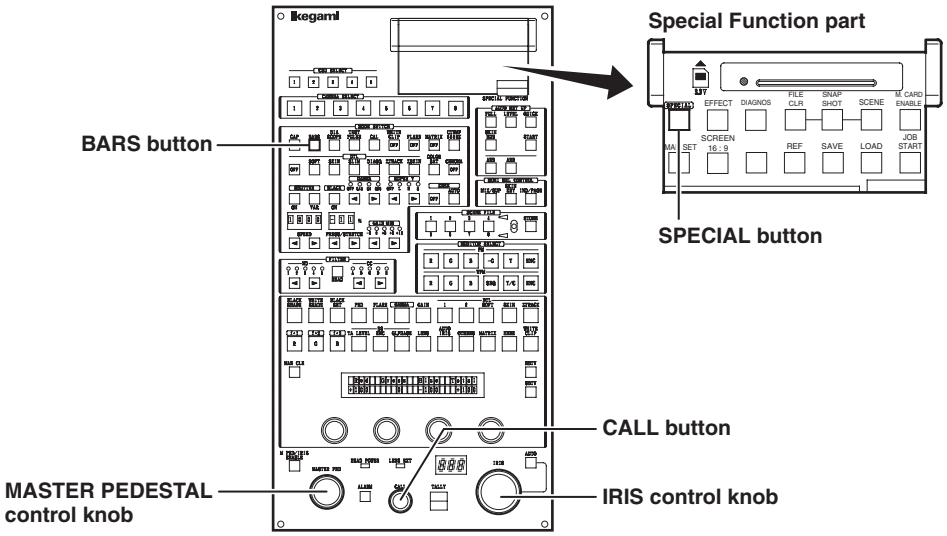
5

# 5.1 Settings from the CCU Menu

The menu operation for the CCU-890 is performed from the MCP or OCP. The setting of each item is performed by displaying the main menu/submenu screen on the PM screen.

## Basic Operation of the Menu (Operation from the MCP)

The menu operation for the CCU-890 is performed from the MCP. The setting of each item is performed by displaying the main menu/submenu on the Picture Monitor (PM).




| | | |
|---|---|---|
| SPECIAL button/BARS button | : | Pressing the SPECIAL button then pressing the BARS button will switch to the menu mode and display the menu. |
| CALL button | : | Pressed to confirm the selection and setting. |
| MASTER PEDESTAL control knob/IRIS control knob | : | Used to select a setting item. |

### ■ *Displaying the Main Menu*

This section explains how to display the main menu on the PM screen.

**1** Press the SPECIAL button on the MCP.

**2** Press the BARS button.

The main menu appears on the PM screen.

```
*** CCU-890 MENU ***
QUIT
BARS TITLE
HD/DC/UC/VID/AUD CONT
RET VIDEO FORMAT
INFORMATION
OTHERS
   --- OPE. GUIDE ---
 SELECT   :  (SEL) KNOB
 SELECT   :  (NEXT) KNOB
 ENTER    :  (ENTER) KEY
```

***Note:***

The flashing item on the main menu indicates the currently focused item. This flashing status is called the "flashing cursor" hereafter (displayed in gray in the screen example).

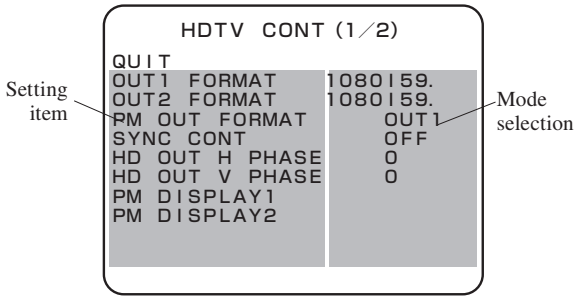
## ■ *Displaying the Submenu*

You can perform various settings on the submenu that is displayed from the main menu on the PM screen.

**1** Make sure that the main menu is displayed on the PM screen.

**2** Turn the MASTER PEDESTAL control knob or IRIS control knob on the MCP to position the flashing cursor on the setting item, and press the CALL button.

The submenu appears, on which you can perform various settings.




***CAUTION:***

Depending on the functions of the setting items, some items change the setting when the knob is turned; others change the setting when the CALL button is pressed.

***Note:***

- To return to the main menu, select "QUIT" and press the CALL button.
- The flashing item on the submenu indicates the currently focused item. This flashing status is called the "flashing cursor" hereafter (displayed in gray in the display example).
- Each time the CALL button is pressed, the flashing cursor switches to setting item -> mode selection -> setting item -> mode selection and so on.

## ■ *Exiting the Menu*

This section explains how to exit the main menu/submenu on the PM screen.

**1** Exit the menu screen in the following two ways:

a) Select "QUIT" on the CCU main menu and press the CALL button.
b) Press the BARS button.
The main menu/submenu disappears.

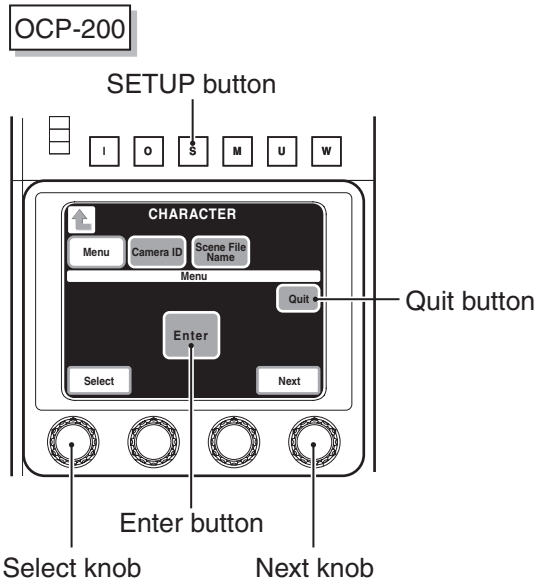
# Basic Operation of the Menu (Operation from the OCP-200)

## ■ *Displaying the Main Menu*

This section explains how to display the main menu on the PM screen.

***1*** Press the SETUP button among the FUNCTION buttons on the OCP-200.

The screen shown in Fig.1 is displayed on the liquid crystal display (LCD) of the OCP.




***2*** Press the CHARACTER button on the LCD.

The screen shown in Fig.2 is displayed.

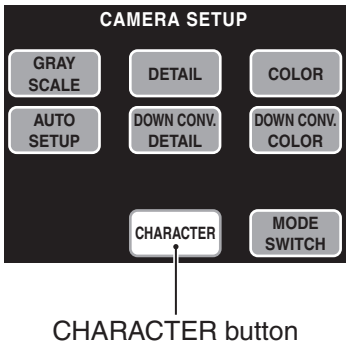



**Fig.1**

***3*** Press the Menu button on the LCD for a while.

The menu screen (Fig.3) appears on the LCD, and the main menu screen appears on the PM.

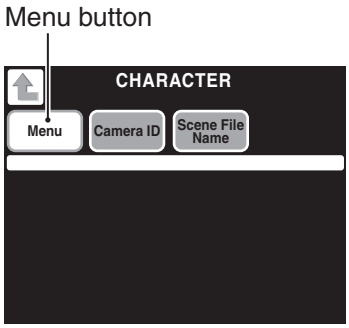



**Fig.2**

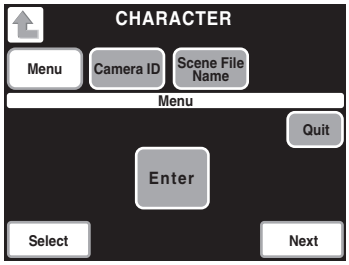



**Fig.3 (Menu screen)**

## ■ *Displaying the Submenu*

You can perform various settings on the submenu that is displayed from the main menu on the PM screen.

**1** Make sure that the main menu screen is displayed on the PM screen.

**2** Turn the Select knob or Next knob to position the flashing cursor on the setting item, and press the Enter button on the LCD.

The submenu appears, on which you can perform various settings.

***CAUTION:***

Depending on the functions of the setting items, some items change the setting when the knob is turned; others change the setting when the Enter button on the LCD is pressed.

## ■ *Exiting the Menu*

This section explains how to exit the main menu/submenu on the PM screen.

**1** Exit the menu screen in the following ways:

a) Select "QUIT" on the CCU main menu.
b) Press the QUIT button on the LCD.
c) Press the BARS button on the OCP.

# Menu Configuration

The following lists the CCU-890 menu configuration. Menu for the standard specification and menu for the DUAL LINK (HS TYPE) specification are available.

***Reference:***

For the menu for the DUAL LINK (HS TYPE) specification, refer to "■ Menu Configuration for DUAL LINK (HS TYPE) Specification" (page 91).

## ■ *Menu Configuration for Standard Specification*

| Main menu name | Submenu name | Item | Description |
|---|---|---|---|
| **QUIT** | | | Exits the main menu. |
| **BARS TITLE** | | | |
| | QUIT | | Returns to the main menu. |
| | DISPLAY | | Turns ON/OFF the BARS TITLE character display. |
| | TITLE EDIT | | Edits the BARS TITLE characters. |
| | POSITION | | Sets the display position of the BARS TITLE characters. |
| **HD/DC/UC/VID/AUD CONT** | | | |
| | QUIT | | Returns to the main menu. |
| | HDTV CONT (1/2) | | |
| | | QUIT | Returns to the submenu HD/DC/UC/VID/AUD CONT. |
| | | OUT1 FORMAT | Sets HD-SDI output1 (2 channels) formats. |
| | | OUT2 FORMAT | Sets HD-SDI output2 (2 channels) formats. |
| | | PM OUT FORMAT | Sets HD-SDI PM output (2 channels) formats associating with either OUT1 or OUT2. |
| | | SYNC CONT | Sets the vertical synchronization phase in the HDTV format and in the SDTV format each. |
| | | HD OUT H PHASE | Adjusts the horizontal phase of the output GENLOCK signal to match the input GENLOCK signal. |
| | | HD OUT V PHASE | Adjusts the vertical phase of the output GENLOCK signal to match the input GENLOCK signal. |
| | | PM DISPLAY1 | Sets the DTL for HD-SDI PM output. (* USA option) |
| | | PM DISPLAY2 | Sets various markers added to HD-SDI PM output. (* USA option) |
| | HDTV CONT (2/2) | | |
| | | QUIT | Returns to the submenu HD/DC/UC/VID/AUD CONT. |
| | | HV SLIM DTL TYPE | Sets a horizontal and/or vertical SLIM DTL for HDTV. |
| | | V SLIM DTL FREQ | Sets a boost band and boost frequency for HDTV. |
| | | OUT1 PHASE | Adjusts the horizontal phase of HD-SDI output1 (2 channels). |
| | | OUT2 PHASE | Adjusts the horizontal phase of HD-SDI output2 (2 channels). |
| | | GBR PHASE | Adjusts the horizontal phase of HDTV GBR (analog) output. |
| | | PBPR FILTER | Sets filter characteristic of HDTV color-difference signals. |
| | | V DTL FILTER | Turns ON/OFF a vertical DTL filter. |
| | | FINE DTL | Sets the FINE DTL. |
| | DOWN CONV CONT (1/3) | | |
| | | QUIT | Returns to the submenu HD/DC/UC/VID/AUD CONT. |
| | | 10 FIELD ID SIG | Selects whether to embed pulse signals (level 40IRE), which counted 1 to 5 frames on 15H and 278H, in the ENC signal (SMPTE 318M-compliant). |
| | | SCREEN MODE | Sets the screen display mode. |
| | | LETTER BOX MODE | Sets the letterbox mode. |
| | | H FILTER | Sets the horizontal filter for SDTV output. |
| | | V FILTER | Sets the vertical filter for SDTV output. |
| | | MOTION DETECT | Sets the motion detection of the down-converter. |
| | | HV SLIM DTL TYPE | Sets a horizontal and/or vertical SLIM DTL for SDTV. |
| | | V SLIM DTL FREQ | Sets a boost band and boost frequency for SDTV. |
| | | FINE DTL | Sets the FINE DTL. |
| | DOWN CONV CONT (2/3) | | |
| | | QUIT | Returns to the submenu HD/DC/UC/VID/AUD CONT. |
| | | SC PHASE COARSE | Coarse adjusts the sub carrier phase. |
| | | SC PHASE FINE | Fine adjusts the sub carrier phase. |
| | | H PHASE | Sets horizontal phases for all SDTV outputs (digital and analog). |
| | | V PHASE | Sets vertical phases for all SDTV outputs (digital and analog). |
| | | PHASE ADJ SDI | Adjusts the horizontal phase of the SD-SDI signal. |
| | | PHASE ADJ ENC | Adjusts the horizontal phase of the ENC signal. |
| | | PHASE ADJ GBR | Adjusts the horizontal phase of the analog GBR signal. |
| | | PHASE ADJ PM | Adjusts the horizontal phase of the PM (digital) signal. |
| | | PHASE ADJ WFM | Adjusts the horizontal phase of the WFM (digital) signal. |

- DOWN CONV CONT (3/3)
  - QUIT ..... Returns to the submenu HD/DC/UC/VID/AUD CONT
  - PM OUT1 ..... Selects the signal type for SD-PM output1.
  - PM OUT2 ..... Selects the signal type for SD-PM output2.
  - PM CHAR LEVEL ..... Sets the character level on the PM.
  - PM CHAR BG LEVEL ..... Sets the background level of characters on the PM.
  - PM DISPLAY1 ..... Sets the DTL for SD-SDI PM output. (* USA option)
  - PM DISPLAY2 ..... Sets various markers added to SD-SDI PM output. (* USA option)
- UP CONV CONT (1/2)
  - QUIT ..... Returns to the submenu HD/DC/UC/VID/AUD CONT.
  - SCREEN MODE ..... Sets the screen display mode.
  - LETTER BOX MODE ..... Sets the letterbox mode.
  - MOTION DETECT ..... Sets the motion detection of the up-converter.
  - OUT SEL ..... Sets monochrome/color of the return signal to the camera head.
- UP CONV CONT (2/2)
  - QUIT ..... Returns to the submenu HD/DC/UC/VID/AUD CONT.
  - DTL ..... Sets a DTL mode.
  - (DTL) H GAIN ..... Sets the horizontal gain of DTL.
  - (DTL) V GAIN ..... Sets the vertical gain of DTL.
  - (DTL) H CORING ..... Sets the horizontal coring of DTL.
  - (DTL) V CORING ..... Sets the vertical coring of DTL.
  - (DTL) H BOOST FREQ ..... Sets the horizontal boost frequency of DTL.
- VIDEO OUT CONT
  - QUIT ..... Returns to the submenu HD/DC/UC/VID/AUD CONT.
  - ANALOG OUT SEL1 / ANALOG OUT SEL2 ..... Sets the type of the analog component output.
  - ANALOG HDTV FMT ..... Sets the association with the format of either HD-SDI output1 or output2 when "HDTV" is set to the analog component output.
  - ANALOG SYNC ADD ..... Sets whether to add synchronization signals to the analog component output.
  - SYNC OUT SEL ..... Sets the format of the synchronization signal output.
  - SYNC OUT H PHASE ..... Adjusts the horizontal phase of external synchronization output.
  - SYNC OUT V PHASE ..... Adjusts the vertical phase of external synchronization output.
  - SYNC 2-3ID ADD ..... Sets whether to embed pulse signals, which counted 1 to 5 frames, in the SYNC output.
  - WFM OUT SEL ..... Sets the WFM outputs.
  - WFM OUT1 ..... Sets the type of the signal for WFM output1.
  - WFM OUT2 ..... Sets the type of the signal for WFM output2.
  - WFM HDTV FMT ..... Sets the association with the format of either HD-SDI output1 or output2 when "HDTV" is set to the WFM output.
- AUDIO CONT
  - QUIT ..... Returns to the submenu HD/DC/UC/VID/AUD CONT.
  - HD-SDI EMBED ..... Sets whether to embed audio signals to HD-SDI output.
  - HD-PM EMBED ..... Sets whether to embed audio signals to HD-SDI PM output.
  - SD-SDI EMBED ..... Sets whether to embed audio signals to SD-SDI output.
  - SD-PM EMBED ..... Sets whether to embed audio signals to SD PM output.
  - WFM EMBED ..... Sets whether to embed audio signals to WFM output.
  - MASTER DELAY ..... Sets the amount of delay for the audio signals of all channels.
  - HD SYS DELAY ..... Sets the amount of delay for the audio signals of HDTV channels.
  - SD SYS DELAY ..... Sets the amount of delay for the audio signals of SDTV channels.
  - DIGITAL DELAY ..... Sets the amount of delay of the digital audio output.
  - MIC1/2 OUT DELAY ..... Sets the amount of delay of MIC output.
- SETTING SELECT (* USA option)
  - STORE ..... Registers/calls set values for each menu item.
  - NUMBER ..... Selects the registration/call number.

