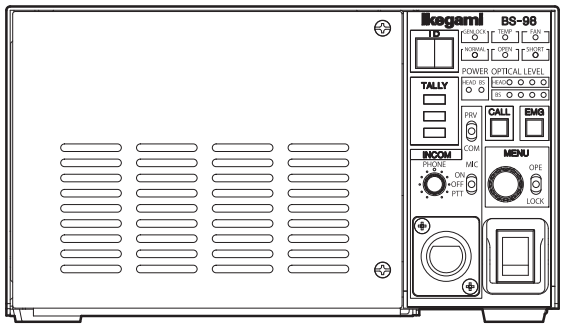



**Products conforming to RoHS directive**

# BS-98

## Base Station

## OPERATION MANUAL

Ikegami

CE

**Products conforming to RoHS directive**

# BS-98

Base Station

## OPERATION MANUAL




**1409 1st Edition (U) (E)**


Ikegami

***English***

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

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

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

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

***Deutsch***

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

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

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

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

***Français***

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

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

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

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

***Español***

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

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

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

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

# PRODUCTS CONFORMING TO RoHS DIRECTIVE

Following products described in this manual are products conforming to RoHS directive.
• BS-98 Base Station

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.

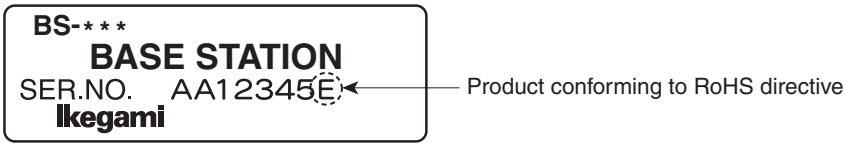
1. Mercury in compact fluorescent lamps not exceeding 5mg per lamp
2. Mercury in straight fluorescent lamps for general purposes not exceeding:
   - halophosphate 10mg
   - triphosphate with a normal lifetime 5mg
   - triphosphate with a long lifetime 8mg
3. Mercury in straight fluorescent lamps for 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

1. 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.

2. 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.

3. Please use it by less than 10m, when you use cable of MIC1 OUT, MIC2 OUT, AUD TRUNK, INTERCOM, and DIGITAL AUDIO.

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
   BS-98 + HDK-79GX + FA-97 + COP-399 : 7.42A

5. Use shielded cable except AC cable.

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

People's Republic of China Electronic Industry Standard (SJ/T11364—2006)

**Marking Styles for Names and Contents of Toxic or hazardous Substances and Elements**

| Part Name | Toxic or hazardous Substances and Elements | | | | | |
|---|---|---|---|---|---|---|
| | Lead (Pb) | Mercury (Hg) | Cadmium (Cd) | Hexavalent Chromium (Cr/(VI)) | Polybrominated biphenyls (PBB) | Polybrominated diphenyl ethers (PBDE) |
| BS-98 | × | ○ | ○ | ○ | ○ | ○ |
| CCU-980 | × | ○ | ○ | ○ | ○ | ○ |

○ : Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.
× : Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.

# 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.

# HOW TO READ THE OPERATION MANUAL

This page explains general notes on reading the BS-98 Operation Manual, and the symbols and notations used in the manual.

## ■ Notes on the Manual

- The target readers of this manual are the people, who has basic knowledge on handling of television cameras for broadcasting, base stations, and/or control panels.
- 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, BS | Indicates BS-98 Base Station. |
| 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, BS, and each control panel to be used.

## ■ Structure of Operation Manual

BS-98 Camera Control Unit Operation Manual is intended to both safely and smoothly operate the BS-98. The Operation Manual consists of six chapters. By reading it in sequence, you can smoothly perform a series of steps, from connection to operation.

**Chapter 1**

### *OUTLINE*

Explains the features and the specifications of this product.
If you are not familiar with BS-98, please start with this chapter.

**Chapter 2**

### *NAME and FUNCTION*

Explains the name and function of each part of the BS-98.

**Chapter 3**

### *FORMATS and GENLOCK*

Explains the signal formats of the BS-98.

**Chapter 4**

### *EQUIPMENT CONNECTIONS*

Also explains how to connect this product to camera and the peripheral equipment and examples to operate this product.

**Chapter 5**

### *BS SETTINGS and ADJUSTMENT*

Explains the menu of the BS-98 and DIP switch settings on the modules inside of the BS.

**Chapter 6**

### *TROUBLE SHOOTING and MAINTENANCE*

BS-98 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.).

# BS-98

BASE STATION

# OPERATION MANUAL

# 1

# OUTLINE

BS-98 is the half-rack size base station that can configure the 3G-compatible "Unicam HD" camera series and the multi format system by the image circuit corresponding to the 3 Gbps transmission and 3G-SDI format.
The base station and the camera head are connected by the 8-core optical fiber composite camera cable (two single mode fibers, four power supply lines, and two control lines). It can be extended to the maximum of 1000m(*) by the optical serial digital transmission method that is conformable to SMPTE425 (Level-B) [international standard] when operating the large camera head and build-up unit.

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

# 1.1 Features of This Product

### ■ *Transmission between the Camera Head and BS with 3G-SDI.*

Transmission is possible between the camera head and BS with 3G-SDI. 1080 progressive scans of the camera head, the high-definition format of 1080i RGB4:4:4, and the 2X speed images of the slow motion format can be output from BS.
When 3G-SDI format is operated, HD-SDI and DUAL-LINK can also be selected with the BS output. In addition, the simultaneous output of 3G-SDI and HD-SDI is also possible.

### ■ *Bidirectional HD-SDI trunk video line*

The bi-directional HD-SDI (1.5G) trunk video line is standard equipment.
The bi-directional HD-SDI trunk video line can be used when the FA (Fiber Adaptor) at the camera head side is compatible.
Moreover, the trunk video (HD-QTV) from BS to the camera head also corresponds to asynchronous videos and asynchronous embedded audio (4 ch). In addition, the trunk video can be used together with the conventional analog QTV (composite signal trunk 2 ch).

### ■ *Multi return video input*

For the returned video input, inputs of four channels are possible with 3G/HD-SDI/SD-SDI automatic recognition. Each channel is equipped with the frame synchronizer function; therefore, each channel corresponds to asynchronous signals.
The two-channel ACTIVE-THROUGH function is provided. Switching between the ACTIVE-THROUGH function and the four-channel input function is possible by selecting in the BS menu.
* When the ACTIVE-THROUGH function is used, both BS and the camera head have the two return channel specification.

### ■ *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.

### ■ *Remote Control to Support Network*

In addition to the conventional Ikegami serial command (ICCP), controls by the network connection are also available.
By setting up the system that corresponds to ARCNET, a wide variety of operation formats including panel assignments become possible. In addition, it is also compatible with systems corresponding to Ethernet, which allows wide expandability.

### ■ *Front/rear panel Fulfillment of system interface function*

The system interface function is more fulfilled when compared to the conventional systems, and thus the system operability has improved.
This system uses the module that is common to that of the full rack size camera control unit [CCU-980] in the same series as this BS.
The display system, operation system, input and output I/O are compatible; therefore, the system construction performance, serviceability, and operability improved.
The front panel is equipped with the ID No. display function. Recognitions of the corresponding camera and the network ID became easier.
The rotary switches for easier access to the BS menu is provided to the front panel.

# 1.2 Specifications

## ■ *Rating and Performance*

Output format (CCU / BS Common)

| | | | |
|---|---|---|---|
| Camera head format:1080I/59.94 Y Pb Pr 4:2:2 | | | |
| -HDTV Signal output | | | |
| 1080I/59.94 | | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | | |
| 525I/59.94 | | | |
| Camera head format:1080P/23.98 2-3 pull down Y Pb Pr 4:2:2 | | | |
| -HDTV Signal output | | | |
| 1080P/23.98 | 2-3 pull down | Y Pb Pr 4:2:2 | |
| 1080P/23.98sF | segmented Frame | Y Pb Pr 4:2:2 | |
| 1080P/23.98 | | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | | |
| 525I/59.94 (1080p23PD to Down Convert) | | | |
| Camera head format:1080P/29.97sF Y Pb Pr 4:2:2 | | | |
| -HDTV Signal output | | | |
| 1080P/29.97sF | segmented Frame | Y Pb Pr 4:2:2 | |
| 1080P/29.97 | | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | | |
| 525I/59.94 (1080p29sF to Down Convert) | | | |
| Camera head format:720P/59.94 Y Pb Pr 4:2:2 | | | |
| -HDTV Signal output | | | |
| 720P/59.94 | | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | | |
| 525I/59.94 | | | |
| Camera head format:1080P/59.94 Y Pb Pr 4:2:2 | | | |
| -HDTV Signal output | | | |
| 1080P/59.94 | | Y Pb Pr 4:2:2 | 3G HD SDI |
| 1080P/59.94 | | Y Pb Pr 4:2:2 | DUAL LINK |
| 1080I/59.94 | | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | | |
| 525I/59.94 | | | |
| Camera head format:1080I/59.94 G B R 4:4:4 | | | |
| -HDTV Signal output | | | |
| 1080I/59.94 | | G B R 4:4:4 | 3G HD SDI |
| 1080I/59.94 | | G B R 4:4:4 | DUAL LINK |
| 1080I/59.94 | | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | | |
| 525I/59.94 | | | |
| Camera head format:1080P/23.98 2-3 pull down G B R 4:4:4 | | | |
| -HDTV Signal output | | | |
| 1080P/23.98 | 2-3 pull down | G B R 4:4:4 | 3G HD SDI |
| 1080P/23.98 | 2-3 pull down | G B R 4:4:4 | DUAL LINK |
| 1080P/23.98 | 2-3 pull down | Y Pb Pr 4:2:2 | |
| 1080P/23.98sF | segmented Frame | G B R 4:4:4 | 3G HD SDI |
| 1080P/23.98sF | segmented Frame | G B R 4:4:4 | DUAL LINK |
| 1080P/23.98sF | segmented Frame | Y Pb Pr 4:2:2 | |
| 1080P/23.98 | | G B R 4:4:4 | 3G HD SDI |
| 1080P/23.98 | | G B R 4:4:4 | DUAL LINK |
| 1080P/23.98 | | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | | |
| 525I/59.94 (1080p23PD to Down Convert) | | | |
| Camera head format:1080P/29.97sF G B R 4:4:4 | | | |
| -HDTV Signal output | | | |
| 1080P/29.97sF | segmented Frame | G B R 4:4:4 | 3G HD SDI |
| 1080P/29.97sF | segmented Frame | G B R 4:4:4 | DUAL LINK |
| 1080P/29.97sF | segmented Frame | Y Pb Pr 4:2:2 | |
| 1080P/29.97 | | G B R 4:4:4 | 3G HD SDI |
| 1080P/29.97 | | G B R 4:4:4 | DUAL LINK |
| 1080P/29.97 | | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | | |
| 525I/59.94 (1080p29sF to Down Convert) | | | |

| | | |
|---|---|---|
| Camera head format:1080I/119.88 Y Pb Pr 4:2:2 | | |
| -HDTV Signal output | | |
| 1080I/119.88 | Y Pb Pr 4:2:2 | 3G HD SDI |
| 1080I/119.88 | Y Pb Pr 4:2:2 | DUAL LINK |
| 1080I/59.94 | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | |
| 525I/59.94 | | |

| | | |
|---|---|---|
| Camera head format:1080I/50 Y Pb Pr 4:2:2 | | |
| -HDTV Signal output | | |
| 1080I/50 | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | |
| 625I/50 | | |
| Camera head format:1080P/25sF Y Pb Pr 4:2:2 | | |
| -HDTV Signal output | | |
| 1080P/25sF segmented Frame | Y Pb Pr 4:2:2 | |
| 1080P/25 | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | |
| 625I/50 (1080p25sF to Down Convert) | | |
| Camera head format:720P/50 Y Pb Pr 4:2:2 | | |
| -HDTV Signal output | | |
| 720P/50 | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | |
| 625I/50 | | |
| Camera head format:1080P/50 Y Pb Pr 4:2:2 | | |
| -HDTV Signal output | | |
| 1080P/50 | Y Pb Pr 4:2:2 | 3G HD SDI |
| 1080P/50 | Y Pb Pr 4:2:2 | DUAL LINK |
| 1080I/50 | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | |
| 625I/50 | | |
| Camera head format:1080I/50 G B R 4:4:4 | | |
| -HDTV Signal output | | |
| 1080I/50 | G B R 4:4:4 | 3G HD SDI |
| 1080I/50 | G B R 4:4:4 | DUAL LINK |
| 1080I/50 | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | |
| 625I/50 | | |
| Camera head format:1080P/25sF G B R 4:4:4 | | |
| -HDTV Signal output | | |
| 1080P/25sF segmented Frame | G B R 4:4:4 | 3G HD SDI |
| 1080P/25sF segmented Frame | G B R 4:4:4 | DUAL LINK |
| 1080P/25sF segmented Frame | Y Pb Pr 4:2:2 | |
| 1080P/25 | G B R 4:4:4 | 3G HD SDI |
| 1080P/25 | G B R 4:4:4 | DUAL LINK |
| 1080P/25 | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | |
| 625I/50 (1080p25sF to Down Convert) | | |
| Camera head format:1080I/100 Y Pb Pr 4:2:2 | | |
| -HDTV Signal output | | |
| 1080I/100 | Y Pb Pr 4:2:2 | 3G HD SDI |
| 1080I/100 | Y Pb Pr 4:2:2 | DUAL LINK |
| 1080I/50 | Y Pb Pr 4:2:2 | |
| -SDTV Signal output | | |
| 625I/50 | | |

| | | | | |
|---|---|---|---|---|
| Analog Frequency characteristic | SDTV Signal output (Downconverted from 1080I) | Y signal | | |
| | | | Less than 60 Hz | Falling characteristic |
| | | | 60 Hz to 4.5 MHz | ± 0.5dB within |
| | | | 4.5 MHz to 5 MHz | ± 1.0dB within |
| | | | 5 MHz or more | Falling characteristic |
| | Audio output signal (MIC1 / 2 OUT) | | Less than 100 Hz | Falling characteristic |
| | | | 100Hz to 10kHz | ± 1.0dB within |
| | | | 10kHz or more | Falling characteristic |

| | | |
|---|---|---|
| Power | Power-supply voltage | AC100V/110V/117V/220V/240V ± 10% |
| | Power consumption | CCU-980 self operation Approx. 110 VA<br>BS-98 self operation Approx. 80 VA |
| Environmental condition | Using Workstation temperature range | Operating temperature CCU : 0℃ to +45℃ BS : 0 ℃ to +40℃<br>Storage temperature : -30℃ to + 60℃ |
| | Using Workstation humidity range | It is non-condensing 30% to 90% |
| External dimensions | | CCU-980 W483 × H133 × D454 (Not including protrusions)<br>BS-98 W219 × H125 × D457 (Not including protrusions) |
| Mass | | CCU : About 28kg BS : About 9kg |
| Aplike estanda | EMC standards | FCC15 Subpart B Class A / EN55103-1, EN55103-2 |
| | Safety standard | EN60950-1 |
| | Quality control | ISO 9001 (JIS Z 9901) |
| | Security Trade Control | Thawed relevant goods |
| Using Workstation conditions | Electrical environment | Normal living area<br>(I except the strong electric field, and magnetic field strength) |
| | Apply standard | SMPTE 292M, SMPTE 425M, SMPTE 372M, SMPTE 259M |

## ■ *Input Signals*

| Item | Rating | | | |
|---|---|---|---|---|
| GENLOCK signal (HDTV/SDTV supported) | HDTV : PS | 1Vp-p | | 75Ω bridged connection |
| | or | | | |
| | Tri-level sync | 0.6Vp-p ± 6dB | | 75Ω bridged connection |
| | SDTV : BBS | 1Vp-p | | 75Ω bridged connection |
| | or | | | |
| | BBS (w/10 FIELD ID) | SMPTE 318M | | 75Ω bridged connection |
| Return signal (RETURN VIDEO) | 3G-SDI/HD-SDI<br>SD-SDI selection | 4 channels | | 75Ω single end input |
| Q-TV signal (Prompter) | Analog VBS | 2 channels | 1Vp-p | 75Ω single end input |
| HD Q-TV signal (Prompter) | HD-SDI Y Pb Pr 4:2:2 | 1 channels | | 75Ω single end input |
| INTERCOM signal (ENG / PROD) 2 lines | Select from 4-wire/Clearcom/RTS | | | |
| | 4-wire | 2 channels | 0dBm | 600 Ω |
| | Clearcom | 2 channels | -15dBs | 200 Ω |
| | RTS | 2 channels | 0dBm | 200 Ω |
| PGM (Program audio) | +4dBs or 0dBs | 3 channels | | 600 Ω /10k Ω |
| TALLY signal | Red / Green / Yellow | Selected from the make contact / power supply | | |

## ■ Output Signals

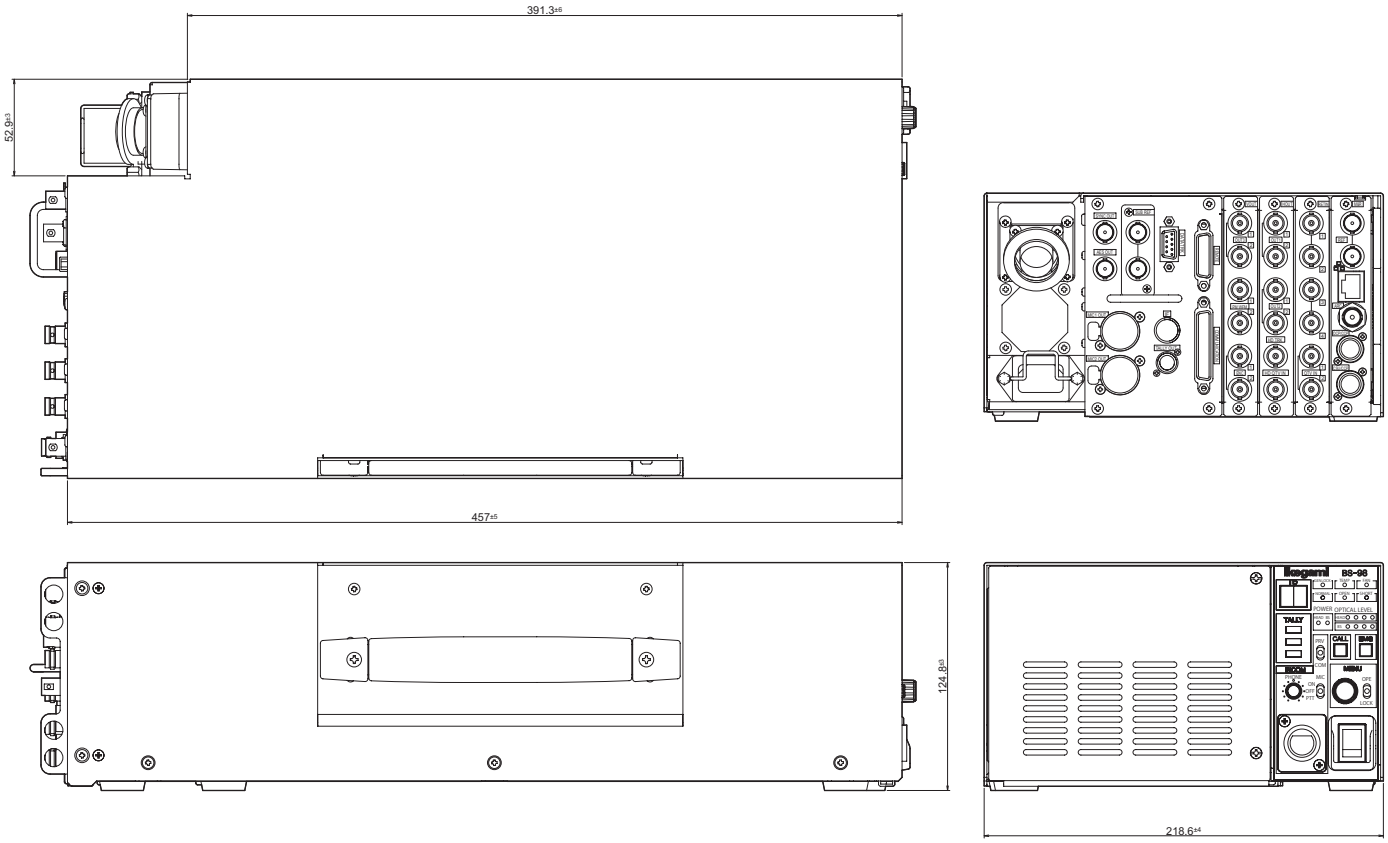
| Item | Rating | | | |
|---|---|---|---|---|
| HDTV signal | Select from 3G-SDI/DUAL-LINK/HD-SDI<br>(SMPTE 425M, SMPTE 372M, SMPTE292M standard) | 3 channels 6 outputs *1 | | 75 Ωoutput |
| SD-SDI signal *2 | SD-SDI<br>(SMPTE259M standard) | 1 channel 2 outputs | | 75 Ωoutput |
| Synchronization signal | HDTV/SDTV selection<br>HDTV tri-level sync<br>SDTV | 1 channel<br>0.6 Vp-p<br>2 Vp-p | | 75Ωoutput |
| Composite signal *2 | VBS (ENC) | 1 channel 2 outputs | 1 Vp-p | 75 Ωoutput |
| Picture monitor (PM) signal | Select from HD-SDI/SD-SDI | 2 channels *3 | | 75 Ωoutput |
| Waveform monitor (WFM) signal *4 | Select from HD-SDI/SD-SDI | 1 channel | | 75 Ωoutput |
| Intercom signal<br>(ENG/PROD) 2 lines | Select from 4-wire/Clearcom/RTS<br>4-wire<br>Clearcom<br>RTS | <br>2 channels<br>2 channels<br>2 channels | | <br>600Ω<br>200Ω<br>200Ω |
| MIC signal (Audio) | +4dBs or 0dBs<br>-18dBFS or -20dBFS | 2 channels<br>2 channels | (Analog)<br>(AES / EBU) | |
| Tally signal (PM TALLY) | Red / Green / Yellow | 3channel | | |

*1: Two channels are selectable from 3G-SDI/HD-SDI (HOUT module). One channel is selectable from 3G-SDI/HD-SDI/SD-SDI (VOUT module).
*2: The signal is output only when the SDTV Option is implemented.
*3: One channel can be selected from PM/WFM.
*4: WFM output can be selected with PM-2. When WFM is set, the SDI output becomes the same one as OUT-3 output.

## ■ Camera Cable

| Item | Rating |
|---|---|
| Standard cable | 2SM-9.2-37.5 |
| Cable for studio shooting | 2SM-16-37.5 |
| Cable configuration | 2 single-mode silica glass fiber optic cables<br>(HEAD -> CCU/BS, CCU/BS -> 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



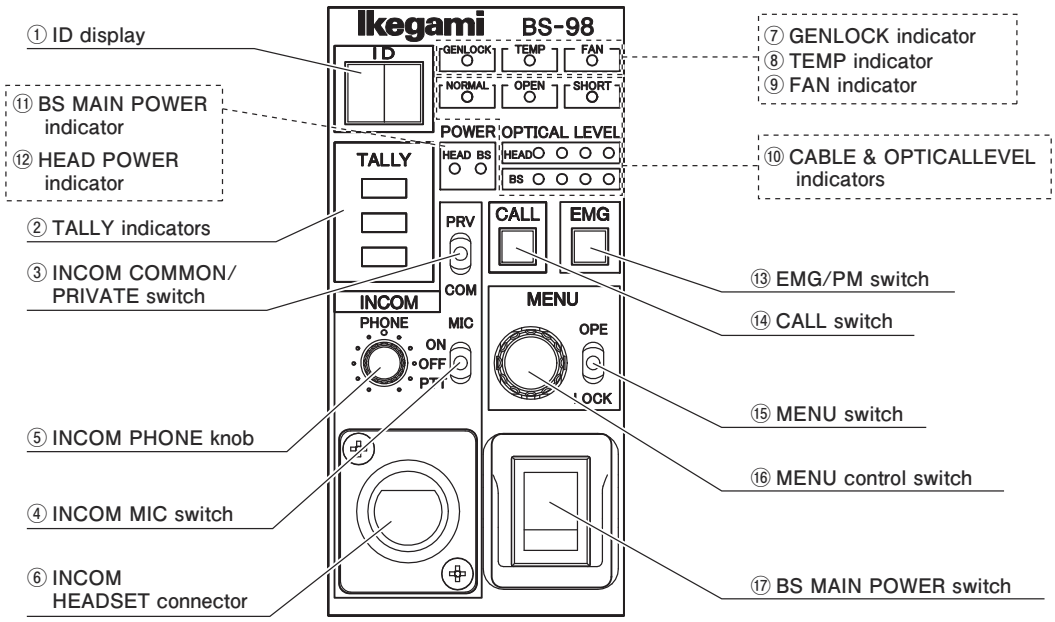
# 2

# NAME and FUNCTION

# 2.1 BS-98 Front View

This section explains the names and functions of the parts on the front of the BS-98.