**RET VIDEO FORMAT**

- QUIT ..... Returns to the main menu.
- FRAME SYNCHRO ..... Sets ON/OFF of the frame synchronization function.
- RET1 VIDEO FORMAT / RET2 VIDEO FORMAT / RET3 VIDEO FORMAT / RET4 VIDEO FORMAT ..... Sets the format of the return signal input to the camera head.
- V PHASE ..... Sets the vertical phase.

**INFORMATION**

- QUIT ..... Returns to the main menu.
- MODULE SW ..... Displays the switch setting status of the PULSE module and CONT/REF module.
- ROM VERSION ..... Displays the ROM version.
- CHECK SUM ..... Displays the ROM check sum.

**OTHERS**

- QUIT ..... Returns to the main menu.
- OTHERS (1/2)
  - QUIT ..... Returns to the submenu OTHERS.
  - HEAD MENU ..... Sets whether to control the CCU menu or camera head menu.
  - HDTV BARS TYPE ..... Sets the type of the HDTV color bar.
  - ARIB BARS TYPE ..... Sets the pattern of the ARIB bar.
  - SMPTE BARS TYPE1 ..... Sets the pattern of the SMPTE bar.
  - SMPTE BARS TYPE2
  - INCOM LINE SEL ..... Sets the number of intercom lines at the system side.
- OTHERS (2/2)
  - QUIT ..... Returns to the submenu OTHERS.
  - CAM PGM NO. ENA ..... Sets whether the CCU manages the camera program numbers.
  - CAM PGM NO. SET ..... Sets how to display the camera program numbers for the camera head and control panel.

# BARS TITLE

BARS TITLE sets the bars title related data.

***Reference:***

Refer to the manual for each control panel for details on how to set the bars title data.

```
  *** CCU-890 MENU ***
QUIT
BARS TITLE
HD/DC/UC/VID/AUD CONT
RET VIDEO FORMAT
INFORMATION
OTHERS
    --- OPE.  GUIDE ---
 SELECT    :   (SEL)  KNOB
 SELECT    :  (NEXT)  KNOB
 ENTER     :  (ENTER) KEY
```

Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the submenu "BARS TITLE," and press the CALL button.

```
** BARS TITLE ENTRY **
   →·QUIT
    ·DISPLAY: OFF
    ·TITLE EDIT
    ·POSITION
   --- OPE.  GUIDE ---
 MENU SEL :   [SEL]  KNOB

 ENTER    :  [ENTER]  KEY
```

The submenu "BARS TITLE ENTRY" is displayed, on which you can perform various settings.

# HDTV CONT (1/2)

HDTV CONT sets HDTV outputs.

```
  *** CCU-890 MENU ***
QUIT
BARS TITLE
HD/DC/UC/VID/AUD CONT
RET VIDEO FORMAT
INFORMATION
OTHERS
    --- OPE.  GUIDE ---
 SELECT    :   (SEL)  KNOB
 SELECT    :  (NEXT)  KNOB
 ENTER     :  (ENTER) KEY
```

Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the submenu "HD/DC/UC/VID/AUD CONT," and press the CALL button.

```
HD/DC/UC/VID/AUD CONT
QUIT
HDTV CONT (1/2)
HDTV CONT (2/2)
DOWN CONV CONT (1/3)
DOWN CONV CONT (2/3)
DOWN CONV CONT (3/3)
UP CONV CONT (1/2)
UP CONV CONT (2/2)
VIDEO OUT CONT
AUDIO CONT
SETTING SELECT
```

The submenu "HD/DC/UC/VID/AUD CONT" is displayed. Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "HDTV CONT (1/2)," and press the CALL button.

```
      HDTV CONT (1/2)
QUIT
OUT1 FORMAT    1080I59.
OUT2 FORMAT    1080I59.
PM OUT FORMAT       OUT1
SYNC CONT           OFF
HD OUT H PHASE      0
HD OUT V PHASE      0
PM DISPLAY1
PM DISPLAY2
```

The submenu "HDTV CONT (1/2)" is displayed, on which you can perform various settings.

| Setting Item | Set Value | Description |
|---|---|---|
| OUT1 FORMAT | 1080I59. | Sets the HD-SDI output1 (2 channels) format to "1080I59.94." |
| | 1080I59.PD | Sets the HD-SDI output1 (2 channels) format to "1080I59.94 2-3 pulldown." |
| | 1080P23.SF | Sets the HD-SDI output1 (2 channels) format to "1080P23.97 segment frame." |
| | 1080P23. | Sets the HD-SDI output1 (2 channels) format to "1080P23.97." |
| | 720P59. | Sets the HD-SDI output1 (2 channels) format to "720P59.94." |
| OUT2 FORMAT | Same as the OUT1 FORMAT. | Sets the HD-SDI output2 (2 channels) format. |
| PM OUT FORMAT | OUT1 | Sets the HD-SDI PM output (2 channels) format to the same format as OUT1. |
| | OUT2 | Sets the HD-SDI PM output (2 channels) format to the same format as OUT2. |
| SYNC CONT *1 | OFF | Each output SYNC signal in both the HDTV format and the SDTV format is in phase of each input SYNC signal. |
| | HD -90H | The output SYNC signal in the HDTV format is phase shifted by -90H of the input SYNC signal in the HDTV format, and the output SYNC signal in the SDTV format is in phase with the input SYNC signal in the SDTV format. |
| | SD +90H | The output SYNC signal in the SDTV format is phase shifted by +90H of the input SYNC signal in the SDTV format. |
| | SD +90H CL | The output SYNC signal in the SDTV format is phase shifted by +90H of the input SYNC signal in the SDTV format.<br>The phase difference between the video signal sent from the camera head and the SYNC signal of the video signal sent from the CCU-890 is delayed at least +6H to +8H. In this setting, when you switch the HDTV format signal to the return signal, the image on the viewfinder is less scrambled due to the switching. |
| | FD<br>(FRAME DELAY) | Each output SYNC signal in both the HDTV format and the SDTV format is in phase of each input SYNC signal.<br>The camera head operates in about 1 frame ahead. (The delay depends on transmission distance of the camera and the CCU.) |
| | HD FD -90H | The output SYNC signal in the HDTV format is phase shifted by -90H of the input SYNC signal in the HDTV format, and the output SYNC signal in the SDTV format is in phase with the input SYNC signal in the SDTV format.<br>The camera head operates in about 1 frame ahead. (The delay depends on transmission distance of the camera and the CCU.) |
| | SD FD +90H | The output SYNC signal in the SDTV format is phase shifted by +90H of the input SYNC signal in the SDTV format.<br>The camera head operates in about 1 frame ahead. (The delay depends on transmission distance of the camera and the CCU.) |
| | SD +120H | The output SYNC signal in the SDTV format is phase shifted by +120H of the input SYNC signal in the SDTV format. |
| | SD +120H CL | The output SYNC signal in the SDTV format is phase shifted by +120H of the input SYNC signal in the SDTV format.<br>The phase difference between the video signal sent from the camera head and the SYNC signal of the video signal sent from the CCU-890 is delayed at least +6H to +8H. In this setting, when you switch the HDTV format signal to the return signal, the image on the viewfinder is less scrambled due to the switching. |
| | SD FD +120H | The output SYNC signal in the SDTV format is phase shifted by +120H of the input SYNC signal in the SDTV format.<br>The camera head operates in about 1 frame ahead. (The delay depends on transmission distance of the camera and the CCU.) |
| | HD -90H CL | The output SYNC signal in the HDTV format is phase shifted by -90H of the input SYNC signal in the HDTV format, and the output SYNC signal in the SDTV format is in phase with the input SYNC signal in the SDTV format.<br>The phase difference between the video signal sent from the camera head and the SYNC signal of the video signal sent from the CCU-890 is delayed at least +6H to +8H. In this setting, when you switch the HDTV format signal to the return signal, the image on the viewfinder is less scrambled due to the switching. |
| | HD -120H CL | The output SYNC signal in the HDTV format is phase shifted by -120H of the input SYNC signal in the HDTV format, and the output SYNC signal in the SDTV format is in phase with the input SYNC signal in the SDTV format.<br>The phase difference between the video signal sent from the camera head and the SYNC signal of the video signal sent from the CCU-890 is delayed at least +6H to +8H. In this setting, when you switch the HDTV format signal to the return signal, the image on the viewfinder is less scrambled due to the switching. |
| | AUTO CL | Depending on the input SYNC signal, following settings are automatically set.<br>HDTV<br>- Camera head format 1080I: SD +90H CL<br>- Camera head format 720P: SD +120H CL<br>SDTV or none<br>- Camera head format 1080I: HD -90H CL<br>- Camera head format 720P: HD -120H CL |
| HD OUT H PHASE | -1375 to 1375 | Adjusts the horizontal phase of the output GENLOCK signal to match the input GENLOCK signal. |
| HD OUT V PHASE | -563 to 563 | Adjusts the vertical phase of the output GENLOCK signal to match the input GENLOCK signal. |
| | -375 to 375<br>(720P) | |
| PM DISPLAY1 | — | Sets the HD-SDI PM output display.<br>Selecting this item switches to "HDTV PM DISPLAY1." |
| PM DISPLAY2 | — | Sets the HD-SDI PM output display.<br>Selecting this item switches to "HDTV PM DISPLAY2." |

*1 Items to be set very depending on the HD-SDI output format.

# HDTV PM DISPLAY1

HDTV PM DISPLAY1 sets the DTL for HD-SDI PM output. (* USA option)

| Setting Item | Set Value | Description |
|---|---|---|
| PM DTL | OFF | Sets DTL to OFF. |
| | ON | Sets DTL to ON. |
| (PM DTL) H LEVEL | 0 to 100 | Sets the horizontal level of DTL. |
| (PM DTL) V LEVEL | 0 to 100 | Sets the vertical level of DTL. |

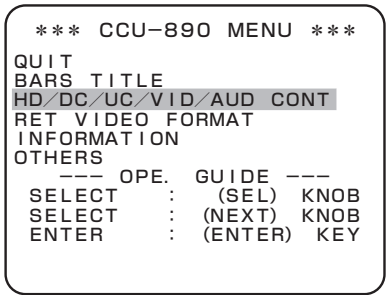
# HDTV PM DISPLAY2

HDTV PM DISPLAY2 sets various markers added to HD-SDI PM output. (* USA option)

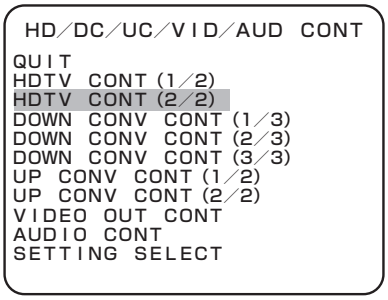
| Setting Item | Set Value | Description |
|---|---|---|
| FRAME MARKER | OFF | Does not display the frame marker. |
| | ON-16:9 | Displays the frame marker with 16:9 aspect ratio. |
| | ON-14:9 | Displays the frame marker with 14:9 aspect ratio. |
| | ON-13:9 | Displays the frame marker with 13:9 aspect ratio. |
| | ON-4:3 | Displays the frame marker with 4:3 aspect ratio. |
| ACTION MARKER | OFF | Does not display the action area marker. |
| | ON-16:9 | Displays the action area marker with 16:9 aspect ratio. |
| | ON-14:9 | Displays the action area marker with 14:9 aspect ratio. |
| | ON-13:9 | Displays the action area marker with 13:9 aspect ratio. |
| | ON-4:3 | Displays the action area marker with 4:3 aspect ratio. |
| TITLE MARKER | OFF | Does not display the title area marker. |
| | ON-16:9 | Displays the title area marker with 16:9 aspect ratio. |
| | ON-14:9 | Displays the title area marker with 14:9 aspect ratio. |
| | ON-13:9 | Displays the title area marker with 13:9 aspect ratio. |
| | ON-4:3 | Displays the title area marker with 4:3 aspect ratio. |
| CENTER MARKER | OFF | Does not display the center marker. |
| | ON | Displays the center marker. |
| SIDE MASK | OFF | Does not display the side mask. |
| | ON-14:9 | Displays the side mask with 14:9 aspect ratio. |
| | ON-13:9 | Displays the side mask with 13:9 aspect ratio. |
| | ON-4:3 | Displays the side mask with 4:3 aspect ratio. |
| (SIDE MASK) CONTRAST | 0 to 100 | Adjusts the side mask contrast. (The larger the value, the contrast gets higher.) |
| (SIDE MASK) BRIGHT | 0 to 100 | Adjusts the side mask brightness. (The larger the value, the brightness gets higher.) |
| SIDE MASK MARKER | OFF | Does not display the side mask marker. |
| | ON | Displays the side mask marker. |
| (SIDE MASK MARKER) WIDTH | 5CK | Selects the side mask marker width.<br>(The width gets wider in the order of 5CK<10CK<15CK<20CK.) |
| | 10CK | |
| | 15CK | |
| | 20CK | |

# HDTV CONT (2/2)

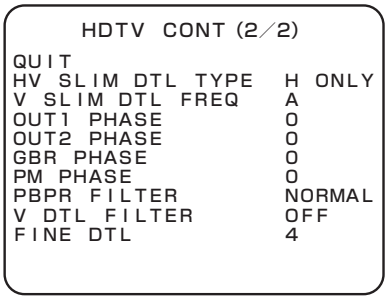
HDTV CONT sets HDTV outputs.




Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the submenu "HD/DC/UC/VID/AUD CONT," and press the CALL button.




The submenu "HD/DC/UC/VID/AUD CONT" is displayed. Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "HDTV CONT (2/2)," and press the CALL button.




The submenu "HDTV CONT (2/2)" is displayed, on which you can perform various settings.

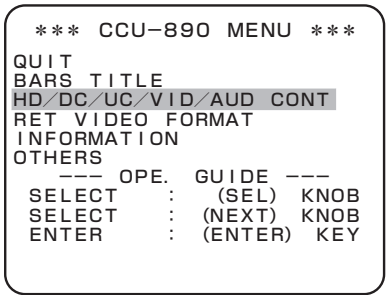
| Setting Item | Set Value | Description |
|---|---|---|
| HV SLIM DTL TYPE | H ONLY | Sets SLIM DTL to be effective only in the horizontal direction. |
| | V ONLY | Sets SLIM DTL to be effective only in the vertical direction. |
| | H+V | Sets SLIM DTL to be effective both in the horizontal/vertical direction. |
| V SLIM DTL FREQ*1 | (In interlace frame output or segmented frame output) | Sets a boost band. |
| | A | Number of effective lines × 0.41 |
| | B | Number of effective lines × 0.38 |
| | C | Number of effective lines × 0.36 |
| | D | Number of effective lines × 0.34 |
| | (In progressive frame output) | Sets a frequency to boost. |
| | A | Number of effective lines × 0.64 |
| | B | Number of effective lines × 0.75 |
| | C | Number of effective lines × 0.86 |
| | D | Number of effective lines |
| OUT1 PHASE | -625 to 625 | Adjusts the horizontal phase of HD-SDI output1 (2 channels). |
| OUT2 PHASE | -625 to 625 | Adjusts the horizontal phase of HD-SDI output2 (2 channels). |
| GBR PHASE | -625 to 625 | Adjusts the horizontal phase of HDTV GBR (analog) output. |
| PM PHASE | -625 to 625 | Adjusts the horizontal phase of HD-SDI PM output. |
| PBPR FILTER | OFF | Sets filter characteristic of HDTV color-difference signals. (The level around 18MHz increases in 5% for WIDE compared to NORMAL.) |
| | NORMAL | |
| | WIDE | |
| V DTL FILTER | OFF | Sets a vertical DTL filter to OFF. |
| | ON | Sets a vertical DTL filter to ON. |
| FINE DTL*2 | 0 to 8 | Sets the FINE DTL. |

*1 When "SLIM DTL" is "OFF" or SLIM DTL is set to be effective only in the horizontal direction ("H ONLY" is set to "HV SLIM DTL TYPE"), the frequency to boost is half the number of effective lines.

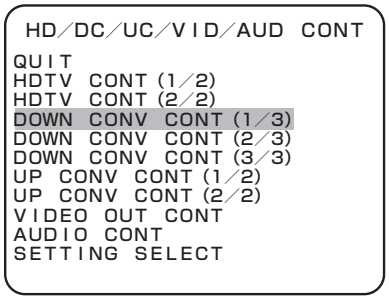
*2 This item is valid only when the camera head to be connected is the HDK-790EXⅡ or HDK-790EXⅢ.

# DOWN CONV CONT (1/3)

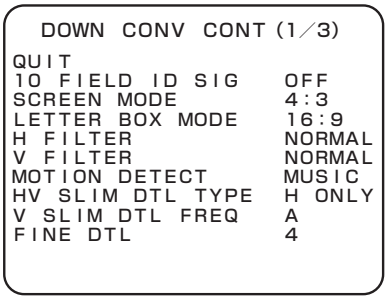
DOWN CONV CONT sets a down-converter.




Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the submenu "HD/DC/UC/VID/AUD CONT," and press the CALL button.




The submenu "HD/DC/UC/VID/AUD CONT" is displayed. Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "DOWN CONV CONT (1/3)," and press the CALL button.




The submenu "DOWN CONV CONT (1/3)" is displayed, on which you can perform various settings.

| Setting Item | Set Value | Description |
|---|---|---|
| 10 FIELD ID SIG | OFF | Sets not to embed pulse signals (level 40IRE), which counted 1 to 5 frames on 15H and 278H, in the ENC signal. |
| | ON | Sets to embed pulse signals (level 40IRE), which counted 1 to 5 frames on 15H and 278H, in the ENC signal. |
| SCREEN MODE | 4:3 | Sets the screen display mode to "4:3." |
| | 16:9 | Sets the screen display mode to "16:9." |
| | LETTER | Sets the screen display mode to "Letterbox." |
| LETTER BOX MODE | 16:9 | Sets the letterbox mode to "16:9." |
| | 14:9 | Sets the letterbox mode to "14:9." (currently not supported) |
| | 13:9 | Sets the letterbox mode to "13:9." (currently not supported) |
| H FILTER *1 | NARROW | Sets the horizontal filter.<br>The frequency characteristics improve in the order of "NARROW" < "NORMAL" < "WIDE." |
| | NORMAL | |
| | WIDE | |
| V FILTER | NARROW | Sets the vertical filter.<br>The frequency characteristics improve in the order of "NARROW" < "NORMAL" < "WIDE" < "SUPER." |
| | NORMAL | |
| | WIDE | |
| | SUPER | |
| MOTION DETECT | Sets the motion detection function of the down-converter. | |
| | MUSIC | Specifies the normal mode. |
| | DRAMA | Suitable for still-image editing using a VTR in a drama. This remains a few afterimages because framing is done. |
| | STILL | Suitable for shooting still images such as picture shooting. |
| | OFF | Suitable for shooting from a helicopter. Neither afterimages nor images remain because filed handling is done. |
| | SPORTS | Suitable for broadcasting quick-motion sports. |
| HV SLIM DTL TYPE | H ONLY | Sets SLIM DTL to be effective only in the horizontal direction. |
| | V ONLY | Sets SLIM DTL to be effective only in the vertical direction. |
| | H+V | Sets SLIM DTL to be effective both in the horizontal/vertical direction. |
| V SLIM DTL FREQ *2 | Sets a boost band. | |
| | A | Number of effective lines × 0.41 |
| | B | Number of effective lines × 0.38 |
| | C | Number of effective lines × 0.36 |
| | D | Number of effective lines × 0.34 |
| FINE DTL*3 | 0 to 8 | Sets the FINE DTL. |

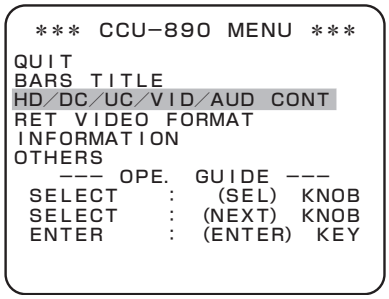
*1 When the format of the camera head is 720P59.94, only "NORMAL" can be selected.

*2 When "SLIM DTL" is "OFF" or SLIM DTL is set to be effective only in the horizontal direction ("H ONLY" is set to "HV SLIM DTL TYPE"), the frequency to boost is half the number of effective lines.

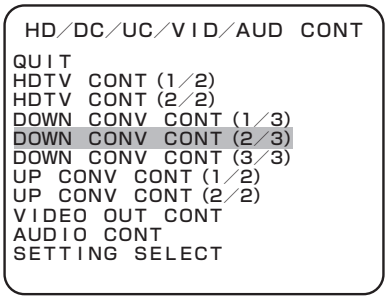
*3 This item is valid only when the camera head to be connected is the HDK-790EXⅡ or HDK-790EXⅢ.

# DOWN CONV CONT (2/3)

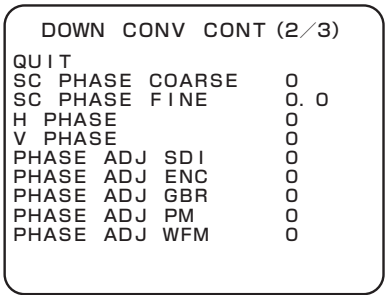
DOWN CONV CONT sets a down-converter.




Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the submenu "HD/DC/UC/VID/AUD CONT," and press the CALL button.




The submenu "HD/DC/UC/VID/AUD CONT" is displayed. Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "DOWN CONV CONT (2/3)," and press the CALL button.

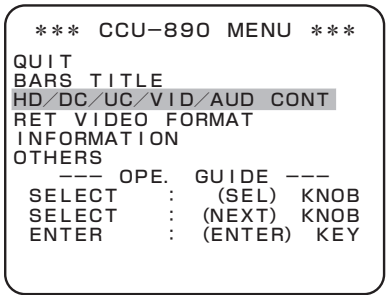



The submenu "DOWN CONV CONT (2/3)" is displayed, on which you can perform various settings.

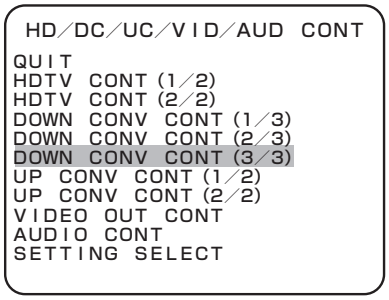
| Setting Item | Set Value | Description |
|---|---|---|
| SC PHASE COARSE | -100 to 100 | Coarse adjusts the sub carrier phase. |
| SC PHASE FINE | -100 to 100 | Fine adjusts the sub carrier phase. |
| H PHASE | -864 to 864 | Sets horizontal phases for all SDTV outputs (digital and analog). |
| V PHASE | -263 to 263 (NTSC) | Sets vertical phases for all SDTV outputs (digital and analog). |
| | -313 to 313 (PAL) | |
| PHASE ADJ SDI | -336 to 336 | Sets the horizontal phase of the SD-SDI signal. |
| PHASE ADJ ENC | -336 to 336 | Sets the horizontal phase of the ENC signal. |
| PHASE ADJ GBR | -336 to 336 | Sets the horizontal phase of the analog GBR signal. |
| PHASE ADJ PM | -336 to 336 | Sets the horizontal phase of the PM (digital) signal. |
| PHASE ADJ WFM | -336 to 336 | Sets the horizontal phase of the WFM (digital) signal. |

# DOWN CONV CONT (3/3)

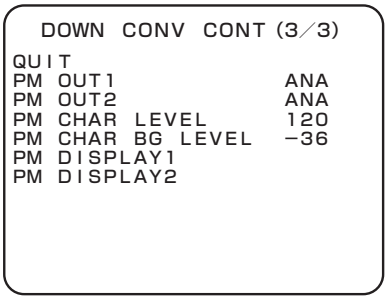
DOWN CONV CONT sets a down-converter.




Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the submenu "HD/DC/UC/VID/AUD CONT," and press the CALL button.




The submenu "HD/DC/UC/VID/AUD CONT" is displayed. Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "DOWN CONV CONT (3/3)," and press the CALL button.




The submenu "DOWN CONV CONT (3/3)" is displayed, on which you can perform various settings.

| Setting Item | Set Value | Description |
|---|---|---|
| PM OUT1 | SDI | Selects the SD-PM output1 to the SD-SDI signal. |
| | ANA | Selects the SD-PM output1 to the SDTV analog signal. |
| PM OUT2 | SDI | Selects the SD-PM output2 to the SD-SDI signal. |
| | ANA | Selects the SD-PM output2 to the SDTV analog signal. |
| PM CHAR LEVEL | 0 to 200 | Sets the character level of the SD-PM. |
| PM CHAR BG LEVEL | -100 to 100 | Sets the background level of characters on the SD-PM. |
| PM DISPLAY1 | — | Sets the SD-SDI PM output display.<br>Selecting this item switches to "SDTV PM DISPLAY1." |
| PM DISPLAY2 | — | Sets the SD-SDI PM output display.<br>Selecting this item switches to "SDTV PM DISPLAY2." |

# SDTV PM DISPLAY1

SDTV PM DISPLAY1 sets the DTL for SD-SDI PM output. (* USA option)

| Setting Item | Set Value | Description |
|---|---|---|
| PM DTL | OFF | Sets DTL to OFF. |
| | ON | Sets DTL to ON. |
| (PM DTL) H LEVEL | 0 to 100 | Sets the horizontal level of DTL. |
| (PM DTL) V LEVEL | 0 to 100 | Sets the vertical level of DTL. |

# SDTV PM DISPLAY2

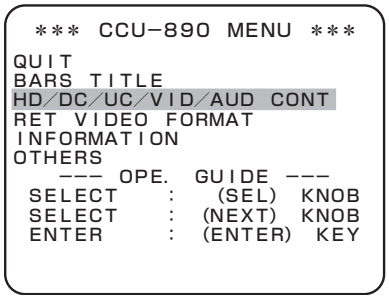
SDTV PM DISPLAY2 sets various markers added to SD-SDI PM output. (* USA option)

| Setting Item | Set Value | Description |
|---|---|---|
| FRAME MARKER *1 | OFF | Does not display the frame marker. |
| | ON-16:9 | Displays the frame marker with 16:9 aspect ratio. |
| | ON-14:9 | Displays the frame marker with 14:9 aspect ratio. |
| | ON-13:9 | Displays the frame marker with 13:9 aspect ratio. |
| | ON-4:3 | Displays the frame marker with 4:3 aspect ratio. |
| ACTION MARKER *1 | OFF | Does not display the action area marker. |
| | ON-16:9 | Displays the action area marker with 16:9 aspect ratio. |
| | ON-14:9 | Displays the action area marker with 14:9 aspect ratio. |
| | ON-13:9 | Displays the action area marker with 13:9 aspect ratio. |
| | ON-4:3 | Displays the action area marker with 4:3 aspect ratio. |
| TITLE MARKER *1 | OFF | Does not display the title area marker. |
| | ON-16:9 | Displays the title area marker with 16:9 aspect ratio. |
| | ON-14:9 | Displays the title area marker with 14:9 aspect ratio. |
| | ON-13:9 | Displays the title area marker with 13:9 aspect ratio. |
| | ON-4:3 | Displays the title area marker with 4:3 aspect ratio. |
| CENTER MARKER | OFF | Does not display the center marker. |
| | ON | Displays the center marker. |
| SIDE MASK *2 | OFF | Does not display the side mask. |
| | ON-14:9 | Displays the side mask with 14:9 aspect ratio. |
| | ON-13:9 | Displays the side mask with 13:9 aspect ratio. |
| | ON-4:3 | Displays the side mask with 4:3 aspect ratio. |
| (SIDE MASK) CONTRAST | 0 to 100 | Adjusts the side mask contrast. (The larger the value, the contrast gets higher.) |
| (SIDE MASK) BRIGHT | 0 to 100 | Adjusts the side mask brightness. (The larger the value, the brightness gets higher.) |
| SIDE MASK MARKER | OFF | Does not display the side mask marker. |
| | ON | Displays the side mask marker. |
| (SIDE MASK MARKER) WIDTH | 10CK | Selects the side mask marker width. (The width of 20CK is wider than that of 10CK.) |
| | 20CK | |

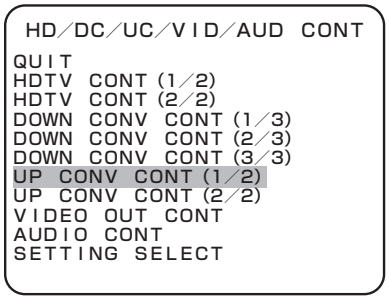
*1 When "SCREEN MODE" is set to "4:3," only "OFF" or "ON-4:3" can be selected for "FRAME MARKER," "ACTION MARKER," and "TITLE MARKER."
*2 When "SCREEN MODE" is set to "4:3," "SIDE MASK" is fixed to "OFF."

# UP CONV CONT (1/2)

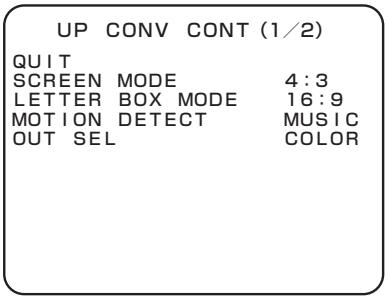
UP CONV CONT sets an up-converter for RET.




Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the submenu "HD/DC/UC/VID/AUD CONT," and press the CALL button.




The submenu "HD/DC/UC/VID/AUD CONT" is displayed. Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "UP CONV CONT (1/2)," and press the CALL button.

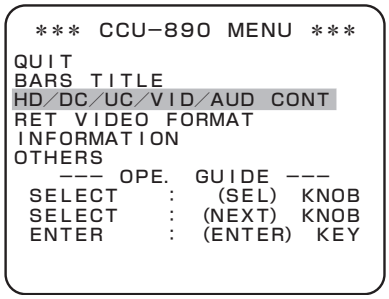



The submenu "UP CONV CONT (1/2)" is displayed, on which you can perform various settings.

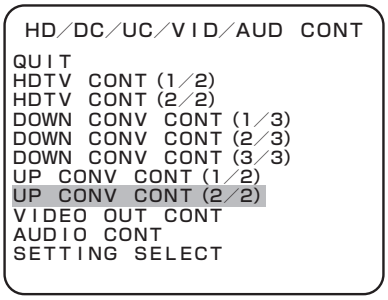
| Setting Item | Set Value | Description |
|---|---|---|
| SCREEN MODE | 4:3 | Sets the screen display mode to "4:3." |
| | 16:9 | Sets the screen display mode to "16:9." |
| | LETTER | Sets the screen display mode to "Letterbox." |
| LETTER BOX MODE | 16:9 | Sets the letterbox mode to "16:9." |
| | 14:9 | Sets the letterbox mode to "14:9." (currently not supported) |
| | 13:9 | Sets the letterbox mode to "13:9." (currently not supported) |
| MOTION DETECT | Sets the motion detection function of the up-converter. | |
| | MUSIC | Specifies the normal mode. |
| | DRAMA | Suitable for still-image editing using a VTR in a drama. This remains a few afterimages because framing is done. |
| | STILL | Suitable for shooting still images such as picture shooting. |
| | OFF | Suitable for shooting from a helicopter. Neither afterimages nor images remain because filed handling is done. |
| | SPORTS | Suitable for broadcasting quick-motion sports. |
| OUT SEL | MONO | Sets image output in black and white. |
| | COLOR | Sets image output in color. |

# UP CONV CONT (2/2)

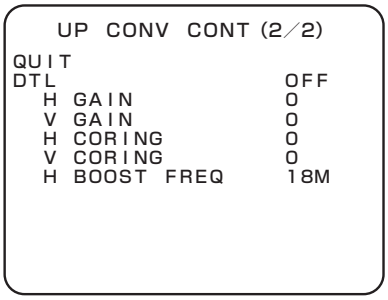
UP CONV CONT sets an up-converter for RET.




Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the submenu "HD/DC/UC/VID/AUD CONT," and press the CALL button.




The submenu "HD/DC/UC/VID/AUD CONT" is displayed. Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "UP CONV CONT (2/2)," and press the CALL button.

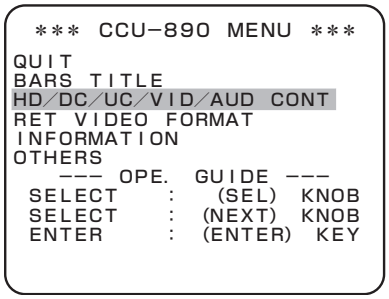



The submenu "UP CONV CONT (2/2)" is displayed, on which you can perform various settings.

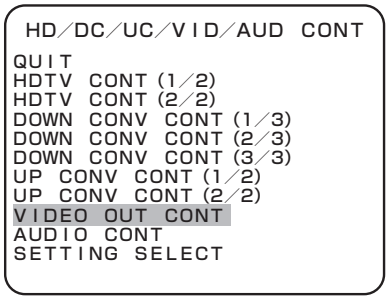
| Setting Item | Set Value | Description |
|---|---|---|
| DTL | OFF | Sets DTL to OFF. |
| | ON | Sets DTL to ON. |
| (DTL) H GAIN | -64 to 63 | Sets the horizontal gain of DTL. |
| (DTL) V GAIN | -64 to 63 | Sets the vertical gain of DTL. |
| (DTL) H CORING | 0 to 255 | Sets the horizontal coring of DTL. |
| (DTL) V CORING | 0 to 255 | Sets the vertical coring of DTL. |
| (DTL) H BOOST FREQ | 18M | Sets the horizontal boost frequency of DTL. |
| | 16M | |
| | 14M | |
| | 12M | |
| | 10M | |
| | 8M | |

# VIDEO OUT CONT

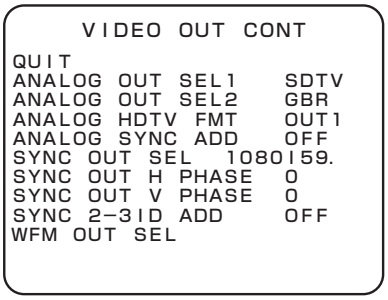
VIDEO OUT CONT sets the signals output from the VIDEO OUT module on the rear of the CCU.




Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the submenu "HD/DC/UC/VID/AUD CONT," and press the CALL button.




The submenu "HD/DC/UC/VID/AUD CONT" is displayed. Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "VIDEO OUT CONT," and press the CALL button.




The submenu "VIDEO OUT CONT" is displayed, on which you can perform various settings.

| Setting Item | Set Value | | | Description |
|---|---|---|---|---|
| ANALOG OUT SEL1 | HDTV | | | Sets the analog component output to "HDTV." |
| | SDTV | | | Sets the analog component output to "SDTV." |
| ANALOG OUT SEL2 | GBR | | | Sets the analog component output to "GBR." |
| | YPbPr or YCbCr | | | Sets the analog component output to "YPbPr" (when "HDTV" is selected) or "YCbCr" (when "SDTV" is selected). |
| ANALOG HDTV FMT | OUT1 | | | Sets the same format as HD-SDI output1 when "HDTV" is set to the analog component output. |
| | OUT2 | | | Sets the same format as HD-SDI output2 when "HDTV" is set to the analog component output. |
| ANALOG SYNC ADD | (HDTV selected) | (GBR selected) | OFF | Sets not to add tri-sync signals to all the analog HDTV RGB output. |
| | | | ON | Sets to add tri-sync signals to all the analog HDTV RGB output. |
| | | (YPbPr selected) | Y ONLY | Sets to add tri-sync signals only to the Y signal among the analog HDTV YPbPr output. |
| | | | ALL | Sets to add tri-sync signals to all the analog HDTV YPbPr output. |
| | (SDTV selected) | (GBR selected) | OFF | Sets not to add tri-sync signals to all the analog SDTV RGB output. |
| | | | ON | Sets to add tri-sync signals to all the analog SDTV RGB output. |
| | | (YCbCr selected) | Y ONLY | Sets to add tri-sync signals only to the Y signal among the analog SDTV YCbCr output. |
| SYNC OUT SEL [*1] | 1080I59. | | | The synchronization signal for the external synchronization output associates with the "1080I59.94" format. |
| | 1080P23.SF | | | The synchronization signal for the external synchronization output associates with the "1080P23.97 segment frame" format. |
| | 1080P23. | | | The synchronization signal for the external synchronization output associates with the "1080P23.97" format. |
| | 720P59. | | | The synchronization signal for the external synchronization output associates with the "720P59.94" format. |
| | SDTV | | | The external synchronization output becomes the SDTV synchronization signal. |
| SYNC OUT H PHASE | [*2] | | | Adjusts the horizontal phase of external synchronization output. |
| SYNC OUT V PHASE | [*2] | | | Adjusts the vertical phase of external synchronization output. |
| SYNC 2-3ID ADD [*3] | OFF | | | Sets not to embed pulse signals, which counted 1 to 5 frames, in the SYNC output. |
| | ON | | | Sets to embed pulse signals, which counted 1 to 5 frames, in the SYNC output. |
| WFM OUT SEL | - | | | Sets the WFM outputs. |

*1 Depending on the setting of "OUT1 FORMAT"/"OUT2 FORMAT" in "HDTV CONT (1/2)," the format to be selected as a synchronization signal varies.

| OUT1/OUT2 FORMAT | Synchronization Signal Format to be Selected |
|---|---|
| 1080I59. | 1080I59./SDTV |
| 1080I59.PD | 1080I59./1080P23.SF/1080P23./SDTV |
| 1080P23.SF | |
| 1080P23. | |
| 720P59. | 720P59./SDTV |

*2 Depending on the format of the synchronization signal to be output, variable range for H PHASE and V PHASE varies.

| Synchronization Signal Output | H PHASE | V PHASE |
|---|---|---|
| 1080I59. | -1100 to 1100 | -563 to 563 |
| 1080P23.SF | -1375 to 1375 | -563 to 563 |
| 1080P23. | -1375 to 1375 | -563 to 563 |
| 720P59. | -825 to 825 | -375 to 375 |
| NTSC (525I/59) | -858 to 858 | -263 to 263 |
| NTSC (625I/50) | -864 to 864 | -313 to 313 |

*3 When all items other than "1080I59." are selected for "OUT1 FORMAT"/"OUT2 FORMAT" in "HDTV CONT (1/2)," selecting ON/OFF is enabled.

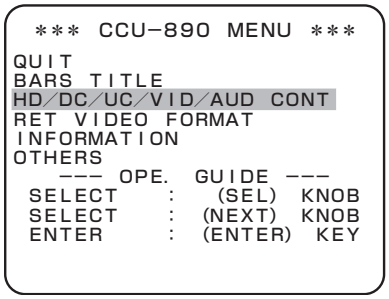
## WFM OUT SEL

WFM OUT SEL sets the WFM output signals.

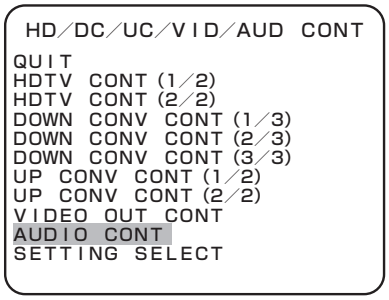
| Setting Item | Set Value | Description |
|---|---|---|
| WFM OUT1 | HDTV | Sets the WFM output (first channel) to the HD-SDI signal. |
| | SD-SDI | Sets the WFM output (first channel) to the SD-SDI signal. |
| | ANA | Sets the WFM output (first channel) to the SDTV analog signal. |
| WFM OUT2 | HDTV | Sets the WFM output (second channel) to the HD-SDI signal. |
| | SD-SDI | Sets the WFM output (second channel) to the SD-SDI signal. |
| | ANA | Sets the WFM output (second channel) to the SDTV analog signal. |
| WFM HDTV FMT | OUT1 | Sets the same format as HD-SDI output1 when "HDTV" is selected for the WFM output. |
| | OUT2 | Sets the same format as HD-SDI output2 when "HDTV" is selected for the WFM output. |

# AUDIO CONT

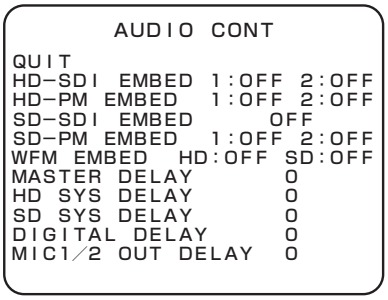
AUDIO CONT sets the audio signals.




Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the submenu "HD/DC/UC/VID/AUD CONT," and press the CALL button.




The submenu "HD/DC/UC/VID/AUD CONT" is displayed. Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "AUDIO CONT," and press the CALL button.




The submenu "AUDIO CONT" is displayed, on which you can perform various settings.

| Setting Item | Set Value | Description |
|---|---|---|
| HD-SDI EMBED | 1: OFF 2: OFF | Sets not to embed audio signals both in the HD-SDI output1 (2 channels) and HD-SDI output2 (2 channels). |
| | 1: ON 2: OFF | Sets to embed audio signals in the HD-SDI output1 (2 channels). |
| | 1: OFF 2: ON | Sets to embed audio signals in the HD-SDI output2 (2 channels). |
| | 1: ON 2: ON | Sets to embed audio signals both in the HD-SDI output1 (2 channels) and HD-SDI output2 (2 channels). |
| HD-PM EMBED | 1: OFF 2: OFF | Sets not to embed audio signals both in the HD-SDI PM output1 and HD-SDI PM output2. |
| | 1: ON 2: OFF | Sets to embed audio signals in the HD-SDI PM output1. |
| | 1: OFF 2: ON | Sets to embed audio signals in the HD-SDI PM output2. |
| | 1: ON 2: ON | Sets to embed audio signals both in the HD-SDI PM output1 and HD-SDI PM output2. |
| SD-SDI EMBED | OFF | Sets not to embed audio signals in the SD-SDI output (2 channels). |
| | ON | Sets to embed audio signals in the SD-SDI output (2 channels). |
| SD-PM EMBED | 1: OFF 2: OFF | Sets not to embed audio signals both in the SD-PM output1 and SD-PM output2. |
| | 1: ON 2: OFF | Sets to embed audio signals in the SD-PM output1. |
| | 1: OFF 2: ON | Sets to embed audio signals in the SD-PM output2. |
| | 1: ON 2: ON | Sets to embed audio signals both in the SD-PM output1 and SD PM output2. |
| WFM EMBED | HD: OFF SD: OFF | Sets not to embed audio signals both in the HD-SDI signal and SD-SDI signal of the WFM output (2 channels). |
| | HD: ON SD: OFF | Sets to embed audio signals only in the HD-SDI signal of the WFM output (2 channels). |
| | HD: OFF SD: ON | Sets to embed audio signals only in the SD-SDI signal of the WFM output (2 channels). |
| | HD: ON SD: ON | Sets to embed audio signals both in the HD-SDI signal and SD-SDI signal of the WFM output (2 channels). |
| MASTER DELAY | 0 to 21 | Sets the amount of delay for the audio signals of all channels. |
| HD SYS DELAY | 0 to 21 | Sets the amount of delay for the audio signals of HDTV channels. |
| SD SYS DELAY | 0 to 21 | Sets the amount of delay for the audio signals of SDTV channels. |
| DIGITAL DELAY | 0 to 21 | Sets the amount of delay of the digital audio output. |
| MIC1/2 OUT DELAY | 0 to 21 | Sets the amount of delay of the MIC output (2 channels). |

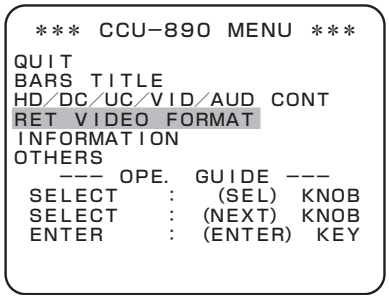
# SETTING SELECT

SETTING SELECT registers/calls settings. (* USA option)

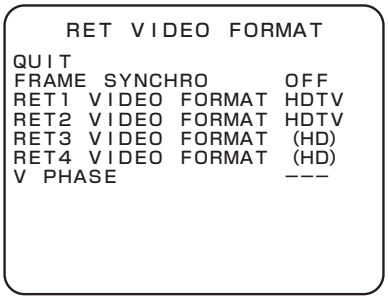
| Setting Item | Set Value | Description |
|---|---|---|
| STORE | OFF | Registers/calls set values for each menu item. |
| | ON | |
| NUMBER | OFF | Selects the registration/call number. |
| | NO.1 to NO.8 | |

# RET VIDEO FORMAT

RET VIDEO FORMAT sets the return video signals.




Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the submenu "RET VIDEO FORMAT," and press the CALL button.




The submenu "RET VIDEO FORMAT" is displayed, on which you can perform various settings.

| Setting Item | Set Value | Description |
|---|---|---|
| FRAME SYNCHRO | OFF | Sets the function to synchronize the RET signal to be input with the CCU to OFF. |
| | ON | Sets the function to synchronize the RET signal to be input with the CCU to ON. |
| RET1 VIDEO FORMAT | HDTV *1 | Selects "HD-SDI" from the RET1 signal input to the HD RET IN module and SD RET IN module. |
| | SD-SDI/(SDTV) *3 | Selects "SD-SDI" from the RET1 signal input to the HD RET IN module and SD RET IN module. |
| RET2 VIDEO FORMAT | HDTV *1 | Selects "HD-SDI" from the RET2 signal input to the HD RET IN module and SD RET IN module. |
| | SD-SDI/(SDTV) *3 | Selects "SD-SDI" from the RET2 signal input to the HD RET IN module and SD RET IN module. |
| RET3 VIDEO FORMAT *2 | HDTV *1 | Selects "HD-SDI" from the RET3 signal input to the HD RET IN module and SD RET IN module. |
| | SD-SDI | Selects "SD-SDI" from the RET3 signal input to the HD RET IN module and SD RET IN module. |
| RET4 VIDEO FORMAT *2 | HDTV *1 | Selects "HD-SDI" from the RET4 signal input to the HD RET IN module and SD RET IN module. |
| | SD-SDI | Selects "SD-SDI" from the RET4 signal input to the HD RET IN module and SD RET IN module. |
| SDTV TYPE *3 | SDI | Sets to "SD-SDI" when "SDTV" is selected in RET VIDEO FORMAT and the input RET signal is "SD-SDI." |
| | VBS (option) | Sets to "VBS" when "SDTV" is selected in RET VIDEO FORMAT and the input RET signal is "VBS." |
| V PHASE | Sets the vertical phase. | |

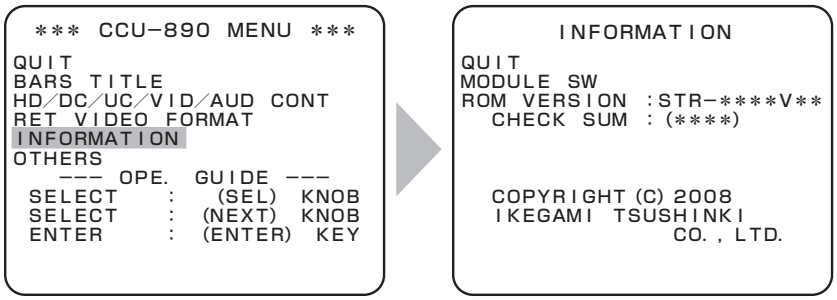
*1 When the SDTV RET module has not been installed, the set value is fixed to "HDTV." In this case, the setting is displayed as "(HD)."

*2 When FRAME SYNCHRO is set to "ON," the RET input supports 2 channels, and items for RET3 VIDEO FORMAT and RET4 VIDEO FORMAT are not displayed.

*3 When the SD RET IN module employs the RET2 channel specification (enabled by the switch in the module), "SDTV" is displayed for RET VIDEO FORMAT, and then "SDI" or "VBS" can be selected from SDTV TYPE.
However, when FRAME SYNCHRO is set to "ON," the setting of RET VIDEO FORMAT is fixed to "SDI," and the item for SDTV TYPE is not displayed.

# INFORMATION

INFORMATION displays the DIP switch settings and ROM version.



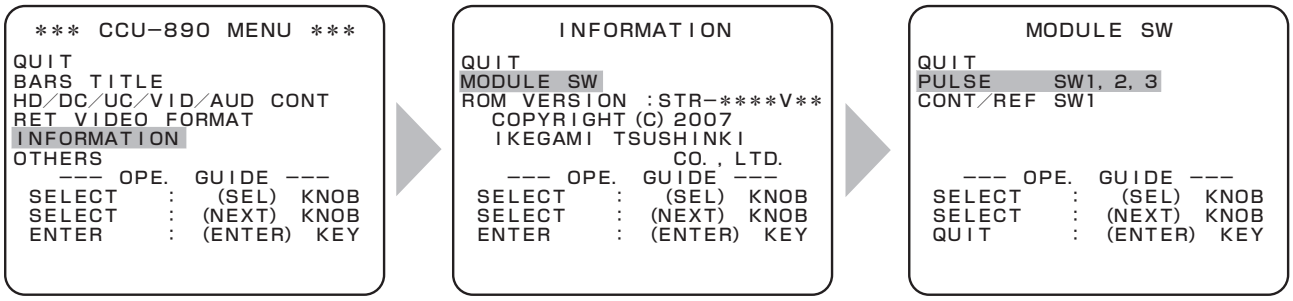

Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "INFORMATION," and press the CALL button.

The submenu "INFORMATION" is displayed, on which you can check the settings.

| Setting Item | Set Value | Description |
|---|---|---|
| MODULE SW | - | Displays the DIP switch settings of the PULSE module and CONT/REF module. |
| ROM VERSION | - | Displays ROM version. |
| CHECK SUM | - | Displays the ROM check sum. |

## ■ *MODULE SW*

MODULE SW displays the DIP switch settings of the PULSE module and CONT/REF module.

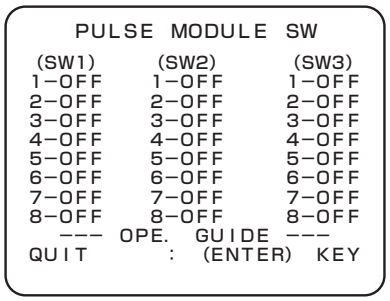



Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "INFORMATION," and press the CALL button.

The submenu "INFORMATION" is displayed. Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "MODULE SW," and press the CALL button.

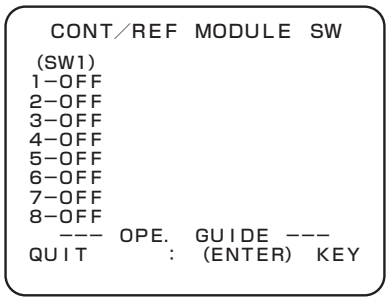
The submenu "MODULE SW" is displayed. Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the switch number, and press the CALL button.