## BS-98 front display and operation unit




### ①ID display

ARCNET ID or the camera program number is displayed.
It can be set with "FUNCTION SETTING" item on ENGINEER (2/2) page of the BS menu.
- For ARCNET ID, a set value of 1 to 255 (decimal number ) is displayed in a hexadecimal number.
- For CAM PGM No., a set value of 1 to 99 is displayed.

### ②TALLY indicators

Indicators for Red TALLY, Green TALLY and Yellow TALLY.
R TALLY : Lights when the R TALLY signal is input to the TALLY IN connector on the rear of the BS. 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 BS.
Y TALLY : Lights when the Y TALLY signal is input to the TALLY IN connector on the rear of the BS.

### ③INCOM COMMON/PRIVATE switch

Selects the intercom conversation mode.
COMM : Conversation among the camera head, BS, and system is enabled.
PRV : Conversation between the camera head and BS is enabled.

### ④INCOM MIC switch

Selects ON/OFF/PTT for the intercom headset 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)

### ⑤INCOM PHONE knob

Controls the volume of the intercom receiver.

### ⑥INCOM HEADSET connector

Connects the intercom headset. The connector type varies according to the regional and specifications.

### ⑦ GENLOCK indicator (green)

The indicator lights on when the proper synchronous coupling occurred to an external synchronizing signal that was input to BS.

### ⑧ TEMP indicator (red)

***CAUTION:***

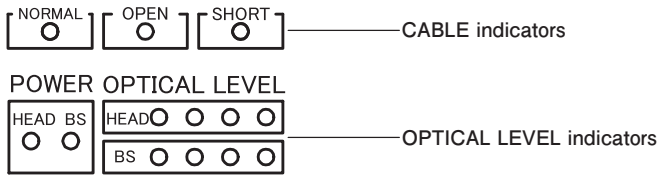
Lights when the internal temperature of the BS increases abnormally.
When this indicator lights on, check that the ventilation hole on the front panel and the exhaust hole on the rear panel are not covered or clogged with dust.

### ⑨ FAN ALARM indicator (red)

***CAUTION:***

The indicator lights on when the cooling fan inside of the BS POWER stops.
When the alarm is lit, immediately stop operating the equipment and turn off the power supply.

### ⑩ CABLE & OPTICAL LEVEL indicators




#### · CABLE indicators

The indicator that displays the status of the Hybrid Fiber-Optic Camera Cable status.

NORMAL (green) : It lights up when the Hybrid Fiber-Optic Camera Cable is normal.
OPEN (red) : It lights up when the Hybrid Fiber-Optic Camera Cable is not connected or is broken.
SHORT (red) : It lights up when the power supply line of the Hybrid Fiber-Optic Camera Cable is short-circuited or when the power contact pins are short-circuited by water drop, etc. The camera will not power up when this indicator lights.

#### · OPTICAL LEVEL indicators

This is a light receiving indicator of the optical level. "HEAD" indicates the receiving condition at the camera head side, and "BS" indicates the light receiving condition at the BS side.

| Lighting Status | Light Reception Status | |
|---|---|---|
| R Yl Gr Gr<br>● ○ ○ ○ | OK | Light reception status is good. |
| R Yl Gr Gr<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. |
| R Yl Gr Gr<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. |
| R Yl Gr Gr<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)

### ⑪ BS MAIN POWER indicator (green)

Lights when the BS main power is ON.

### ⑫ HEAD POWER indicator (orange)

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

### ⑬ EMG/PAGE switch

Two functions are assigned depending on the BS state.

-PAGE function When the BS power supply is on and is in the operating condition.
It works as a changeover switch for various information pages displayed for the output of the picture monitor.

-EMG function When the BS power supply is off (EMERGENCY function)
When the BS main power supply is turned on while the EMG switch is kept pressed, the SYSTEM FORMAT of BS is forcibly switched to the general-purpose 1080I59.94 and 1080I50 and started up.

***Note:***

For example, when PM OUT FORMAT is set to 24p system or 3G HD-SDI, checking the further MENU operations on the monitor becomes impossible without the monitor that corresponds to these formats.
In a such case, further recovery will be facilitated by rebooting the BS by using the EMG function.
- Switching is not possible beyond different frame rates of 59.94 Hz system and 50 Hz system.
- The 1920 x 1080 FORMAT of 59.94 Hz system boots in 1080I59.94. The 1920 x 1080 FORMAT of 50 Hz system boots in 1080I50. When the 1280 x 720 system FORMAT (720p59.94, 720p50) is set, no switching occurs.
- The output settings of OUT-1, OUT-2, OUT-3, and PM OUT are booted in 1080I59.94 YC 422 or 1080I50 YC 422.
- When the camera head FORMAT is different from the FORMAT that BS boots, the camera head side follows the BS format. Therefore, the camera head side reboots. Thus, time is required until the communication and the image stabilize.

### ⑭ CALL switch

Only while this switch is pressed, the R TALLY indicators on the camera head and the control panel light.
Equipment that has a buzzer outputs buzzer sound.

### ⑮ MENU switch

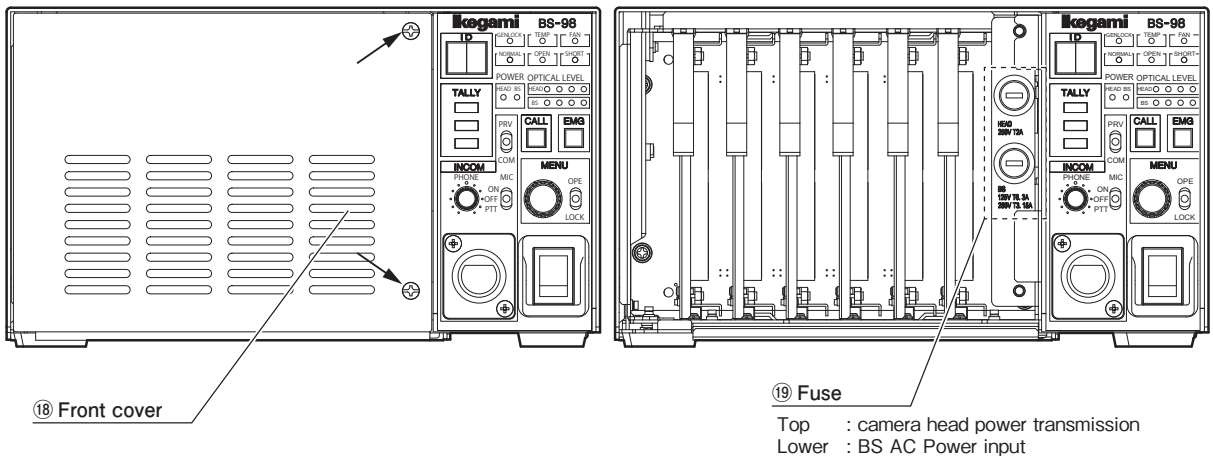
This switch sets the on-screen BS menu operations for various settings.
- OPE Enables the BS menu display.
- LOCK Disables the BS menu display function. The MENU control switch ⑯ becomes disabled.
When the switch is changed from OPE to OFF while the BS menu is displayed, the menu ends.

### ⑯ MENU control switch

When this switch is kept pressed for approx. 3 seconds while the MENU switch ⑮ is at the OPE side, the BS menu is displayed at the PM OUT output. When the dial is turned, the cursor moves. When the switch is pressed, the selected item is finalized.

### ⑰ BS MAIN POWER switch

This is the main AC power supply switch of the base station.




### ⑱ Front cover

Protection cover on the front of the BS.

How to open the front cover

When opening the front cover, loosen the fixing screws at the upper and lower right corners of the cover. These screws are drop-off preventive type.
When removing the cover, hold the upper and lower latching pins and remove the cover to the near side.
Follow the removing procedure in the inverse order when attaching the cover. At this time, be very careful not to pinch the optical fiber cable (yellow two cables).

### ⑲ Fuse

When checking or replacing the glass tube fuse for the equipment protection, open the front cover.

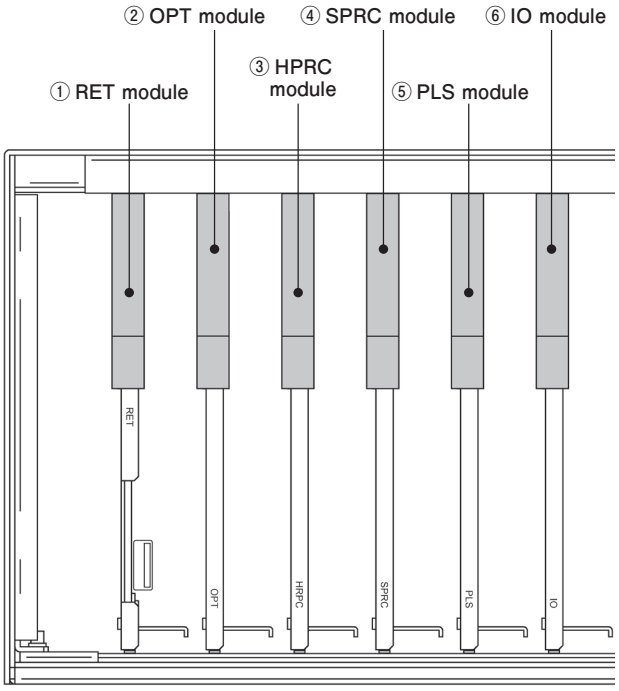
Fuse of the camera head power transmission (upper)

Fuse to be used 250V T2A (rating) ("T" in the rating indicates a time lag fuse.)

Fuse of BS AC input power supply (lower)

100V-117V AC input voltage : 250V T6.3A (rating)
220V-240V AC input voltage : 250V T3.15A (rating) ("T" in the rating indicates a time lag fuse.)

# BS-98 Front View With the Front Cover Off

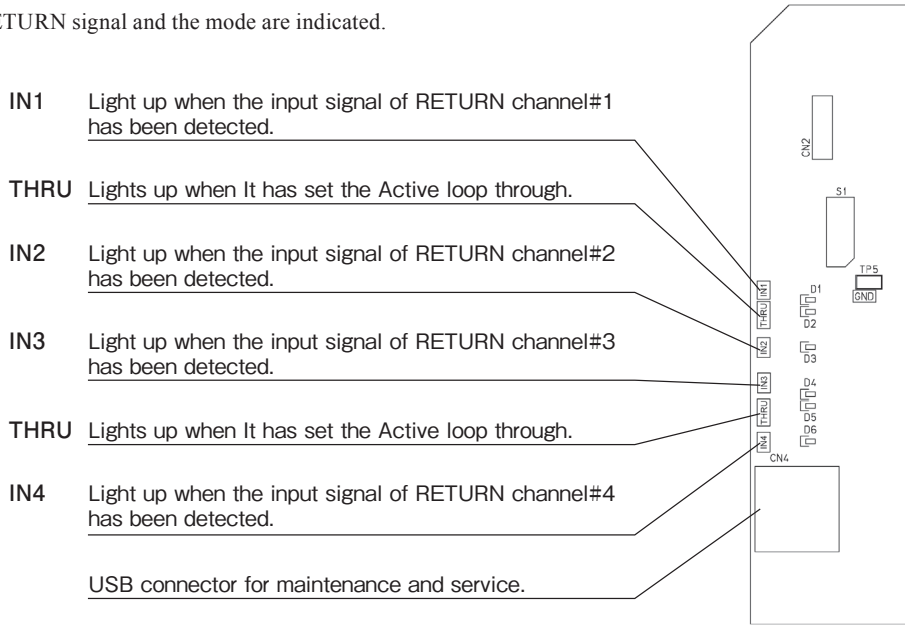



***Note:***

④ SPRC module is optional.
When the SPRC module is not mounted, "OUT-3" output of the VOUT module on the rear side and "PM OUT" SD-SDI signal cannot be selected.
At the same time, "ENC OUT" (analog VBS signal) is not output.

## ①RET module

The detection status of the RETURN signal and the mode are indicated.

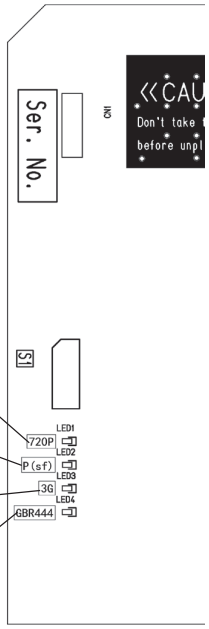



***Note:***

The active loop through output executes the through output only when the equipment power is on.

### ② OPT module

It displays the information related to the transmission between the camera head and BS/CCU.



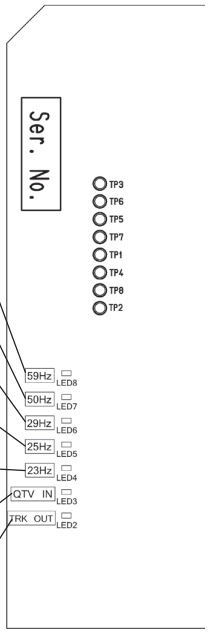

| | |
|---|---|
| 720P | Lights up when format the 720p. |
| P(sF) | Lights up when format the psF. |
| 3G | Light up when the 3G transmission mode. |
| GBR444 | Light up when the 4:4:4 Mode. |

***CAUTION:***

The OPT module is connected with the BS body via the optical cable (yellow). Do not disconnect the cable at any timing other than replacing the module.
When the cable is disconnected forcibly, damaging and/or breakage of the cable may occur.

### ③ HPRC module

It displays the information related to the frame rate and bi-directional HDTV-TRUNK.



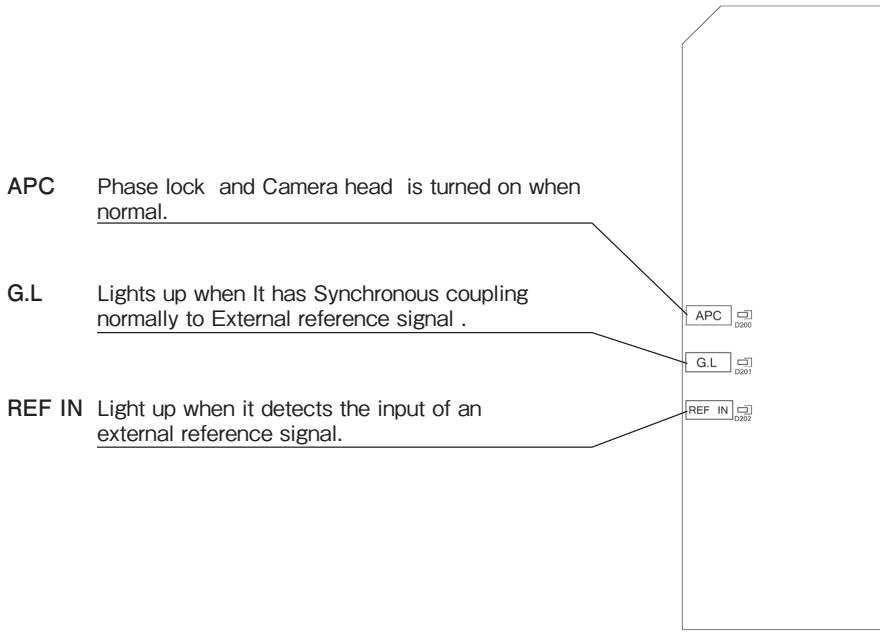

| | |
|---|---|
| 59Hz | Lights up when format the Frame rate 59.94Hz. |
| 50Hz | Lights up when format the Frame rate 50.00Hz. |
| 29Hz | Lights up when format the Frame rate 29.97Hz. |
| 25Hz | Lights up when format the Frame rate 25.00Hz. |
| 23Hz | Lights up when format the Frame rate 23.98Hz. |
| QTV IN | Lights up when it detects a HDTV QTV input signal. |
| TRK OUT | Light up when the HDTV TRUNK output mode . |

***Note:***

HD QTV : Transmits HD-SDI signals from BS/CCU to the camera head.
HD TRUNK : Transmits HD-SDI signals from the camera head to BS/CCU.
In order to use the above functions, a fiber adaptor that corresponds to the 3G transmission is required.

### ④ PLS module

It displays the information related to synchronization between the camera head and BS and the external reference signals.



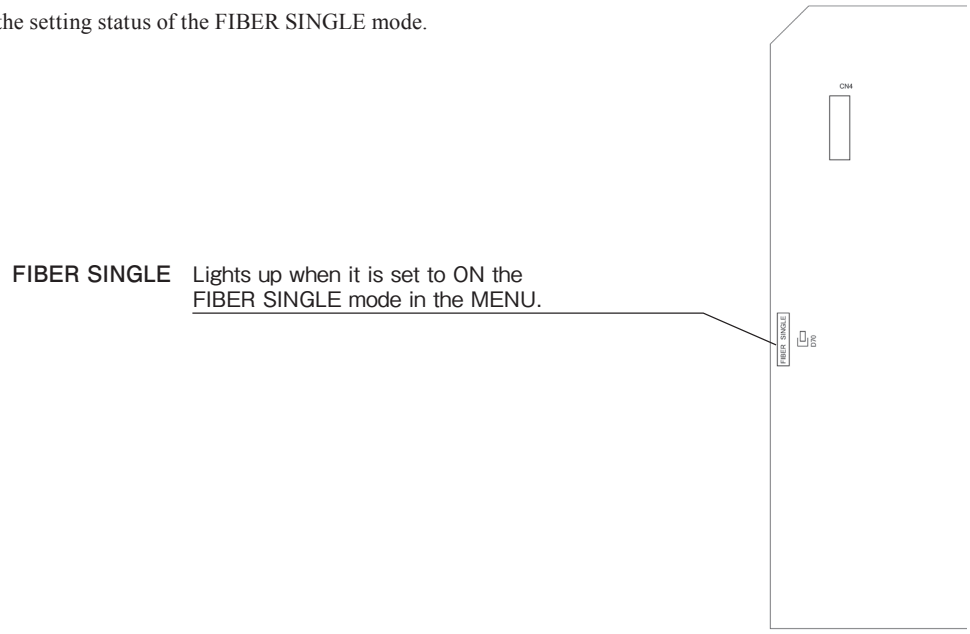

***Note:***

APC : Auto Phase Control

Function used to automatically adjust the vertical and horizontal phases between the camera head and BS/CCU.

### ⑤ IO module

This module indicates the setting status of the FIBER SINGLE mode.




***Note:***

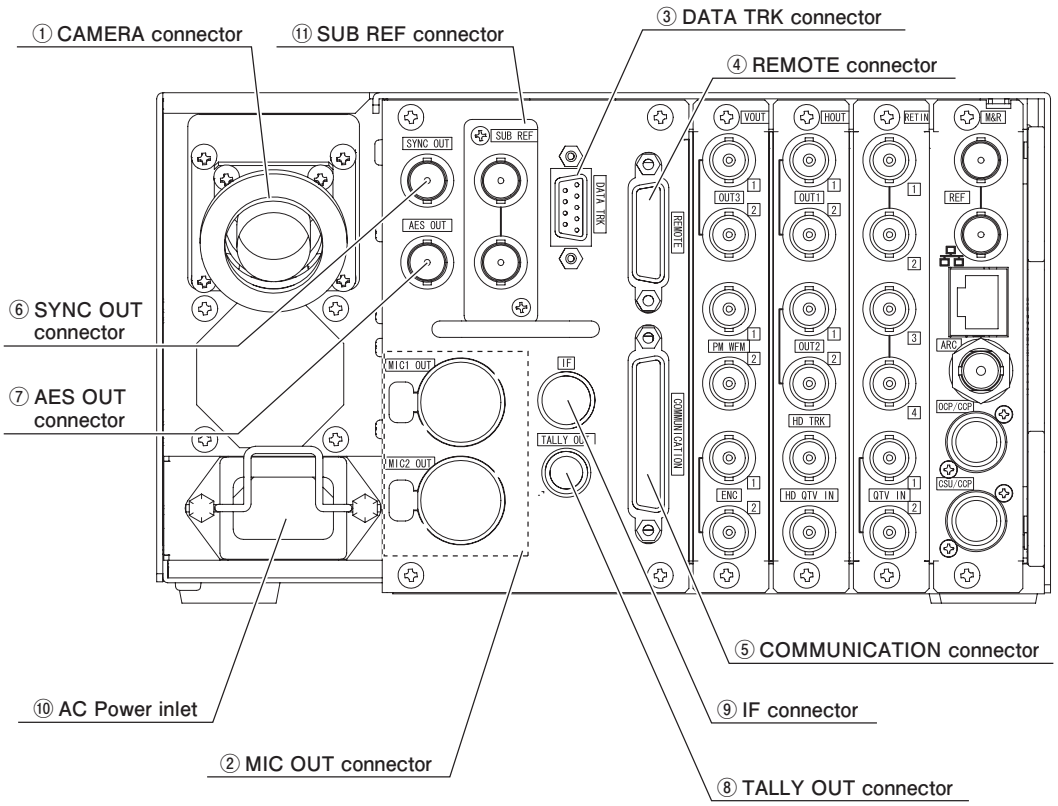
What is the FIBER SINGLE mode ?

The extendable transmission distance between the camera head and CCU/BS is generally determined by the power transmission capability of CCU/BS and the attenuation of optical level. When the power transmission capability is insufficient, the power is supplied from the camera head side by using local power supply, so the limitation of the operation due to insufficient power supply can be avoided. When the FIBER SINGLE mode is turned on, power supply from CCU/BS stops; however, the bidirectional optical transmission is operable as usual operations.

For the power supply method from local power supply source at the camera head side and the setting method of the FIBER SINGLE mode, refer to the instruction manual of each camera. If a long-distance optical transmission device made by a third party is used, check the compatibility of the device.

# 2.2 BS-98 Rear View

This section explains the names and functions of the parts on the rear of the BS-98.




***Reference:***

For model names of connectors and details of assignments, refer to "4.6 Connector for External Connection".

### ① CAMERA connector

Optical fiber composite camera cable, This connector is to connect the camera head and the BS.

### ② MIC OUT connectors

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

### ③ DATA TRK connector

This is a connector for RS-422 communication with the camera head. (Channel #1)

### ④ REMOTE connector

This is a connector used to externally control the microphone gain of the camera head.

### ⑤ COMMUNICATION connector

This connector is used for a connection with an external system.
Input/output of Intercom system, program audio input, and TALLY control input are assigned.

### ⑥ SYNC OUT connector

The signal for synchronization of the external equipment is output. In "SYNC OUT" setting under "ENGINEER (1/2)" -> "OUTPUT FORMAT" in BS menu, HDTV Tri-Level sync signal output or SDTV synchronizing signal output can be selected.
Note) SDTV synchronizing signal is not the BBS.

### ⑦ AES OUT connector

It is an output connector of the digital audio signal (75Ω output). The signal is conformable to the AES/EBU format.

### ⑧ TALLY OUT connector

TALLY OUT signals that are used for external control device.

### ⑨ IF connector

DATA TRUNK #2, Camera head power ON/OFF indicator output, PREVIEW output, and other functions are assigned.
(In order to use the Channel # 2, the camera head side is also need to be addressed)

### ⑩ AC power inlet

This inlet is used to connect the AC cable to the BS and to operate the AC power supply.
* The input voltage ranges are 100 to 120 VAC +/- 10% and 220 to 240 VAC +/- 10%.

### ⑪ SUB REF connector (SUB Rreference)

When the output format is 1080P/23.98PD (2-3 pull-down), 1080P/23.98, and 1080P/23.98sF (segment frame), the 23.98P signal and the 2-3 pull-down signal phases can be adjusted by inputting the following signals.

**● When setting one unit of BS-98 as a master and synchronization other 2-3 pull-down signals of BS-98 or CCU-980 phases**

Input the HDTV Tri-level sync signal with 10 FIELD ID, which is output from the SYNC OUT connector of the master BS-98, to the SUB REF connector of other BS/CCU.