### ● When "PULSE" is selected




The DIP switch settings of the PULSE module are displayed.

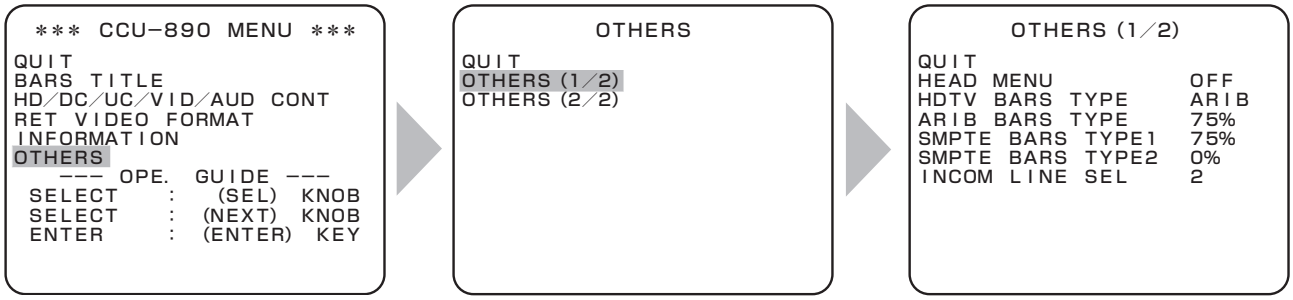
### ● When "CONT/REF" is selected




The DIP switch settings of the CONT/REF module are displayed.

# OTHERS (1/2)

OTHERS sets control over the color menu, HDTV color bar types, ARIB color bar types, and SMPTE color bar types.




Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the submenu "OTHERS," and press the CALL button.

The submenu "OTHERS" is displayed. Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "OTHERS (1/2)," and press the CALL button.

The submenu "OTHERS (1/2)" is displayed, on which you can perform various settings.

| Setting Item | Set Value | Description |
|---|---|---|
| HEAD MENU *1 | OFF | Sets to display/control the CCU menu. |
| | ON | Sets to display/control the camera head menu. |
| HDTV BARS TYPE | ARIB | Sets the HDTV color bar complying with the ARIB-standard multi-format color bar. |
| | 100% | Sets 100% HDTV color bar. |
| | 75% | Sets 75% HDTV color bar. |
| | SMPTE | Sets the HDTV color bar complying with the SMPTE-standard color bar. |
| ARIB BARS TYPE | 75% | Sets the pattern 2 of the ARIB-standard color bar to "75% White." |
| | 100% | Sets the pattern 2 of the ARIB-standard color bar to "100% White." |
| | +I | Sets the pattern 2 of the ARIB-standard color bar to "+I signal." |
| SMPTE BARS TYPE1 | 75% | Sets the pattern 2 of the SMPTE-standard color bar to "75% White." |
| | 100% | Sets the pattern 2 of the SMPTE-standard color bar to "100% White." |
| | +I | Sets the pattern 2 of the SMPTE-standard color bar to "+I signal." |
| | -I | Sets the pattern 2 of the SMPTE-standard color bar to "-I signal." |
| SMPTE BARS TYPE2 | 0% | Sets the pattern 3 of the SMPTE-standard color bar to "0% Black." |
| | +Q | Sets the pattern 3 of the SMPTE-standard color bar to "+Q signal." |
| INCOM LINE SEL | 2 | Sets to "2" when 2 lines of intercom (ENG and PROD) are used for the system. |
| | 1 | Sets to "1" when the PROD line audio is mixed in the ENG line audio and 1 line of intercom (ENG) is used for the system. |

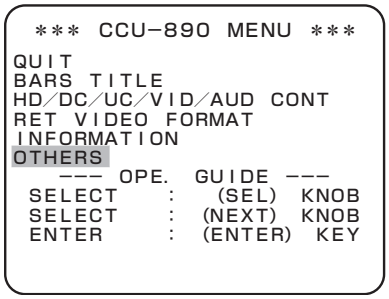
*1 If the menu data from the camera head can be superimposed on the main video signal, you can select "ON."
When you select "ON" and confirm the selection, the CCU menu screen exits, and the camera head menu screen appears.
When the camera head menu screen exits, "OFF" is set automatically.

***Reference:***

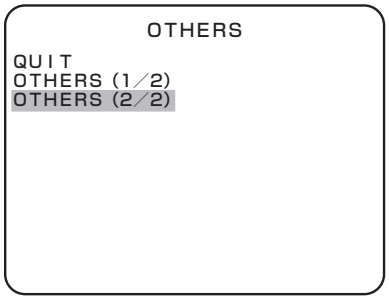
For the details of ARIB-standard color bar, see the standard (ARIB STD-B28). For the details of SMPTE-standard color bar, see the standard (RP 219-2002).

# OTHERS (2/2)

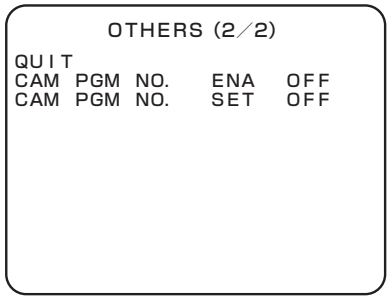
OTHERS sets camera program numbers.




Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the submenu "OTHERS," and press the CALL button.




The submenu "OTHERS" is displayed. Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "OTHERS (2/2)," and press the CALL button.




The submenu "OTHERS (2/2)" is displayed, on which you can perform various settings.

| Setting Item | Set Value | Description |
|---|---|---|
| CAM PGM NO. ENA *2 | OFF | Sets to "OFF" when the CCU does not manage the camera program numbers. |
| | ON | Sets to "ON" when the CCU manages the camera program numbers. |
| CAM PGM NO. SET *3 | OFF | Sets not to display the camera program numbers for the camera head and control panel. |
| | 1 to 99 | Sets to display the camera program numbers for the camera head and control panel. |

*2 For the camera program numbers, refer to the instructions accompanying the control panel such as the OCP-200 that supports the camera program numbers.

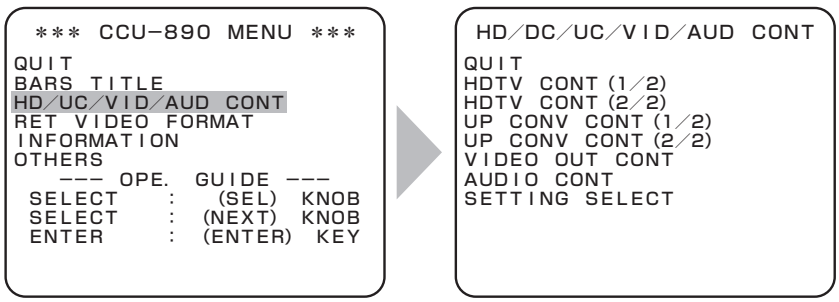
*3 The setting for the camera program numbers is enabled when CAM PGM NO. ENA is set to "ON."

## ■ *CCU Menu with/without Installing Modules*

Depending on the installation of the SDTV PROC module and SDTV RET module on the front of the CCU-890, the display of the CCU menu varies as shown below.

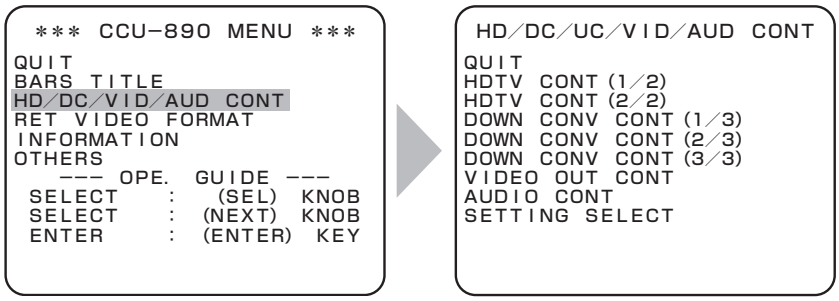
### ● When the SDTV PROC module is not installed

When the SDTV PROC module is not installed, the CCU-890 does not have the down-converter function. Therefore, submenus DOWN CONV CONT (1/3) to (3/3) are not displayed.
In this case, the CCU main menu and submenu are displayed as below.



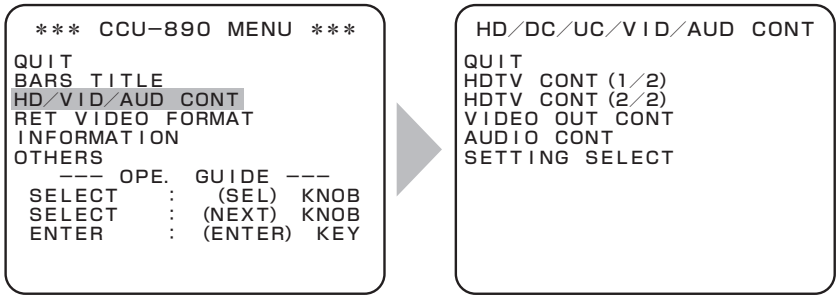

### ● When the SDTV RET module is not installed

When the SDTV RET module is not installed, the CCU-890 does not have the up-converter function. Therefore, submenus UP CONV CONT (1/2) to (2/2) are not displayed.
In this case, the CCU main menu and submenu are displayed as below.




### ● When the SDTV PROC module and SDTV RET module are not installed

When the SDTV PROC module and SDTV RET module are not installed, the CCU-890 does not have the down-converter and up-converter functions. Therefore, submenus DOWN CONV CONT (1/3) to (3/3) and UP CONV CONT (1/2) to (2/2) are not displayed.
In this case, the CCU main menu and submenu are displayed as below.



## ■ *Menu Configuration for DUAL LINK (HS TYPE) Specification*

| Main menu name | Submenu name | Item | Description |
|---|---|---|---|
| **QUIT** | | | Exits the main menu. |
| **BARS TITLE** | | | |
| | QUIT | | Returns to the main menu. |
| | DISPLAY | | Turns ON/OFF the BARS TITLE character display. |
| | TITLE EDIT | | Edits the BARS TITLE characters. |
| | POSITION | | Sets the display position of the BARS TITLE characters. |
| **HD/DC/UC/VID/AUD CONT** | | | |
| | QUIT | | Returns to the main menu. |
| | HDTV CONT (1/2) | | |
| | | QUIT | Returns to the submenu HD/DC/UC/VID/AUD CONT. |
| | | OUT1 FORMAT | Sets HD-SDI output1 (2 channels) formats. |
| | | OUT2 FORMAT | Sets HD-SDI output2 (2 channels) formats. |
| | | PM OUT FORMAT | Sets HD-SDI PM output (2 channels) formats associating with either OUT1 or OUT2. |
| | | SYNC CONT | Sets the vertical synchronization phase in the HDTV format and in the SDTV format each. |
| | | HD OUT H PHASE | Adjusts the horizontal phase of the output GENLOCK signal to match the input GENLOCK signal. |
| | | HD OUT V PHASE | Adjusts the vertical phase of the output GENLOCK signal to match the input GENLOCK signal. |
| | | PM DISPLAY1 | Sets the DTL for HD-SDI PM output. (* USA option) |
| | | PM DISPLAY2 | Sets various markers added to HD-SDI PM output. (* USA option) |
| | HDTV CONT (2/2) | | |
| | | QUIT | Returns to the submenu HD/DC/UC/VID/AUD CONT. |
| | | HV SLIM DTL TYPE | Sets a horizontal and/or vertical SLIM DTL for HDTV. |
| | | V SLIM DTL FREQ | Sets a boost band and boost frequency for HDTV. |
| | | OUT1 PHASE | Adjusts the horizontal phase of HD-SDI output1 (2 channels). |
| | | OUT2 PHASE | Adjusts the horizontal phase of HD-SDI output2 (2 channels). |
| | | GBR PHASE | Adjusts the horizontal phase of HDTV GBR (analog) output. |
| | | PBPR FILTER | Sets filter characteristic of HDTV color-difference signals. |
| | | V DTL FILTER | Turns ON/OFF a vertical DTL filter. |
| | UP CONV CONT (1/2) | | |
| | | QUIT | Returns to the submenu HD/DC/UC/VID/AUD CONT. |
| | | SCREEN MODE | Sets the screen display mode. |
| | | LETTER BOX MODE | Sets the letterbox mode. |
| | | MOTION DETECT | Sets the motion detection of the up-converter. |
| | | OUT SEL | Sets monochrome/color of the return signal to the camera head. |
| | UP CONV CONT (2/2) | | |
| | | QUIT | Returns to the submenu HD/DC/UC/VID/AUD CONT. |
| | | DTL | Sets a DTL mode. |
| | | (DTL) H GAIN | Sets the horizontal gain of DTL. |
| | | (DTL) V GAIN | Sets the vertical gain of DTL. |
| | | (DTL) H CORING | Sets the horizontal coring of DTL. |
| | | (DTL) V CORING | Sets the vertical coring of DTL. |
| | | (DTL) H BOOST FREQ | Sets the horizontal boost frequency of DTL. |
| | VIDEO OUT CONT (DUAL) | | |
| | | QUIT | Returns to the submenu HD/DC/UC/VID/AUD CONT. |
| | | ANALOG OUT SEL | Sets the type of the analog component output. |
| | | ANALOG HDTV FMT | Sets the format of the analog component output. |
| | | ANALOG SYNC ADD | Sets whether to add synchronization signals to the analog component output. |
| | | SYNC OUT SEL | Sets the format of the external synchronization output. |
| | | SYNC OUT H PHASE | Adjusts the horizontal phase of external synchronization output. |
| | | SYNC OUT V PHASE | Adjusts the vertical phase of external synchronization output. |
| | | SYNC 2-3ID ADD | Sets not to embed pulse signals, which counted 1 to 5 frames, in the SYNC output. |
| | AUDIO CONT | | |
| | | QUIT | Returns to the submenu HD/DC/UC/VID/AUD CONT. |
| | | DIGITAL DELAY | Sets the amount of delay of the digital audio output. |
| | | MIC1/2 OUT DELAY | Sets the amount of delay of MIC output. |
| **RET VIDEO FORMAT** | | | |
| | QUIT | | Returns to the main menu. |
| | FRAME SYNCHRO | | Sets ON/OFF of the frame synchronization function. |
| | RET1 VIDEO FORMAT | | Sets the format of the return signal input to the camera head. |
| | RET2 VIDEO FORMAT | | |
| | RET3 VIDEO FORMAT | | |
| | RET4 VIDEO FORMAT | | |
| | V PHASE | | Sets the vertical phase. |

**INFORMATION**

- QUIT ..... Returns to the main menu.
- MODULE SW ..... Displays the switch setting status of the PULSE module and CONT/REF module.
- ROM VERSION ..... Displays the ROM version.

**OTHERS**

- QUIT ..... Returns to the main menu.
- OTHERS (1/2)
  - QUIT ..... Returns to the submenu OTHERS.
  - HEAD MENU ..... Sets whether to control the CCU menu or camera head menu.
  - HDTV BARS TYPE ..... Sets the type of the HDTV color bar.
  - ARIB BARS TYPE ..... Sets the pattern of the ARIB bar.
  - SMPTE BARS TYPE1 ..... Sets the pattern of the SMPTE bar.
  - SMPTE BARS TYPE2
  - INCOM LINE SEL ..... Sets the number of intercom lines at the system side.
- OTHERS (2/2)
  - QUIT ..... Returns to the submenu OTHERS.
  - CAM PGM NO. ENA ..... Sets whether the CCU manages the camera program numbers.
  - CAM PGM NO. SET ..... Sets how to display the camera program numbers for the camera head and control panel.

There are 4 main differences between the DUAL LINK (HS TYPE) specification menu and the standard specification menu.

1. Changes in the HD-SDI output format (partial changes of the HDTV CONT menu)
2. No DOWN CONV CONT menu
3. VIDEO OUT CONT menu specific to the DUAL LINK specification
4. Different AUDIO CONT menu

Only the menu items of the DUAL LINK (HS TYPE) specification different from that of the standard specification is explained here.