**● When synchronization 23.98P signal and 2-3 pull-down signal to the phase of reference signal**

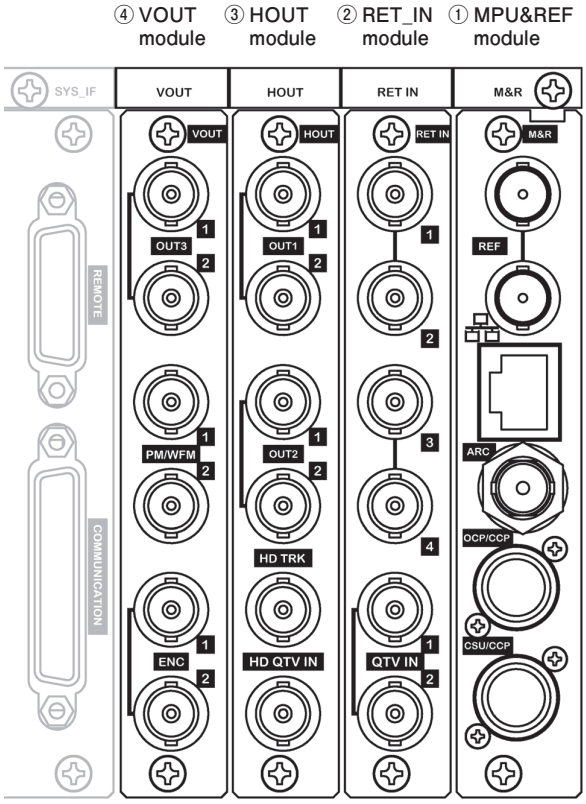
Input the synchronizing signal of the 23.98P format. However, when inputting the synchronizing signal in 59.94I format to the BS/CCU REF connector, phases of the synchronizing signals in the 23.98/P format and in the 59.94I format must match to each other.)

***Reference:***

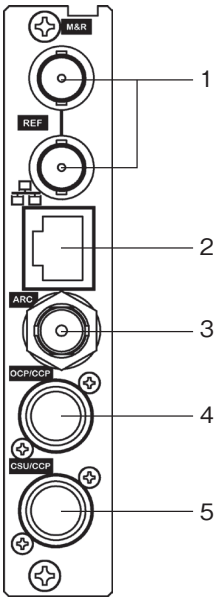
Refer to "3.2 GENLOCK System" for details.

# Modules on the Rear of the BS-98

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




## ① MPU&REF Module




### 1. REF connector

It inputs the reference signal (HDTV PS/S or SDTV VBS/BBS) from the external source. It is also possible to input the signals, of which the 10 field ID signal conformable to SMPTE318M is added, to VBS/BBS.
Bridge connection is possible.

### 2. Ethernet RJ45 (8P8C) connector

This is a connector to be used for connecting with the system corresponding to Ethernet.

### 3. ARCNET connector

This is a connector for ARCNET. It is connected to CP HUB (option) by the coaxial cable.
Refer to the Instruction manual of CP HUB to be used for details.

***CAUTION:***

- Use the F-head type conversion plug for connection. In addition, use 75Ω type coaxial cables and terminators.
- When the connector contacts the housing, failures may be caused. Pay close attention when handling.
- When using the F-head type conversion plug, cover with an insulation cover or other item.

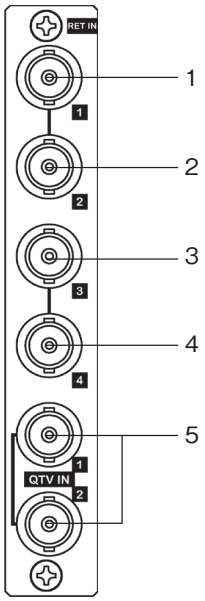
### 4. OCP/CCP connector

Connect with CP cable and OCP.

### 5. CSU/CCP connector

Connect with CP cable and CSU.

## ② RET IN Module




### 1 to 4. RETURN IN connector

Input the return video signal to the camera head.

It corresponds to inputs of four lines. It automatically recognize three rate signals of 3G-SDI/HD-SDI/SD-SDI.

When ACTIVE-THROUGH is turned on from the CCU/BS menu, CH2 and CH4 become the output connectors. A signal input to CH1 is output to CH2, and a signal input to CH3 is output to CH4.

*When the ACTIVE-THROUGH function is used, both BS/CCU and the camera head apply return 2 channel specification.

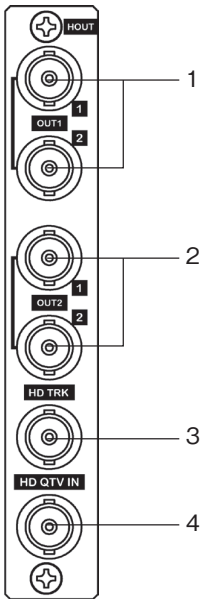
***NOTE:***

The format of input signal is automatically recognized. When an asynchronous signal and/or a signal with a different frame rate is input, FS (Frame Synchronizer) automatically turns on.
From the CCU/BS menu, FS can be manually set separately for each of four channels. FS is not automatically turned off when a signal that does not require FS is input. Set FS to OFF from the menu.

### 5. QTV IN connector

It inputs the QTV signal (prompter signal) to be sent to the camera head.
It corresponds to the analog VBS signal two-line input and has the 75Ω single-end terminal.
* The number of QTV output lines at the camera head side varies depending on the model and specifications.

## ③ HOUT Module




### 1. OUT1 connector

It outputs SDI signal in two rates of 3G/HD-SDI. One line and two outputs.
When DUAL LINK format is selected in "OUTPUT FORMAT" in the menu, LINK-A signal is output.

### 2. OUT2 connector

It outputs SDI signal in two rates of 3G/HD-SDI. One line and two outputs.
When DUAL LINK format is selected in "OUTPUT FORMAT" in the menu, LINK-B signal is output.

### 3. HD TRUNK OUT connector

It outputs the HD-SDI TRUNK signal from the camera head. 1 line and 1 output.
HD-SDI signal is output.

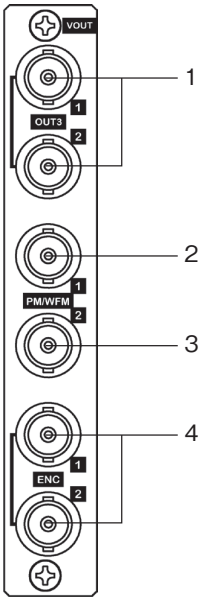
### 4. HD QTV IN connector

Input the HD-SDI QTV signal to be sent to the camera head. 1 line and 1 input.

***NOTE:***

- To use the HD TRUNK and HD QTV functions, it is necessary that the Fiber Adaptor at the camera head side corresponds to the 3G transmission (HDK-79EX series, FA-79/A, and FA-55 do not correspond to the 3G transmission).
- The HD TRUNK function is disabled when the 3G transmission format is selected for the SYSTEM FORMAT.

## ④ VOUT Module




### 1. OUT3 connector

It outputs SDI signals in three rates of 3G/HD-SDI/SD-SDI. 1 line and 2 outputs.
SD-SDI is the SMPTE259M 270 Mbps signal.

### 2. PM-1 OUT connector

It outputs SDI signals in three rates of 3G/HD-SDI/SD-SDI for the picture monitor. 1 line and 1 outputs.
SD-SDI is the SMPTE259M 270 Mbps signal.
CCU/BS menu characters and PM menu characters that indicate various data are superimposed in the image.

### 3. PM-2/WFM OUT connector

The following signals are output by selecting "OUTPUT FORMAT" -> "PM-2/WFM" on the menu.

- PM HD-SDI
  It outputs SDI signal that is the same as PM-1 OUT.
  It outputs SDI signals in two rates of 3G/HD-SDI for the picture monitor. 1 line and 1 output.
  CCU/BS menu characters and PM characters that indicate various data are superimposed in the image.
- PM SD-SDI
  SD-SDI signal for the picture monitor is output. 1 line and 1 output.
  CCU/BS menu characters and PM characters that indicate various data are superimposed in the image.
- WFM (OUT-3)
  The signal that is the same as OUTPUT FORMAT set at OUT-3 is output. 1 line and 1 output.

### 4. ENC OUT connector

Analog composite (ENC) signal is output. 1 line and 2 outputs.

***CAUTION:***

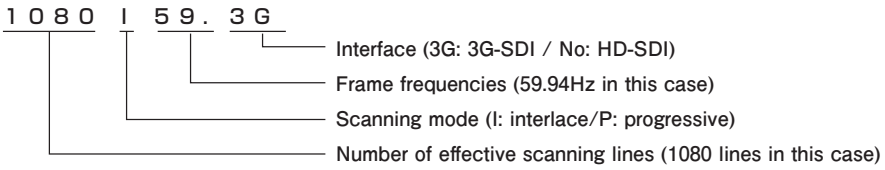
- When SDTV Option (SPRC module) is not mounted, the SD-SDI output and the ENC output become disabled.
- CCU/BS menu characters are superimposed in the SDTV output (SD-SDI and ENC OUT).

# 3

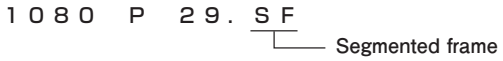
# FORMATS and GENLOCK

# 3.1 HDTV Format

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

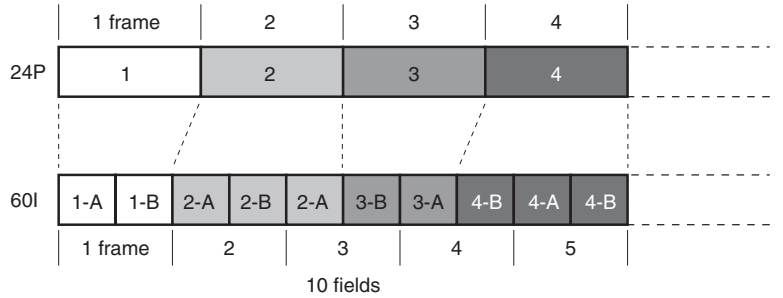






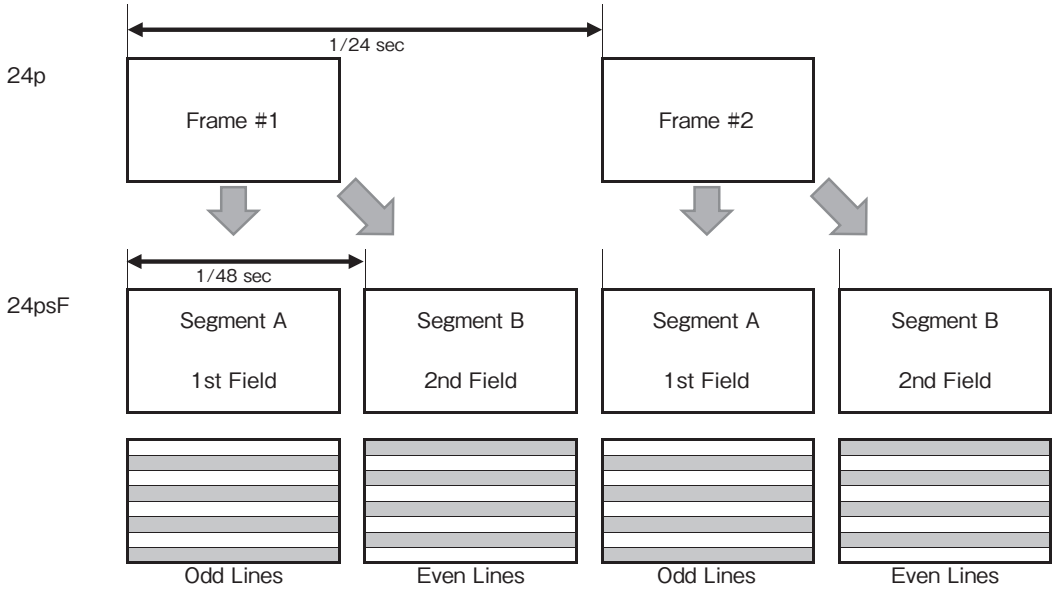

### ■ 2-3 Pull Down

2-3 pull down is a method of converting a 24-frame (24P) video into a 60-field (60I) video.
This method has been used by Telecine, which converts film movies to television signals since early times, and connecting to many kinds of HDTV systems is possible as the 1080p23.98PD signal can be handled as the 1080i59.94 signals.



## ■ *Segmented Frame*

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




It has been described for the sake of convenience, 23.976 is 24 and 47.952 is 48.

The feature of the segment frame is that there is no movement in the first frame (Segment A) and the second frame (Segment B). When these two frames are synthesized, one progressive signal can be created.

PsF (Progressive segmented Frame) method has been widely used from the time when the 24P format appeared. That is because this method enables to create the conventional interlace equipment without making a large difference.

In addition, in recent years, there are more cases that this method is used for the time lapse video effect in television broadcasting, as the 1080PsF29.97 signals can be used as 1080i59.94, and the 1080PsF25 signals can be used as 1080i50.

The following section indicates the lists of HDTV formats, output formats, and signal formats indicated on the BS/CCU menu and the self-diagnosis display screen (Diagnostic Information).

| Menu screen notation | | Format | | | SDI signal | | | | Standard |
|---|---|---|---|---|---|---|---|---|---|
| 1080I59 | | 1920 x 1080 | interlace | 60/M | 1080i59.94 | | 1.485/M Gbps | 422 | 274M/292M |
| 1080P23PD | | 1920 x 1080 | 2-3 pulldown | 24/M | 1080i59.94 | | 1.485/M Gbps | 422 | 274M/292M |
| 1080P23SF | | 1920 x 1080 | progressive(sF) | 24/M | 1080psF23.98 | | 1.485/M Gbps | 422 | 274M/292M |
| 1080P23 | | 1920 x 1080 | progressive | 24/M | 1080p23.98 | | 1.485/M Gbps | 422 | 274M/292M |
| 1080P29SF | | 1920 x 1080 | progressive(sF) | 30/M | 1080psF29.97 | | 1.485/M Gbps | 422 | PR211/292M |
| 1080P29 | | 1920 x 1080 | progressive | 30/M | 1080p29.97 | | 1.485/M Gbps | 422 | 274M/292M |
| 720P59 | | 1280 x 720 | progressive | 60/M | 720p59.94 | | 1.485/M Gbps | 422 | 296M/292M |
| 1080I50 | | 1920 x 1080 | interlace | 50 | 1080i50 | | 1.485 Gbps | 422 | 274M/292M |
| 1080P25SF | | 1920 x 1080 | progressive(sF) | 25 | 1080psF25 | | 1.485 Gbps | 422 | PR211/292M |
| 1080P25 | | 1920 x 1080 | progressive | 25 | 1080p25 | | 1.485 Gbps | 422 | 274M/292M |
| 720P50 | | 1280 x 720 | progressive | 50 | 720p50 | | 1.485 Gbps | 422 | 296M/292M |
| 1080P59 | 3G-SDI | 1920 x 1080 | progressive | 60/M | 1080p59.94 | | 2.970/M Gbps | 422 | 274M/425M |
| 1080P59 | DUAL-LINK | 1920 x 1080 | progressive | 60/M | 1080p59.94 | 2x | 1.485/M Gbps | 422 | 274M/372M |
| 1080I59 | 3G-SDI | 1920 x 1080 | interlace | 60/M | 1080i59.94 | | 2.970/M Gbps | 444 | 274M/425M |
| 1080I59 | DUAL-LINK | 1920 x 1080 | interlace | 60/M | 1080i59.94 | 2x | 1.485/M Gbps | 444 | 274M/372M |
| 1080P23PD | 3G-SDI | 1920 x 1080 | 2-3 pulldown | 24/M | 1080i59.94 | | 2.970/M Gbps | 444 | 274M/425M |
| 1080P23PD | DUAL-LINK | 1920 x 1080 | 2-3 pulldown | 24/M | 1080i59.94 | 2x | 1.485/M Gbps | 444 | 274M/372M |
| 1080P23SF | 3G-SDI | 1920 x 1080 | progressive(sF) | 24/M | 1080psF23.98 | | 2.970/M Gbps | 444 | PR211/425M |
| 1080P23SF | DUAL-LINK | 1920 x 1080 | progressive(sF) | 24/M | 1080psF23.98 | 2x | 1.485/M Gbps | 444 | PR211/372M |
| 1080P23 | 3G-SDI | 1920 x 1080 | progressive | 24/M | 1080p23.98 | | 2.970/M Gbps | 444 | 274M/425M |
| 1080P23 | DUAL-LINK | 1920 x 1080 | progressive | 24/M | 1080p23.98 | 2x | 1.485/M Gbps | 444 | 274M/372M |
| 1080P29SF | 3G-SDI | 1920 x 1080 | progressive(sF) | 30/M | 1080psF29.97 | | 2.970/M Gbps | 444 | PR211/425M |
| 1080P29SF | DUAL-LINK | 1920 x 1080 | progressive(sF) | 30/M | 1080psF29.97 | 2x | 1.485/M Gbps | 444 | PR211/372M |
| 1080P29 | 3G-SDI | 1920 x 1080 | progressive | 30/M | 1080p29.97 | | 2.970/M Gbps | 444 | 274M/425M |
| 1080P29 | DUAL-LINK | 1920 x 1080 | progressive | 30/M | 1080p29.97 | 2x | 1.485/M Gbps | 444 | 274M/372M |
| 1080I119 | 3G-SDI | 1920 x 1080 | interlace | 120/M | 1080i119.88 | | 2.970/M Gbps | 422 | EVS |
| 1080I119 | DUAL-LINK | 1920 x 1080 | interlace | 120/M | 1080i119.88 | 2x | 1.485/M Gbps | 422 | EVS |
| 1080P50 | 3G-SDI | 1920 x 1080 | progressive | 50 | 1080p50 | | 2.970 Gbps | 422 | 274M/425M |
| 1080P50 | DUAL-LINK | 1920 x 1080 | progressive | 50 | 1080p50 | 2x | 1.485 Gbps | 422 | 274M/372M |
| 1080I50 | 3G-SDI | 1920 x 1080 | interlace | 50 | 1080i50 | | 2.970 Gbps | 444 | 274M/425M |
| 1080I50 | DUAL-LINK | 1920 x 1080 | interlace | 50 | 1080i50 | 2x | 1.485 Gbps | 444 | 274M/372M |
| 1080P25SF | 3G-SDI | 1920 x 1080 | progressive(sF) | 25 | 1080psF25 | | 2.970 Gbps | 444 | PR211/425M |
| 1080P25SF | DUAL-LINK | 1920 x 1080 | progressive(sF) | 25 | 1080psF25 | 2x | 1.485 Gbps | 444 | PR211/372M |
| 1080P25 | 3G-SDI | 1920 x 1080 | progressive | 25 | 1080p25 | | 2.970 Gbps | 444 | 274M/425M |
| 1080P25 | DUAL-LINK | 1920 x 1080 | progressive | 25 | 1080p25 | 2x | 1.485 Gbps | 444 | 274M/372M |
| 1080I100 | 3G-SDI | 1920 x 1080 | interlace | 100 | 1080i100 | | 2.970 Gbps | 422 | EVS |
| 1080I100 | DUAL-LINK | 1920 x 1080 | interlace | 100 | 1080i119.88 | 2x | 1.485 Gbps | 422 | EVS |

sF : segmented Frame
/M : I represent the /1.001
EVS : Outputs that correspond to the video servers of EVS Broadcast Equipment (TM).

In order to use above output formats, it is prerequisite that the camera head to be connected is a compatible type.
When the camera head that is not compatible is connected, the connected camera head cannot be selected.

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

### ■ REF connectors (Loop-through)

Three types of signals below can be input to the REF connectors.
① HDTV PS/S (Tri-level sync)
② SDTV VBS/BBS (NTSC / PAL)
③ BBS + 10 FIELD ID (SMPTE 318M compliant)
[There are cases that 10 FIELD ID is set as an option for the synchronizing signal generator (sync generator).]

### ■ SUB REF connectors (Loop-through)

When the output format is 1080P/23.98PD (2-3 pulldown), 1080P/23.98, or 1080P/23.98sF (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/BS is synchronized by using a CCU-980/BS-98 as master**

  Input the HDTV 3 value synchronizing signal with 10 FIELD ID that is output from the SYNC OUT connector of master CCU-980/BS-98, to the SUB REF connector of the slave CCU/BS.

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

  Input the 23.98P format synchronizing signal to the SUB REF connector. However, when the synchronizing signal in the 59.94I format is input to the CCU/BS REF connector, phases of the synchronizing signals in the 23.98/P format and in the 59.94I format must match to each other.)

## 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 setting of SYSTEM FORMAT. (Select a format from the CCU/BS menu.)

| SYSTEM FORMAT | Format that can be selected in the SYNC OUT of OUTPUT FORMAT |
|---|---|
| 1080P59 | 1080P59 / 1080I59 / SDTV |
| 1080I59 | 1080I59 / SDTV |
| 1080P23PD | 1080I59 / 1080P23 / 1080P23SF / SDTV |
| 1080P29SF | 1080I59 / 1080P29 / SDTV |
| 1080I119 | 1080I59 / SDTV |
| 720P59 | 720P59 / SDTV |
| 1080P50 | 1080P50 / 1080I50 / SDTV |
| 1080I50 | 1080I50 / SDTV |
| 1080P25SF | 1080I50 / 1080P25 / SDTV |
| 1080I100 | 1080I50 / SDTV |
| 720P50 | 720P50 / SDTV |

In addition, when the 1080P23PD format is selected, it is possible to select on the menu whether or not 2H pulse is added at every 10 FIELD of 1080I59 (it is not the same as the 10 FIELD ID specified in SMPTE 318M; however, it is called as "10 FIELD ID" as well here).

## ■ ENC OUT connector (SDTV options when mounted)

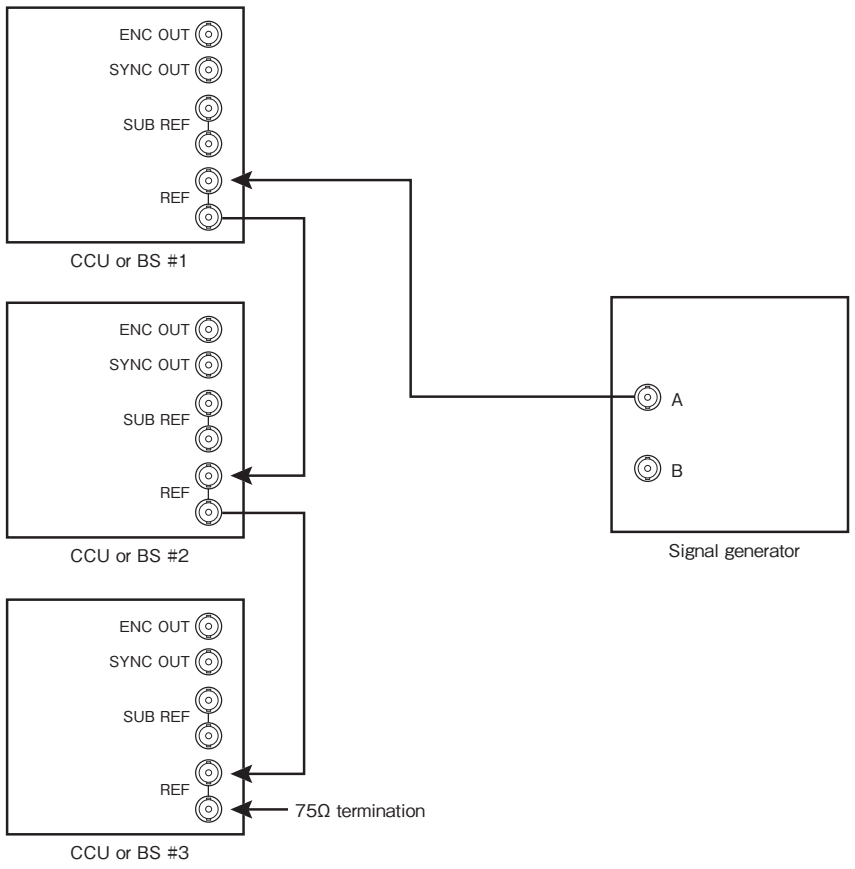
10 FIELD ID can be added to the ENC signal. (The 10 FIELD ID described here indicates the ID specified by SMPTE 318M.)

***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/BS output since the 2-3 pulldown signal is transmit and received between the camera head and the CCU/BS.