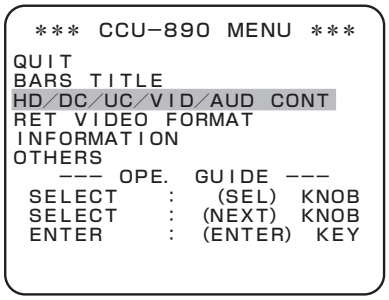
## HDTV CONT (1/2)

| Setting Item | Set Value | Description |
|---|---|---|
| OUT1 FORMAT | 1080I59. | Sets the HD-SDI output1 (2 channels for LINKA and 2 channels for LINKB) format to "1080I59.94." |
| | 1080P59. * | Sets the HD-SDI output1 (2 channels for LINKA and 2 channels for LINKB) format to "1080P59.94." |
| | 1080I119. * | Sets the HD-SDI output1 (2 channels for LINKA and 2 channels for LINKB) format to "1080I119." (Currently not supported) |
| | 1080I59.PD | Sets the HD-SDI output1 (2 channels for LINKA and 2 channels for LINKB) format to "1080I59.94 2-3 pull down." |
| | 1080P23.SF | Sets the HD-SDI output1 (2 channels for LINKA and 2 channels for LINKB) format to "1080P23.97 segmented frame." |
| | 1080P23. | Sets the HD-SDI output1 (2 channels for LINKA and 2 channels for LINKB) format to "1080P23.97." |
| | 720P59. | Sets the HD-SDI output1 (2 channels for LINKA and 2 channels for LINKB) format to "720P59.94." |
| | 720P119. * | Sets the HD-SDI output1 (2 channels for LINKA and 2 channels for LINKB) format to "720P119." |
| OUT2 FORMAT | Same as the OUT1 FORMAT. | Sets the HD-SDI output2 (2 channels for LINKA and 2 channels for LINKB) format. |

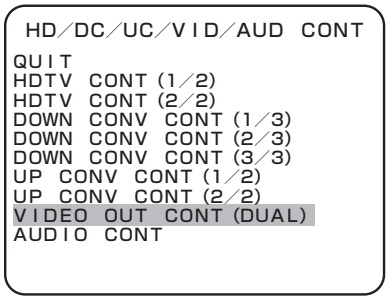
* DUAL format

## VIDEO OUT CONT (DUAL)

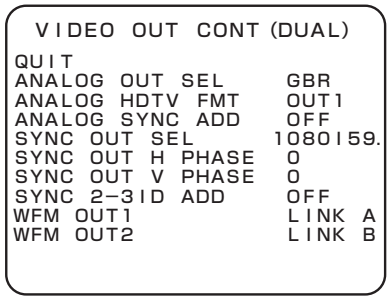
VIDEO OUT CONT (DUAL LINK (HS TYPE)) sets the signals output from the VIDEO OUT module on the rear of the CCU for the DUAL LINK specification.




Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on the submenu "HD/DC/UC/VID/AUD CONT," and press the CALL button.




The submenu "HD/DC/UC/VID/AUD CONT" is displayed. Turn the MASTER PEDESTAL control knob or IRIS control knob to position the flashing cursor on "VIDEO OUT CONT (DUAL)," and press the CALL button.




The submenu "VIDEO OUT CONT (DUAL)" is displayed, on which you can perform various settings.

| Setting Item | Set Value | | Description |
|---|---|---|---|
| ANALOG OUT SEL | GBR | | Sets the analog component output to "HDTV GBR."(In this case, the output is fixed to LINK A.) |
| | YPbPr | | Sets the analog component output to "HDTV YPbPr."(In this case, the output is fixed to LINK A.) |
| ANALOG HDTV FMT | OUT1 | | Sets the analog component output format to the same format as HD-SDI PM output1. |
| | OUT2 | | Sets the analog component output format to the same format as HD-SDI PM output2. |
| ANALOG SYNC ADD | (GBR selected) | OFF | Sets not to add tri-sync signals to all the analog HDTV RGB output. |
| | | ON | Sets to add tri-sync signals to all the analog HDTV RGB output. |
| | (YPbPr selected) | Y ONLY | Sets to add tri-sync signals only to the Y signal among the analog HDTV YPbPr output. |
| | | ALL | Sets to add tri-sync signals to all the analog HDTV YPbPr output. |
| SYNC OUT SEL *1 | 1080I59. | | The synchronization signal for the external synchronization output associates with the "1080I59.94" format. |
| | 1080P23.SF | | The synchronization signal for the external synchronization output associates with the "1080P23.97 segmented frame" format. |
| | 1080P23. | | The synchronization signal for the external synchronization output associates with the "1080P23.97" format. |
| | 720P59. | | The synchronization signal for the external synchronization output associates with the "720P59.94" format. |
| SYNC OUT H PHASE | *2 | | Adjusts the horizontal phase of external synchronization output. |
| SYNC OUT V PHASE | *2 | | Adjusts the vertical phase of external synchronization output. |
| SYNC 2-3ID ADD *3 | OFF | | Sets not to embed pulse signals, which counted 1 to 5 frames, in the SYNC output. |
| | ON | | Sets to embed pulse signals, which counted 1 to 5 frames, in the SYNC output. |
| WFM OUT1 | LINK A | | Sets the HD-SDI signal of the WFM output (first channel) to "LINK A." |
| | LINK B | | Sets the HD-SDI signal of the WFM output (first channel) to "LINK B." |
| WFM OUT2 | LINK A | | Sets the HD-SDI signal of the WFM output (second channel) to "LINK A." |
| | LINK B | | Sets the HD-SDI signal of the WFM output (second channel) to "LINK B." |

*1 Depending on the setting of "OUT1 FORMAT"/"OUT2 FORMAT" in "HDTV CONT (1/2)," the format to be selected as a synchronization signal varies.

| OUT1/OUT2 FORMAT | Synchronization Signal Format to be Selected |
|---|---|
| 1080I59. | 1080I59. |
| 1080P59. | 1080I59. |
| 1080I119. | 1080I59. |
| 1080I59.PD | 1080I59. / 1080P23.SF / 1080P23. |
| 1080P23.SF | |
| 1080P23. | |
| 720P59. | 720P59. |
| 720P119. | 720P59. |

*2 Depending on the format of the synchronization signal to be output, variable range for H PHASE and V PHASE varies.

| Synchronization Signal Output | H PHASE | V PHASE |
|---|---|---|
| 1080I59. | -1100 to 1100 | -563 to 563 |
| 1080P23.SF | -1375 to 1375 | -563 to 563 |
| 1080P23. | -1375 to 1375 | -563 to 563 |
| 720P59. | -825 to 825 | -375 to 375 |

*3 When all items other than "1080I59." are selected for "OUT1 FORMAT"/"OUT2 FORMAT" in "HDTV CONT (1/2)," selecting ON/OFF is enabled.

# AUDIO CONT

| Setting Item | Set Value | Description |
|---|---|---|
| DIGITAL DELAY | 0 to 21 | Sets the amount of delay of the digital audio output. |
| MIC1/2 OUT DELAY | 0 to 21 | Sets the amount of delay of the MIC output (2 channels). |

## ■ *When the Format is Switched from DUAL to Another*

When the format is switched from DUAL to another, VIDEO OUT CONT (DUAL) and AUDIO CONT menus are partially changed.
Only menu items to be changed are explained below.

### ● VIDEO OUT CONT (DUAL)

Items "WFM OUT1" and "WFM OUT2" are not displayed on the VIDEO OUT CONT (DUAL) menu.
In this case, both channels of WFM OUT are the HD-SDI output and fixed to LINK A.

### ● AUDIO CONT

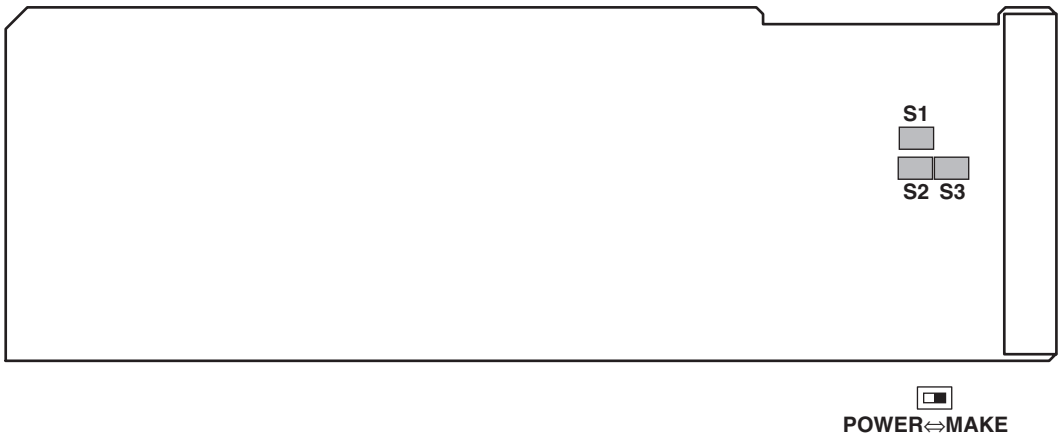
| Setting Item | Set Value | Description |
|---|---|---|
| HD-SDI EMBED | 1: OFF, 2: OFF | Sets not to embed audio signals both in the HD-SDI output1 (2 channels) and HD-SDI output2 (2 channels). |
| | 1: ON, 2: OFF | Sets to embed audio signals in the HD-SDI output1 (2 channels). |
| | 1: OFF, 2: ON | Sets to embed audio signals in the HD-SDI output2 (2 channels). |
| | 1: ON, 2: ON | Sets to embed audio signals both in the HD-SDI output1 (2 channels) and HD-SDI output2. |
| HD-PM EMBED | 1: OFF, 2: OFF | Sets not to embed audio signals both in the HD-SDI PM output1 and HD-SDI PM output2. |
| | 1: ON, 2: OFF | Sets to embed audio signals in the HD-SDI PM output1. |
| | 1: OFF, 2: ON | Sets to embed audio signals in the HD-SDI PM output2. |
| | 1: ON, 2: ON | Sets to embed audio signals both in the HD-SDI PM output1 and HD-SDI PM output2. |
| HD-WFM EMBED | OFF | Sets not to embed audio signals in the HD-SDI signal of the WFM output (2 channels). |
| | ON | Sets to embed audio signals in the HD-SDI signal of the WFM output (2 channels). |
| MASTER DELAY | 0 to 21 | Sets the amount of delay for the audio signals of all channels. |
| HD SYS DELAY | 0 to 21 | Sets the amount of delay for the audio signals of HDTV channels. |
| DIGITAL DELAY | 0 to 21 | Sets the amount of delay of the digital audio output. |
| MIC1/2 OUT DELAY | 0 to 21 | Sets the amount of delay of the MIC output (2 channels). |

# 5.2 Settings Using Switches on the Module

Depending on systems such as an external system connected to the CCU.

## Tally Mode Settings

Set the mode of the tally control signal input to the TALLY IN connector on the rear of the CCU. Select the mode by S1 to S3 switches on the AUX-A module.



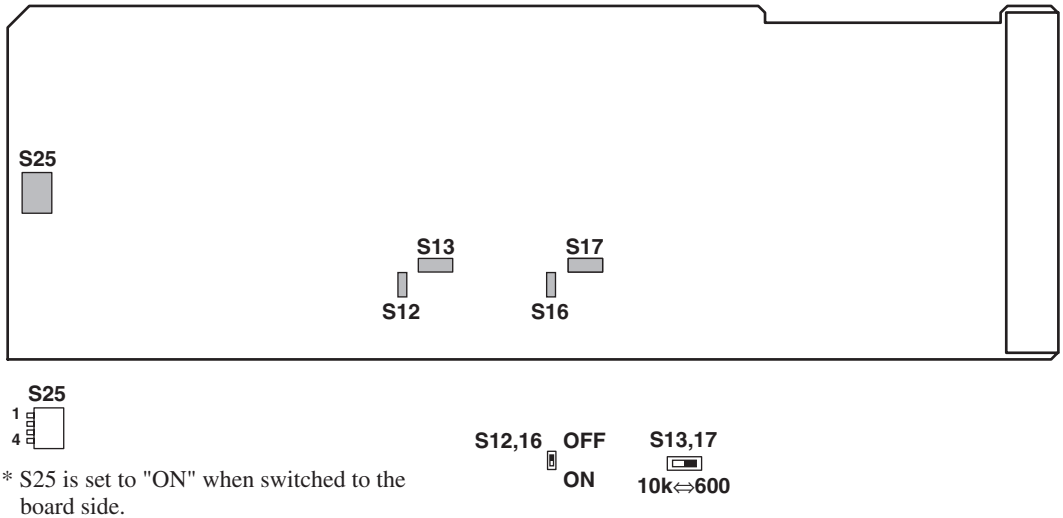

AUX-A Module (Side A)

| Switch No. | Function Name | Setting | Description |
|---|---|---|---|
| S1 | R TALLY | POWER | Sets the R TALLY signal input to the CCU to "POWER mode." |
| | | MAKE | Sets the R TALLY signal input to the CCU to "MAKE/BREAK mode." |
| S2 | G TALLY | POWER | Sets the G TALLY signal input to the CCU to "POWER mode." |
| | | MAKE | Sets the G TALLY signal input to the CCU to "MAKE/BREAK mode." |
| S3 * | Y TALLY | POWER | Sets the Y TALLY signal input to the CCU to "POWER mode." |
| | | MAKE | Sets the Y TALLY signal input to the CCU to "MAKE/BREAK mode." |

* Currently, S3 supports "MAKE" only.

# Intercom Settings

Set functions of the intercom according to the intercom system to be used. Select the function by S12, S13, S16, S17, and S25 switches on the AUX-A module.



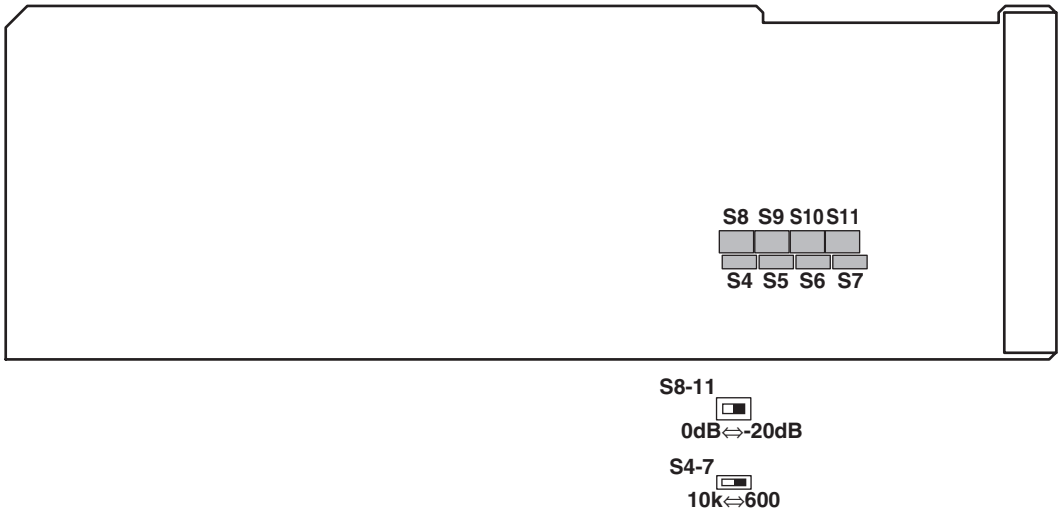

* S25 is set to "ON" when switched to the board side.

AUX-A Module (Side A)

| Switch No. | Function Name | | Setting | Description |
|---|---|---|---|---|
| S12 | ENG RTS OFF | | OFF | Sets to "OFF" when the ENG line of the system is used for "4W." |
| | | | ON | Sets to "ON" when the ENG line of the system is used for "RTS" or "clearcom." |
| S13 | ENG TERMINATE | | 600 | Sets terminal resistance of the ENG line to "600Ω." |
| | | | 10k | Sets terminal resistance of the ENG line to "10kΩ." |
| S16 | PROD RTS OFF | | OFF | Sets to "OFF" when the PROD line of the system is used for "4W." |
| | | | ON | Sets to "ON" when the PROD line of the system is used for "RTS" or "clearcom." |
| S17 | PROD TERMINATE | | 600 | Sets terminal resistance of the PROD line to "600Ω." |
| | | | 10k | Sets terminal resistance of the PROD line to "10kΩ." |
| S25 | 1 | ENG RTS ON | OFF | Sets to "OFF" when the ENG line of the system is used for "4W." |
| | | | ON | Sets to "ON" when the ENG line of the system is used for "RTS" or "clearcom." |
| | 2 | ENG RTS -15dB ON | OFF | Sets to "OFF" when the ENG line of the system is used for "RTS." |
| | | | ON | Sets to "ON" when the ENG line of the system is used for "clearcom." |
| | 3 | PROD RTS ON | OFF | Sets to "OFF" when the PROD line of the system is used for "4W." |
| | | | ON | Sets to "ON" when the PROD line of the system is used for "RTS" or "clearcom." |
| | 4 | PROD RTS -15dB ON | OFF | Sets to "OFF" when the PROD line of the system is used for "RTS." |
| | | | ON | Sets to "ON" when the PROD line of the system is used for "clearcom." |

# PGM Settings

Set PGM (program sound) signals input to the INTERCOM connector on the rear of the CCU and audio trunk signals.
Select the signal by S4 to S11 switches on the AUX-A module.




AUX-A Module (Side A)

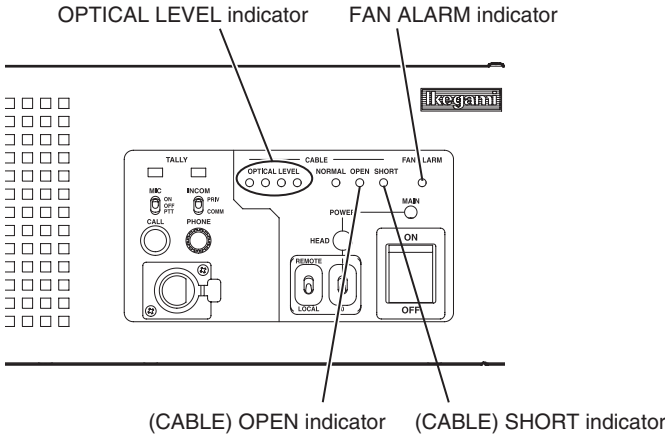
| Switch No. | Function Name | Setting | Description |
|---|---|---|---|
| S4 | PGM-1 TERMINATE | 600 | Sets the terminal resistance of the PGM-1 to "600Ω." |
| | | 10k | Sets the terminal resistance of the PGM-1 to "10kΩ." |
| S5 | PGM-2 TERMINATE | 600 | Sets the terminal resistance of the PGM-2 to "600Ω." |
| | | 10k | Sets the terminal resistance of the PGM-2 to "10kΩ." |
| S6 | PGM-3 TERMINATE | 600 | Sets the terminal resistance of the PGM-3 to "600Ω." |
| | | 10k | Sets the terminal resistance of the PGM-3 to "10kΩ." |
| S7 | AUDIO TRUNK TERMINATE | 600 | Sets the terminal resistance of the AUDIO TRUNK to "600Ω." |
| | | 10k | Sets the terminal resistance of the AUDIO TRUNK to "10kΩ." |
| S8 | PGM-1 LEVEL | 0dB | Sets to "0dB" when the input level of the PGM-1 is "0dB." |
| | | -20dB | Sets to "-20dB" when the input level of the PGM-1 is "-20dB." |
| S9 | PGM-2 LEVEL | 0dB | Sets to "0dB" when the input level of the PGM-2 is "0dB." |
| | | -20dB | Sets to "-20dB" when the input level of the PGM-2 is "-20dB." |
| S10 | PGM-3 LEVEL | 0dB | Sets to "0dB" when the input level of the PGM-3 is "0dB." |
| | | -20dB | Sets to "-20dB" when the input level of the PGM-3 is "-20dB." |
| S11 | AUDIO TRUNK LEVEL | 0dB | Sets to "0dB" when the input level of the AUDIO TRUNK is "0dB." |
| | | -20dB | Sets to "-20dB" when the input level of the AUDIO TRUNK is "-20dB." |

# TROUBLE SHOOTING and MAINTENANCE

6

# 6.1 Indicator on the Front of CCU Lights

The indicator on the front of the CCU lights when the CCU becomes abnormal. Take the following actions since the cause varies depending on the indicator lit.




## ■ *When the OPTICAL LEVEL indicator lights*

| Cause | Action |
|---|---|
| The optical connector is dirty.<br>The lighting state of the OPTICAL LEVEL indicator changes. | Clean the optical connector. |

## ■ *When the (CABLE) OPEN indicator lights*

| Cause | Action |
|---|---|
| The (CABLE) OPEN indicator lights when the camera cable is not connected or there is an open. | Check if the camera cable is properly connected or there is no open.<br>If there is an open, replace the camera cable with a new one. |

## ■ *When the (CABLE) SHORT indicator lights*

| Cause | Action |
|---|---|
| The (CABLE) SHORT indicator lights when a short circuit occurs in the camera cable or a short circuit occurs in the optical connector due to a cause such as water. | Check if a short circuit occurs in the camera cable or the optical connector is dry.<br>If the optical connector is wet, dry it and then clean it. |

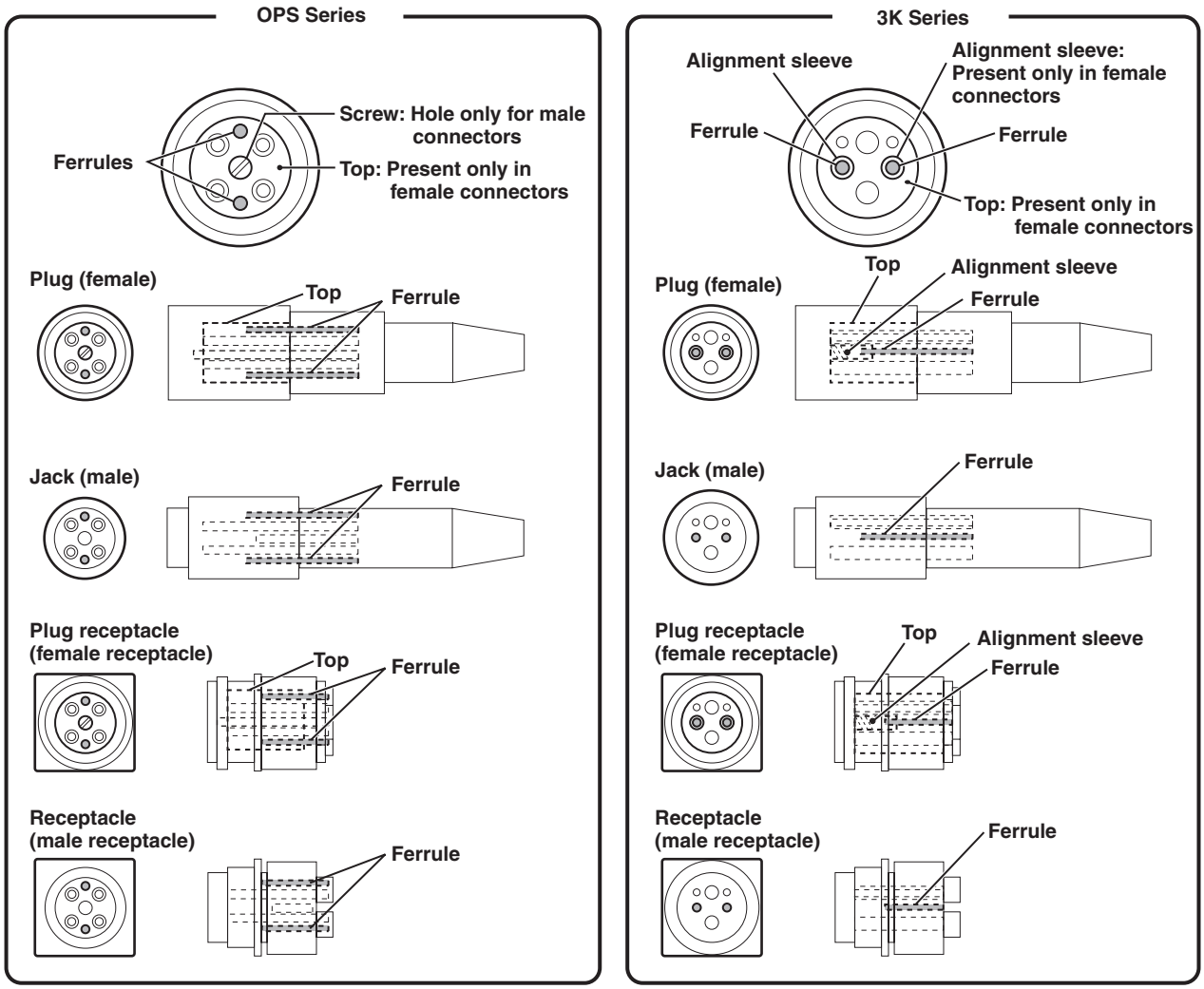
## ■ *When the FAN ALARM indicator lights*

| Cause | Action |
|---|---|
| The FAN ALARM indicator lights when any of the fans (three in total) inside the CCU stops. | Check if the fans are normal.<br>If any of the fans is abnormal or the lifetime of the fan expires, replace it with a new one. |

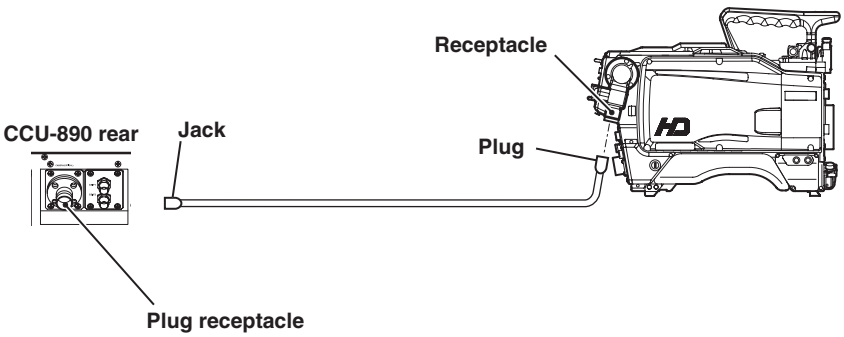
## ■ *Cleaning Optical Connectors*

The camera cable connecting the camera head and the CCU transmits optical signals through 10μm core glass fibers. If Ferrules, which secure glass fibers, are dirty or have dust on them, transmission loss (optical signal attenuation) occurs. If Ferrules are extremely dirty, optical signals are interrupted and the camera cable may not work properly.
Regular cleaning of Ferrules is suggested if the camera connector is frequently removed and inserted. The figures below show the shape of the camera connector joint section, location of the Ferrules, and how to clean the Ferrules:

### ● *Camera Connector Joint Section*




### ● *Plug/Jack for Camera Connectors*



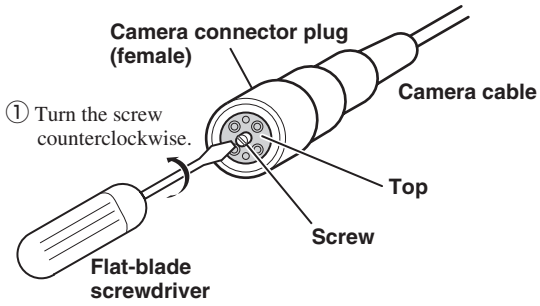

Clean the four sections: receptacle on the camera head, plug receptacle on the CCU, and plug/jack on both ends of the camera cable. The cleaning method for male connectors slightly differs from that for female connectors.

## ■ *OPS Series Connectors*

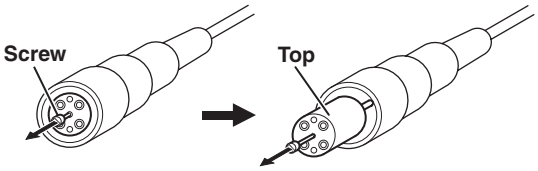
The following explains how to clean Ferrules using a Tajimi OPS series camera cable plug (female) as an example.

**1** Loosen the screw at the center of the connector with a flat-blade screwdriver or a coin.

After turned 9 or 10 turns counterclockwise, the screw will come out. The screw is not removed because it is attached to the top.




**2** Pull the screw and remove the top from the connector.

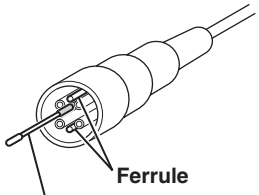



② Pull the screw to remove the top from the connector.

**3** Wipe the Ferrule with a cotton swab dampened with alcohol.

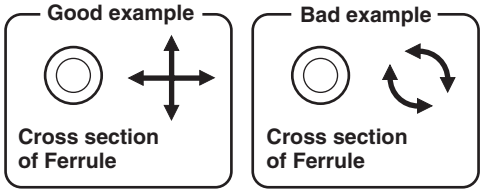
***CAUTION:***

- When you wipe the Ferrule, move the cotton swab straight in a way in which you brush the dust off the Ferrule. Do not wipe back and forth or in a circle. Doing so may spread the dirt instead of removing it.
- Do not carelessly blow your breath on the Ferrule.




③ Wipe with a cotton swab dampened with alcohol.

**4** After wiping the Ferrule with alcohol, wipe the Ferrule with a dry cotton swab.




**5** Make sure that the dirt is removed.

Use a loupe to examine the Ferrule.

**6** If the Ferrule is free from dirt, align the top with the connector guide and put it back in the connector.

Be sure to push the top securely into the connector.

**7** Tighten the screw with a flat-blade screwdriver or a coin.

Male connectors have no "top"; therefore, steps 1, 2, and 6 above are not required.

## ■ *3K Series Connectors*

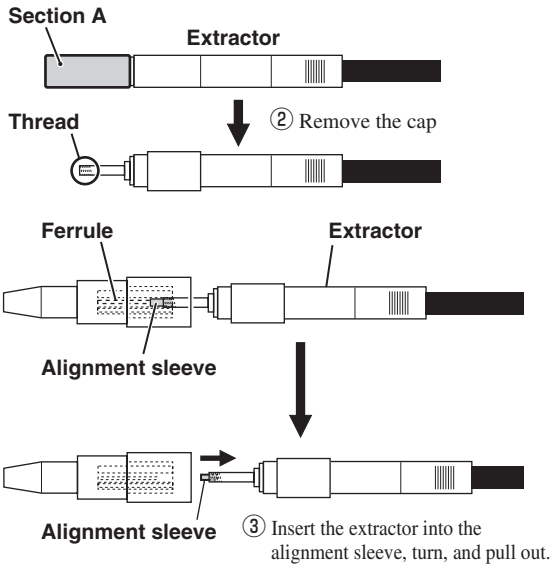
The following explains how to clean Ferrules using a Lemo 3K series camera cable plug (female) as an example.

***CAUTION:***

When removing the alignment sleeve, be sure to use a dedicated optical contact extractor (DCC.91.312.5LA). Also use the end of the extractor that has an inner thread.

***1*** Prepare a dedicated extractor and place the extractor in a position parallel to the connector.

***2*** Remove the cap of section A (with a thread).



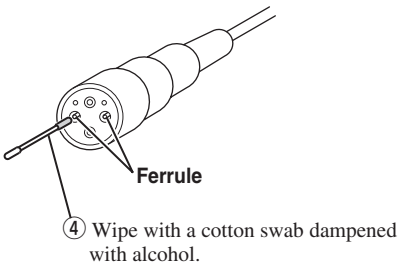

***3*** Insert the extractor into the alignment sleeve and turn the extractor clockwise 8 to 10 turns until it stops. When it stops, pull the extractor out straight.

Leave the alignment sleeve attached to the extractor.

***4*** Wipe the Ferrule with a cotton swab dampened with alcohol.

***CAUTION:***

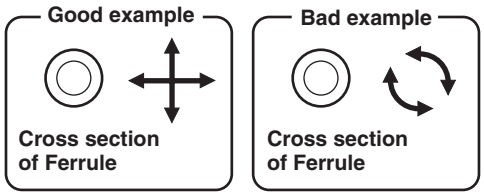
- When you wipe the Ferrule, move the cotton swab straight in a way in which you brush the dust off the Ferrule. Do not wipe back and forth or in a circle. Doing so may spread the dirt instead of removing it.
- Do not carelessly blow your breath on the Ferrule.




***5*** After wiping the Ferrule with alcohol, wipe the Ferrule with a dry cotton swab.

***6*** Make sure that the dirt is removed.

Use a loupe to examine the Ferrule.




***7*** Wipe the electrical contact and alignment sleeve in the same way.

***8*** Insert the alignment sleeve into the optical contact until it clicks and turn the extractor counterclockwise 8 to 10 turns.

The extractor is removed from the alignment sleeve.

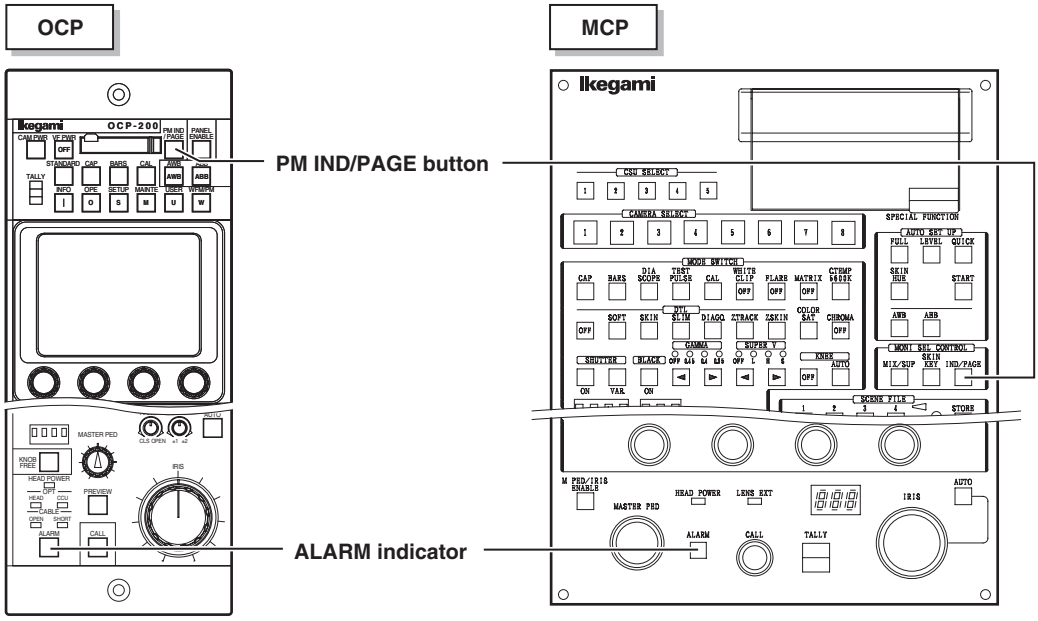
Male connectors have neither "top" nor "alignment sleeve"; therefore, steps 1 to 3 and 8 above are not required.