## ■ Operating configurations

● When format conversion is not performed




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

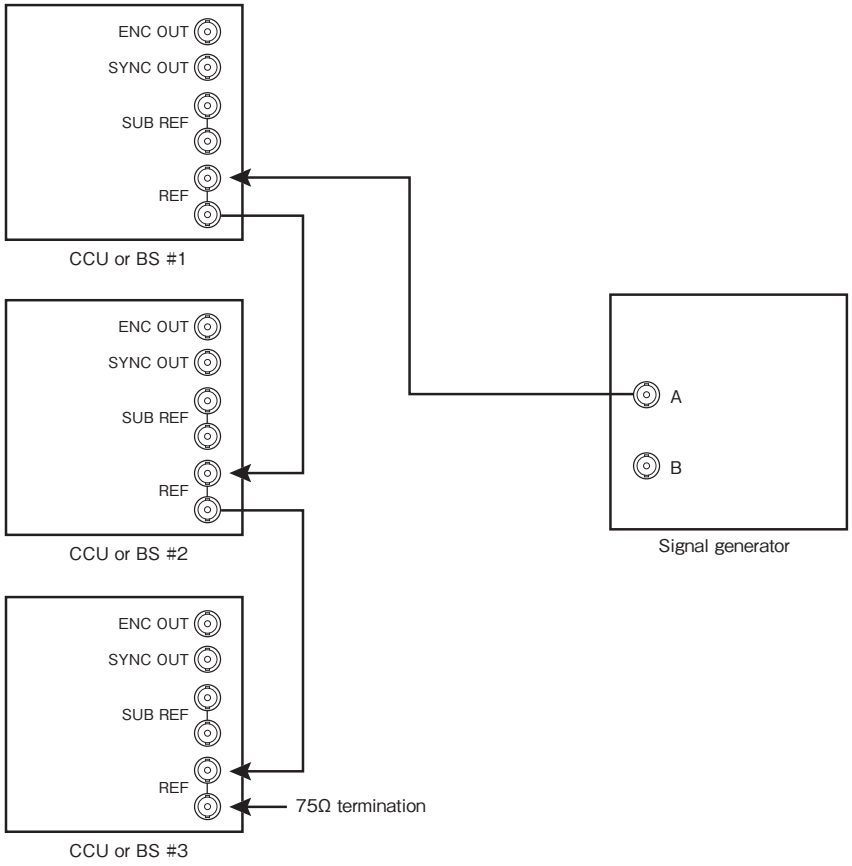
A: HDTV tri-level sync signals whose format is the same as the camera head or NTSC BBS

Example) SYSTEM FORMAT of BS / CCU : 1080i59.94
Format of the camera head : 1080i59.94
Synchronization signal input to the REF connector
HDTV Tri-level sync 1080i59.94 or SDTV (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

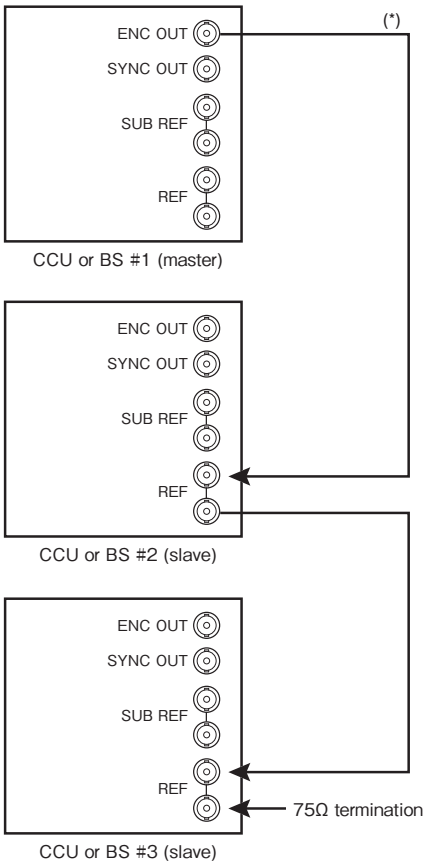



**Condition of signals output by the signal generator in this case**

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

**- Pattern 2**

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

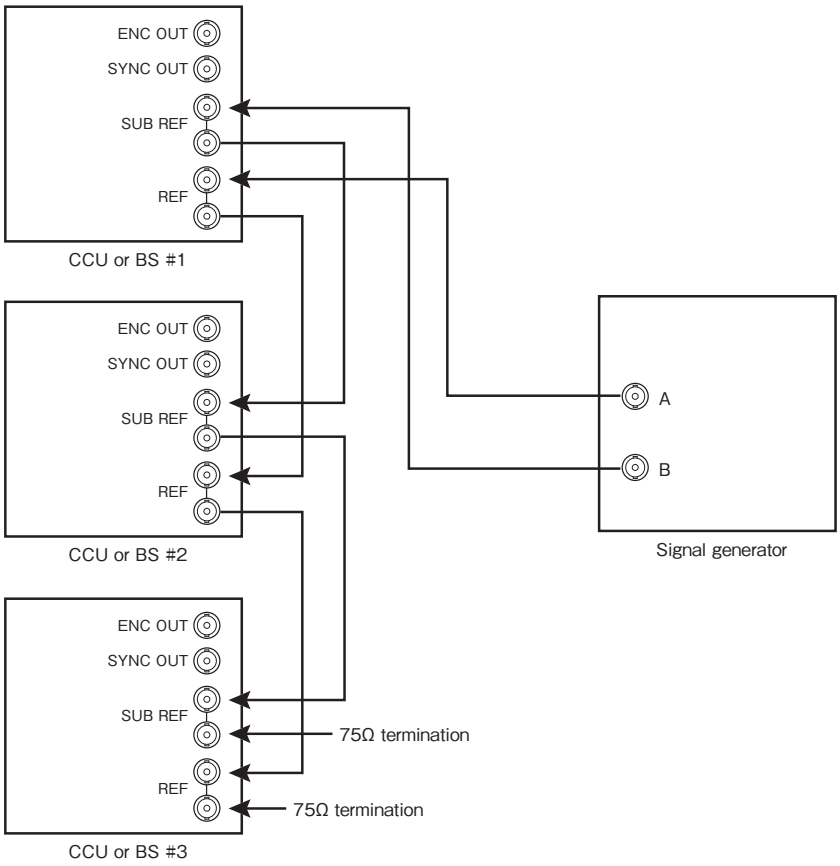



* In that case, add 10 FIELD ID signal (SMPTE 318M compatible) to the ENC signal output of the master equipment.

[Setting]
SD-10 FIELD ID SIG" item under "OUTPUT FORMAT" of "ENGINEER (1/2)" in the CCU/BS menu 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-level sync of 1080I/59.94 format or NTSC BBS
B: HDTV Tri-level sync 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.)

# 4

# EQUIPMENT CONNECTIONS

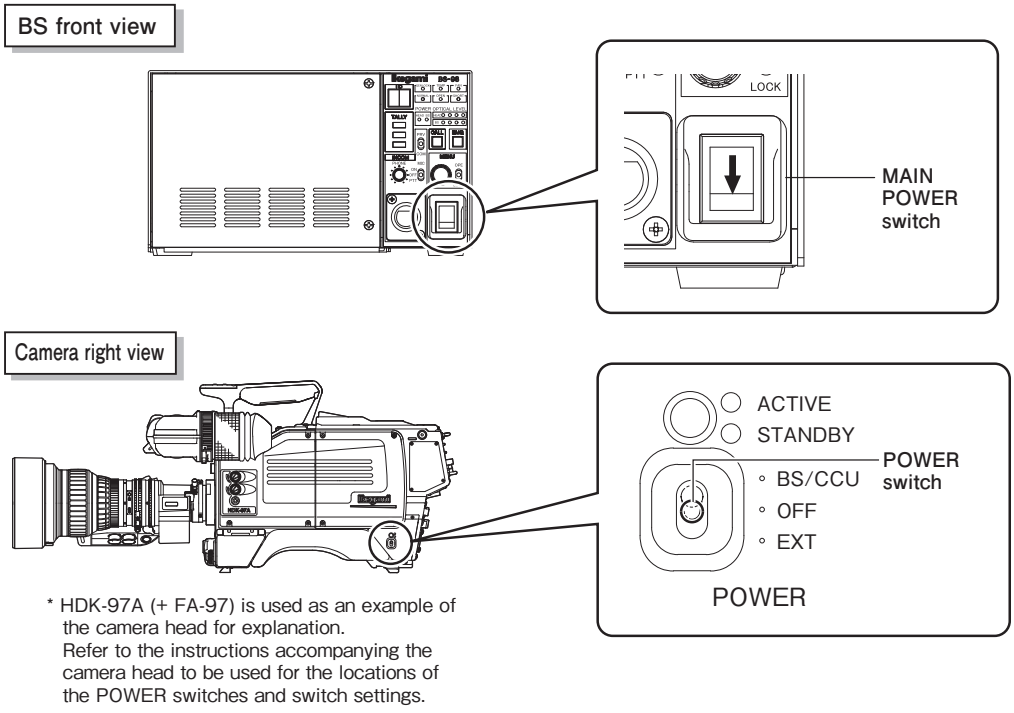
# 4.1 Preparation

## 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.

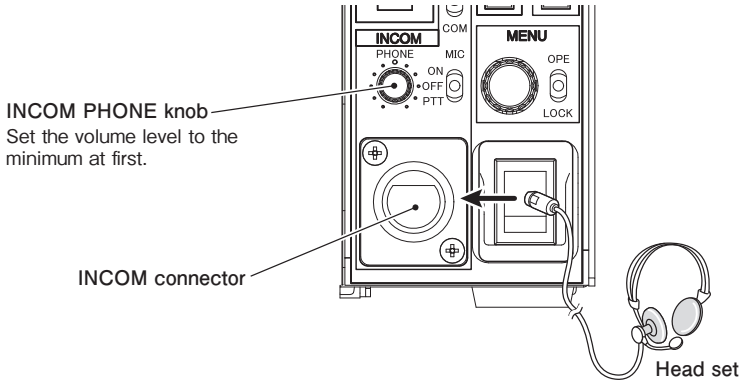



* HDK-97A (+ FA-97) is used as an example of the camera head for explanation.
Refer to the instructions accompanying the camera head to be used for the locations of the POWER switches and switch settings.

At first, set the INCOM PHONE knob to the minimum.

***CAUTION:***

Do not set the volume of the INCOM PHONE knob suddenly around to the maximum when connecting the headset to the INCOM connector. Maximizing the intercom volume while putting the headset to an ear may rupture and damage the eardrum. Also, excess sound pressure may cause a hearing loss.



# 4.2 Power Supply

This section explains how to power supply to the BS and supply power from the BS to the camera head.

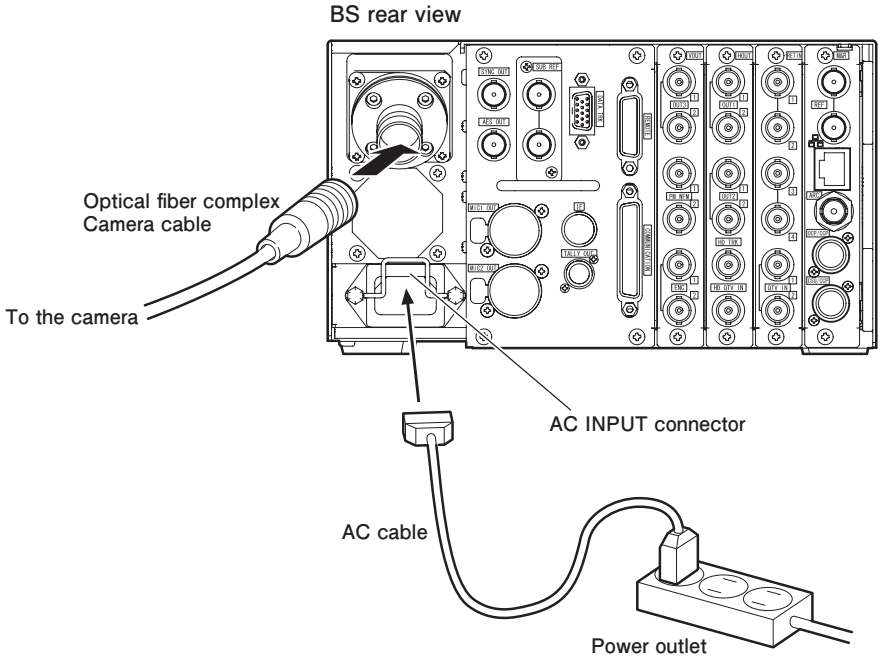
**1** Make sure the BS MAIN POWER switch of the BS is "OFF".

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

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

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

Refer to "4.3 BS and Camera Head Connection" for how to connect the camera cable to the camera head.




Two methods of power supply to the camera head are available with this configuration.
a) To control the power ON/OFF from the BS (turned ON / OFF at the main power of the BS)
b) To control the power ON/OFF from the OCP (remote control)

***Note:***

Function will change by the control panel (OCP) to be used.