# 6.2 ALARM Indicator on the Control Panel Flashes ON and OFF

The CCU-890 is equipped with a self diagnostic function which monitors whether the CCU and camera head are running normal. As soon as the CCU power is turned ON, the self diagnostic function starts running, and always runs during operation.
If the CCU or camera head becomes abnormal, the diagnostic function immediately detects the abnormality, and the ALARM indicator on the control panel flashes ON and OFF. At this time, the self diagnostic information is displayed on the Picture Monitor, so that you can locate the abnormal point.

***Note:***

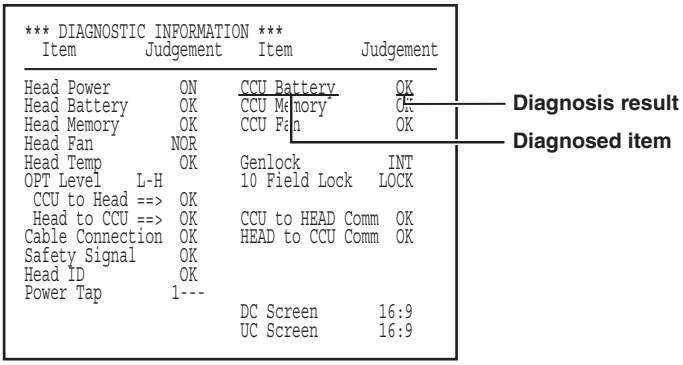
Even if the ALARM indicator does not flash, you can check whether CCU and camera are running normal by pressing the PM IND/PAGE switch on the control panel twice to display the self diagnostic information on the Picture Monitor.



# CCU Self Diagnostic Information

## ■ *Self Diagnostic Information Screen*

The following is the Self Diagnostic Information Screen of the CCU.




## ■ *List of Self Diagnostic Information*

The CCU self diagnostic information may differ slightly for the standard specification and the DUAL LINK (HS TYPE) specification. The following tables list the self diagnostic information for the standard specification and the DUAL LINK (HS TYPE) specification respectively.

### List of Self Diagnostic Information (Standard Specification)

| Diagnosed Item | | Description | Diagnosis Result | Meaning |
|---|---|---|---|---|
| Camera Head | Head Power | Power status of the camera head | ON | The camera head is powered ON. |
| | | | OFF | The camera head is powered OFF. |
| | Head Battery | Status of the battery in the MPU module of the camera head | OK | Normal |
| | | | NG | The backup battery voltage is low. |
| | Head Memory | Status of the RAM IC memory in the MPU module of the camera head | OK | Normal |
| | | | NG | Data in the module is destroyed |
| | Head Fan | Rotating status of fan of the camera head or FA (Fiber Adaptor) | AUTO SSLOW | Super-slow in auto mode |
| | | | AUTO SLOW | Slow in auto mode |
| | | | AUTO NOR | Normal in auto mode |
| | | | AUTO FAST | Fast in auto mode |
| | | | SSLOW | Super-slow in manual mode |
| | | | SLOW | Slow in manual mode |
| | | | NOR | Normal in manual mode |
| | | | FAST | Fast in auto manual |
| | Head Temp | Internal temperature of the camera head | OK | Normal |
| | | | NG | The temperature is abnormally high or the difference between the internal temperature and outside-air temperature is at least 25°C. |
| Camera Cable | (OPT Level L-H) CCU to Head | Optical signal level sent from the CCU to the camera head (detected by the reception module in the camera head) | OK | Good |
| | | | ATTEN | The amount of light received decreased. |
| | | | WARN | The amount of light received significantly decreased. |
| | | | NG | Light cannot be received. |
| | (OPT Level L-H) Head to CCU | Optical signal level sent from the camera head to the CCU (detected by the reception module in the CCU) | OK | Good |
| | | | ATTEN | The amount of light received decreased. |
| | | | WARN | The amount of light received significantly decreased. |
| | | | NG | Light cannot be received. |
| | Cable Connection | Camera cable connection status between the camera head and the CCU | OK | Normal |
| | | | OPEN | Cable is not connected, or there is an open. |
| | | | SHORT | A short circuit occurs in the cable. |

| | | | | |
|---|---|---|---|---|
| CCU | Safety signal | Status of the safety signal sent from the camera head to the CCU | OK | Normal |
| | | | NG | The safety signal is not received, or the connected camera head is not supported by this CCU. |
| | Head ID | Status of the model identification signal sent from the camera head to the CCU | OK | Normal |
| | | | NG | The model identification signal is not received, or the connected camera head is not supported by this CCU. |
| | Power Tap | Transformer tap number in the CCU for transmitting power to the camera head | 1, 2, 3, 4 | Tap number used for the power being transmitted. The higher the number, the higher the voltage. |
| | CCU Battery | Status of the battery in the CCU CONT/REF module | OK | Normal |
| | | | NG | The backup battery voltage is low. |
| | CCU Memory | Status of the RAM IC memory in the CCU CONT/REF module | OK | Normal |
| | | | NG | Data in the module is destroyed. |
| | CCU Fan | Rotating status of the fans on the rear and inside of the CCU | OK | Normal |
| | | | NG | Any of the three fans is not working. |
| | | | | |
| | Genlock | Status of external SYNC signal | INT | No external SYNC signals are input (operation is performed with internal SYNC signals.) |
| | | | NTSC | When external SYNC signal is NTSC |
| | | | 1080I59. | When external SYNC signal is 1080I59.94 |
| | | | 1080P23. | When external SYNC signal is 1080P23.98 |
| | | | 720P59. | When external SYNC signal is 720P59.94 |
| | | | 720P23. | When external SYNC signal is 720P23.98 |
| | | | PAL | When external SYNC signal is PAL |
| | | | 1080I50. | When external SYNC signal is 1080I50 |
| | | | 720P50. | When external SYNC signal is 720P50 |
| | | | 720P24. | When external SYNC signal is 720P24 |
| | | | UNKNOWN | External SYNC signals are input, but synchronization is not performed. |
| | 10 Field Lock | (To be supported in the future) Only when Head Format is "1080P23" | LOCK | (To be supported in the future) |
| | | | UNLOCK | |
| | CCU to Head Comm | Status of the command signal sent from the CCU to the camera head | OK | Normal |
| | | | NG | No command signals are sent, or a CPU error occurs. |
| | Head to CCU Comm | Status of the command signal sent from the camera head to the CCU | OK | Normal |
| | | | NG | No command signals are sent, or a CPU error occurs. |
| | DC Screen | Screen mode status of the SDTV output signal | 4:3 | The aspect ratio is 4:3 |
| | | | 16:9 | The aspect ratio is 16:9 |
| | | | LB 16:9 | Letterbox 16:9 |
| | | | LB 14:9 | Letterbox 14:9 |
| | | | LB 13:9 | Letterbox 13:9 |
| | UC Screen | Screen mode status of up converted signal | 4:3 | The aspect ratio is 4:3 |
| | | | 16:9 | The aspect ratio is 16:9 |
| | | | LB 16:9 | Letterbox 16:9 |
| | | | LB 14:9 | Letterbox 14:9 |
| | | | LB 13:9 | Letterbox 13:9 |

## List of Self Diagnostic Information (DUAL LINK (HS TYPE) Specification)

* The content of the items filled in grey on this table is the same as that of the standard specification.

| Diagnosed Item | | Description | Diagnosis Result | Meaning |
|---|---|---|---|---|
| Camera Head | Head Power | Power status of the camera head | ON | The camera is powered ON. |
| | | | OFF | The camera is powered OFF. |
| | Head Battery | Status of the battery in the MPU module of the camera head | OK | Normal |
| | | | NG | The backup battery voltage is low. |
| | Head Memory | Status of the RAM IC memory in the MPU module of the camera head | OK | Normal |
| | | | NG | Data in the module is destroyed |
| | Head Fan | Rotating status of fan of the camera head or FA (Fiber Adaptor) | AUTO SSLOW | Super-slow in auto mode |
| | | | AUTO SLOW | Slow in auto mode |
| | | | AUTO NOR | Normal in auto mode |
| | | | AUTO FAST | Fast in auto mode |
| | | | SSLOW | Super-slow in manual mode |
| | | | SLOW | Slow in manual mode |
| | | | NOR | Normal in manual mode |
| | | | FAST | Fast in auto manual |
| | Head Temp | Internal temperature of the camera head | OK | Normal |
| | | | NG | The temperature is abnormally high or the difference between the internal temperature and outside-air temperature is at least 25°C. |
| Camera Cable | (OPT Level L-H) CCU to Head | Optical signal level sent from the CCU to the camera head (detected by the reception module in the camera head) | OK | Good |
| | | | ATTEN | The amount of light received decreased. |
| | | | WARN | The amount of light received significantly decreased. |
| | | | NG | Light cannot be received. |
| | (OPT Level L-H) Head to CCU [*1] | Optical signal level sent from the camera head to the CCU (detected by the reception module in the CCU) -> Optical signal level for LINK A and LINK B are detected respectively. | OK | Good |
| | | | ATTEN | The amount of light received decreased. |
| | | | WARN | The amount of light received significantly decreased. |
| | | | NG | Light cannot be received. |
| | Cable Connection | Camera cable connection status between the camera head and the CCU | OK | Normal |
| | | | OPEN | Cable is not connected, or there is an open. |
| | | | SHORT | A short circuit occurs in the cable. |
| CCU | Safety signal | Status of the safety signal sent from the camera head to the CCU | OK | Normal |
| | | | NG | The safety signal is not received, or the connected camera head is not supported by this CCU. |
| | Head ID | Status of the model identification signal sent from the camera head to the CCU | OK | Normal |
| | | | NG | The model identification signal is not received, or the connected camera head is not supported by this CCU. |
| | Power Tap | Transformer tap number in the CCU for transmitting power to the camera head | 1, 2, 3, 4 | Tap number used for the power being transmitted. The higher the number, the higher the voltage. |

| | | | | |
|---|---|---|---|---|
| CCU | (DUAL Mode) | Status of the module required due to the DUAL LINK (HS TYPE) specification of the CCU | CCU: Dual | The CCU is in the perfect state for the DUAL LINK (HS TYPE) specification.<br>(The E/O&O/E module supports DUAL LINK (HS TYPE) and the HDTV PROC module is installed in the slot of the SDTV PROC module.) |
| | | | CCU: Dual<br>VIDEO OUT is not Dual! | The VIDEO OUT module is not exclusively for DUAL LINK (HS TYPE) . |
| | | | Warning! Dual Module<br>E/O O/E only | The modules other than the E/O&O/E module are not exclusively for DUAL LINK (HS TYPE) . |
| | | | Warning! Dual Module<br>HDTV PROC only | The modules other than the HDTV PROC module are not exclusively for DUAL LINK (HS TYPE) . |
| | | | Warning! Dual Module<br>VIDEO OUT only | The modules other than the VIDEO OUT module are not exclusively for DUAL LINK (HS TYPE) . |
| | | | Warning! Dual Module<br>E/O O/E, VIDEO OUT | The HDTV PROC module is not exclusively for DUAL LINK (HS TYPE) . |
| | | | Warning! Dual Module<br>HDTV PROC, VIDEO OUT | The E/O&O/E module is not exclusively for DUAL LINK (HS TYPE) . |
| | CCU Battery | Status of the battery in the CCU CONT/REF module | OK | Normal |
| | | | NG | The backup battery voltage is low. |
| | CCU Memory | Status of the RAM IC memory in the CCU CONT/REF module | OK | Normal |
| | | | NG | Data in the module is destroyed. |
| | CCU Fan | Rotating status of the fans on the rear and inside of the CCU | OK | Normal |
| | | | NG | Any of the three fans is not working. |
| | | | | |
| | Genlock | Status of external SYNC signal | INT | No external SYNC signals are input (operation is performed with internal SYNC signals.) |
| | | | NTSC | When external SYNC signal is NTSC |
| | | | 1080I59. | When external SYNC signal is 1080I59.94 |
| | | | 1080P23. | When external SYNC signal is 1080P23.98 |
| | | | 720P59. | When external SYNC signal is 720P59.94 |
| | | | 720P23. | When external SYNC signal is 720P23.98 |
| | | | PAL | When external SYNC signal is PAL |
| | | | 1080I50. | When external SYNC signal is 1080I50 |
| | | | 720P50. | When external SYNC signal is 720P50 |
| | | | 720P24. | When external SYNC signal is 720P24 |
| | | | UNKNOWN | External SYNC signals are input, but synchronization is not performed. |
| | 10 Field Lock | (To be supported in the future) Only when Head Format is "1080P23" | LOCK | (To be supported in the future) |
| | | | UNLOCK | |
| | CCU to Head Comm | Status of the command signal sent from the CCU to the camera head | OK | Normal |
| | | | NG | No command signals are sent, or a CPU error occurs. |
| | Head to CCU Comm | Status of the command signal sent from the camera head to the CCU | OK | Normal |
| | | | NG | No command signals are sent, or a CPU error occurs. |
| | DC Screen | Screen mode status of the SDTV output signal | *** | ("***" is displayed for the diagnosis result since the down converter function is disabled in the DUAL LINK (HS TYPE) specification.) |
| | UC Screen | Screen mode status of up converted signal | 4:3 | The aspect ratio is 4:3 |
| | | | 16:9 | The aspect ratio is 16:9 |
| | | | LB 16:9 | Letterbox 16:9 |
| | | | LB 14:9 | Letterbox 14:9 |
| | | | LB 13:9 | Letterbox 13:9 |

*1: When the camera head supports DUAL LINK (HS TYPE), the worse (LINK A or LINK B) diagnosis result is displayed. This diagnosis result is not displayed when the both states are the same.
(Example) Head to CCU L-A WARN
"L-A WARN" indicates that "the diagnosis result for LINK A is 'WARN'."

The lighting state of the OPTICAL indicator on the front of the CCU indicates the worse state as this self diagnostic information display. When both states are the same, the lighting state indicates the strength of the optical level.

# 6.3 Replacing Fuses

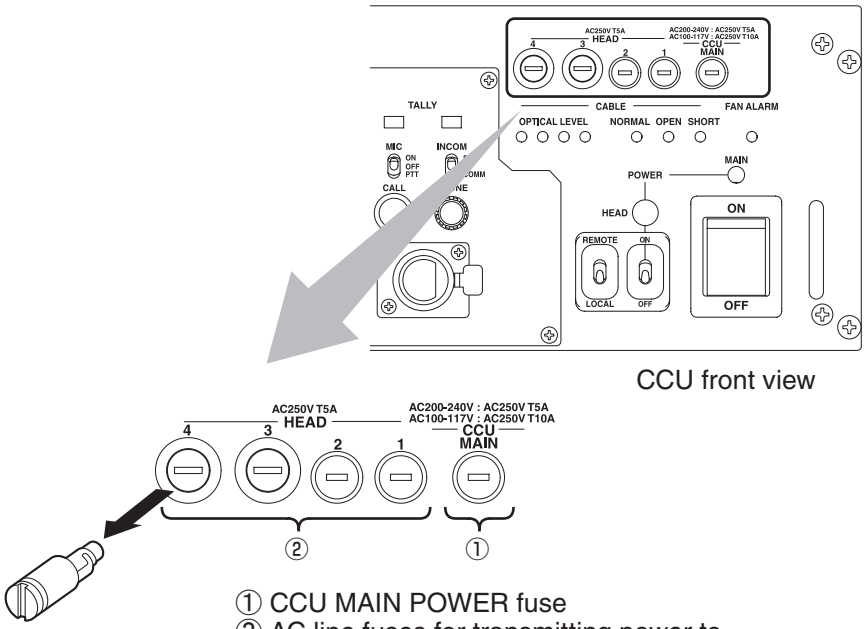
If this product does not turn on even if the AC power supply and peripheral equipment are properly connected, a fuse may have blown. If so, replace the fuse as described below.

***CAUTION:***

Use specified fuses or equivalent ones. For fuses that can be used, refer to "CCU-890 Front View With the Front Cover Off" (page 14).

***1*** Make sure the MAIN POWER switch on the front of the CCU is turned "OFF."

***2*** Use a flat-blade screwdriver or the like to press and turn the fuse on the front of the CCU counterclockwise and remove it.




CCU front view

① CCU MAIN POWER fuse
② AC line fuses for transmitting power to the camera head

***3*** Insert a new fuse into the fuse cap and turn it clockwise using a flat-blade screwdriver or the like until it seats firmly.

# CHANGING INFORMATION

This chapter contains the revision information of user-specific specification or design change requested by users.
Read by comparing this information with the main part of the maintenance manual.

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## Camera Control Unit
## OPERATION MANUAL

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