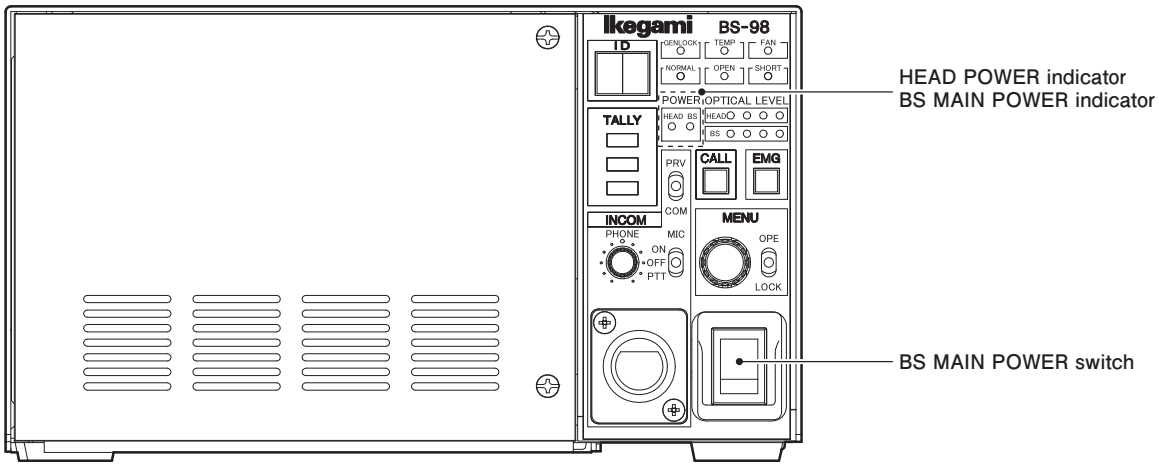
## ■ To Control Power ON/OFF from BS

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

**1** Set the [BS MAIN POWER switch] on the front of the BS to "ON".

This turns on the power of the BS and lights the BS MAIN POWER indicator.
In addition, the status of the camera cable connection between the camera head and the BS is automatically checked.
When the connection is judged normal, [NORMAL] green LED lights up.
When the cable is defective, or when the connection is failed, [OPEN]/[SHORT] red LED lights up.
When the power is supplied to the camera head, the HEAD POWER indicator lights up.

BS-98 front view




***CAUTION:***

To turn on the BS MAIN POWER switch just after the switch is turned off, wait one or more seconds before you turn on the power. Repeating the on/off operation within one second activates protector for equipment protection.
When the protector is activated, turn on the BS MAIN POWER switch after five or more seconds later.

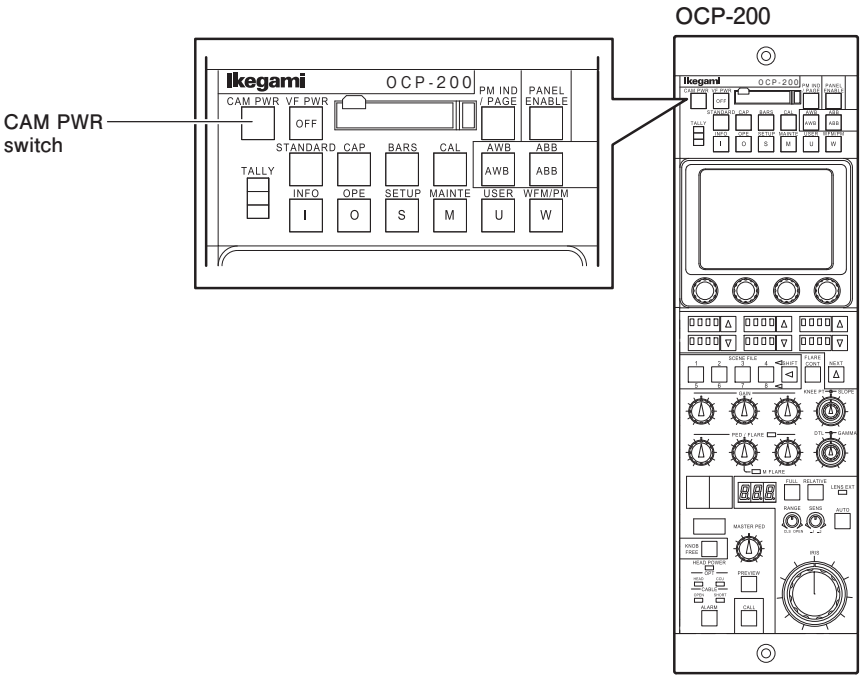
## ■ To Control Power ON/OFF from OCP (Remote Control)

This section describes an example of a case of using the OCP-200.

**1** Set the [BS MAIN POWER switch] on the front of the BS to "ON".

**2** Set the [CAM POWER switch] on the OCP to "ON".

Power is supplied to the camera head.



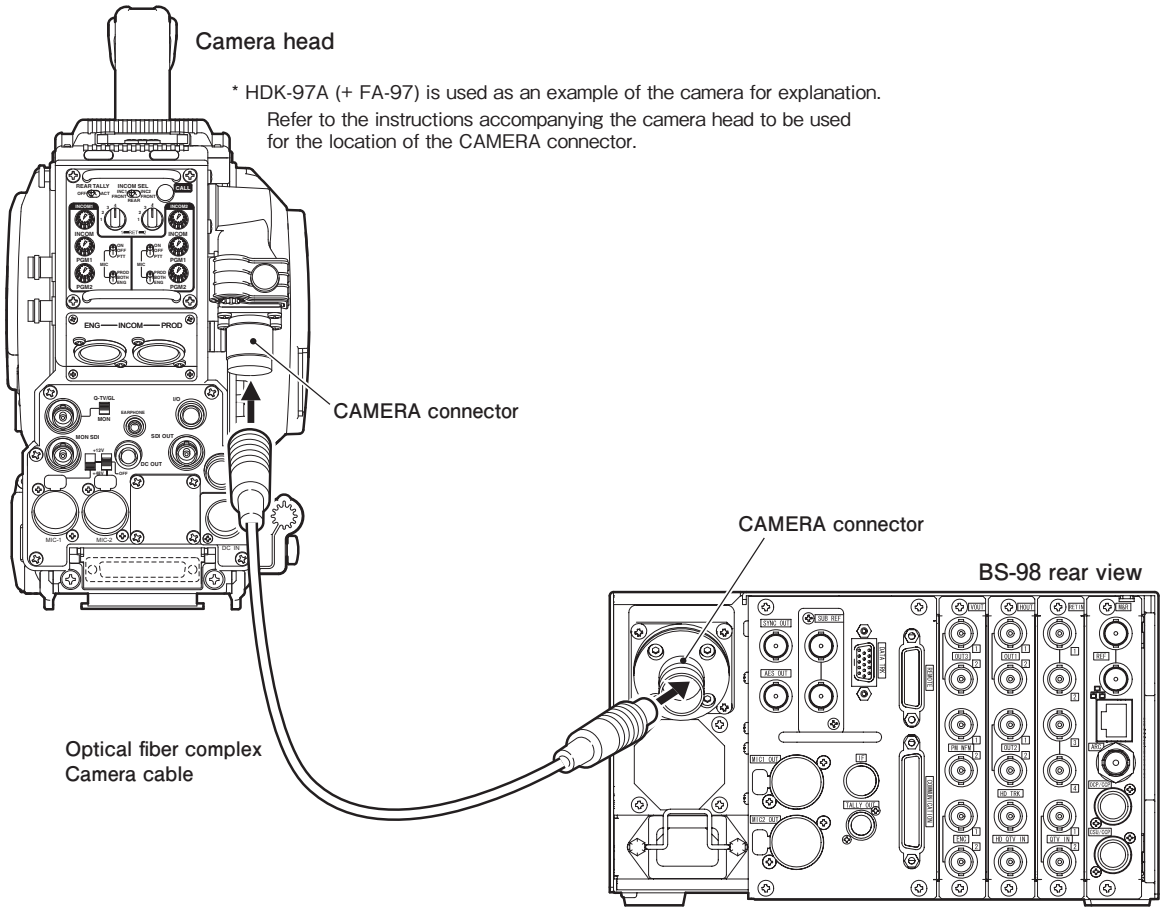

***Note:***

When the CAM POWER switch on the OCP is turned "ON/OFF", only power supply to the camera head is turned "ON/OFF". The BS main power is not controlled.

# 4.3 BS and Camera Head Connection

This section explains how to connect the BS to the camera.

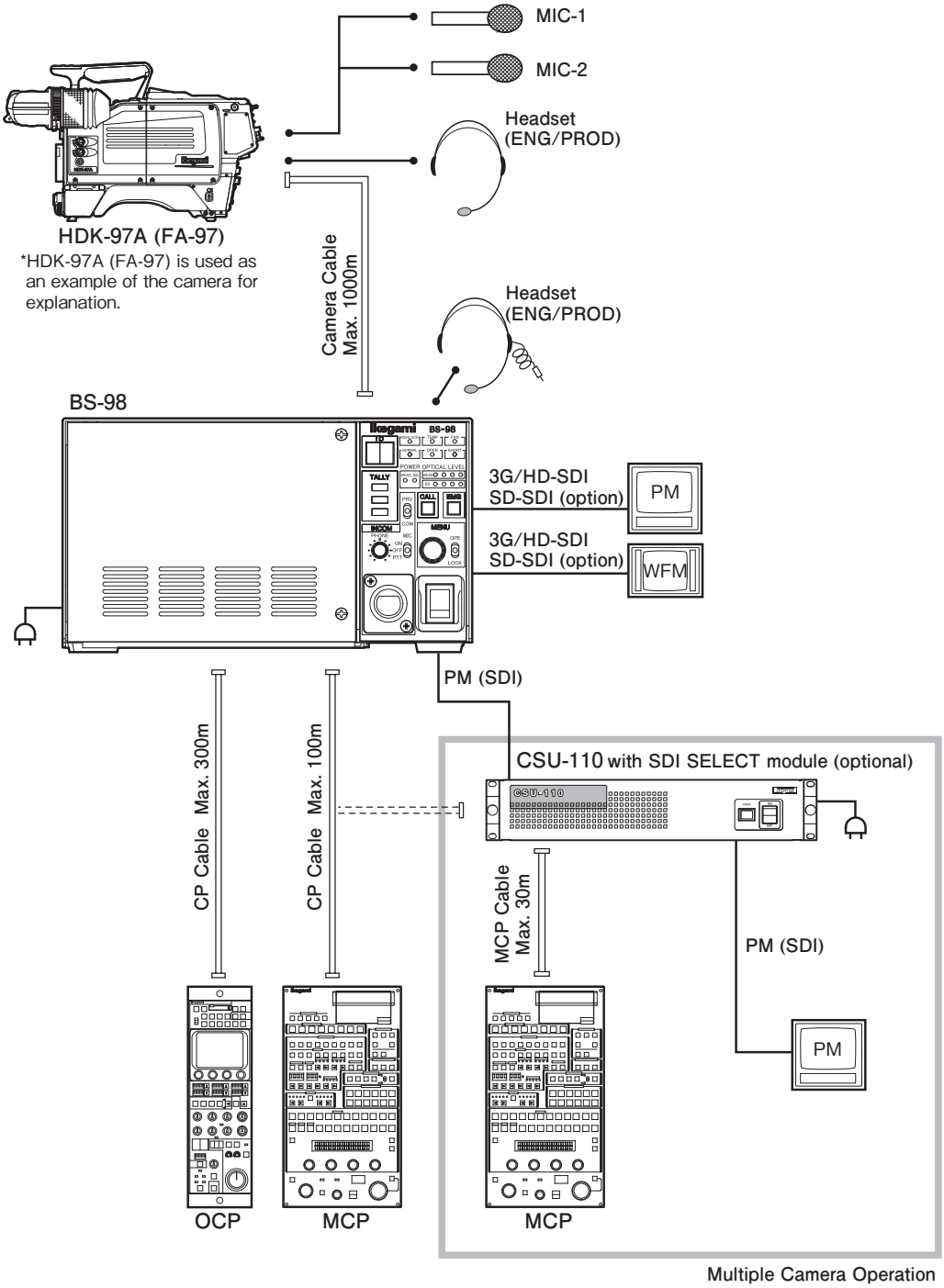
Connect the CAMERA connector on the rear of the BS to the CAMERA connector on the camera head via a camera cable.




***CAUTION:***

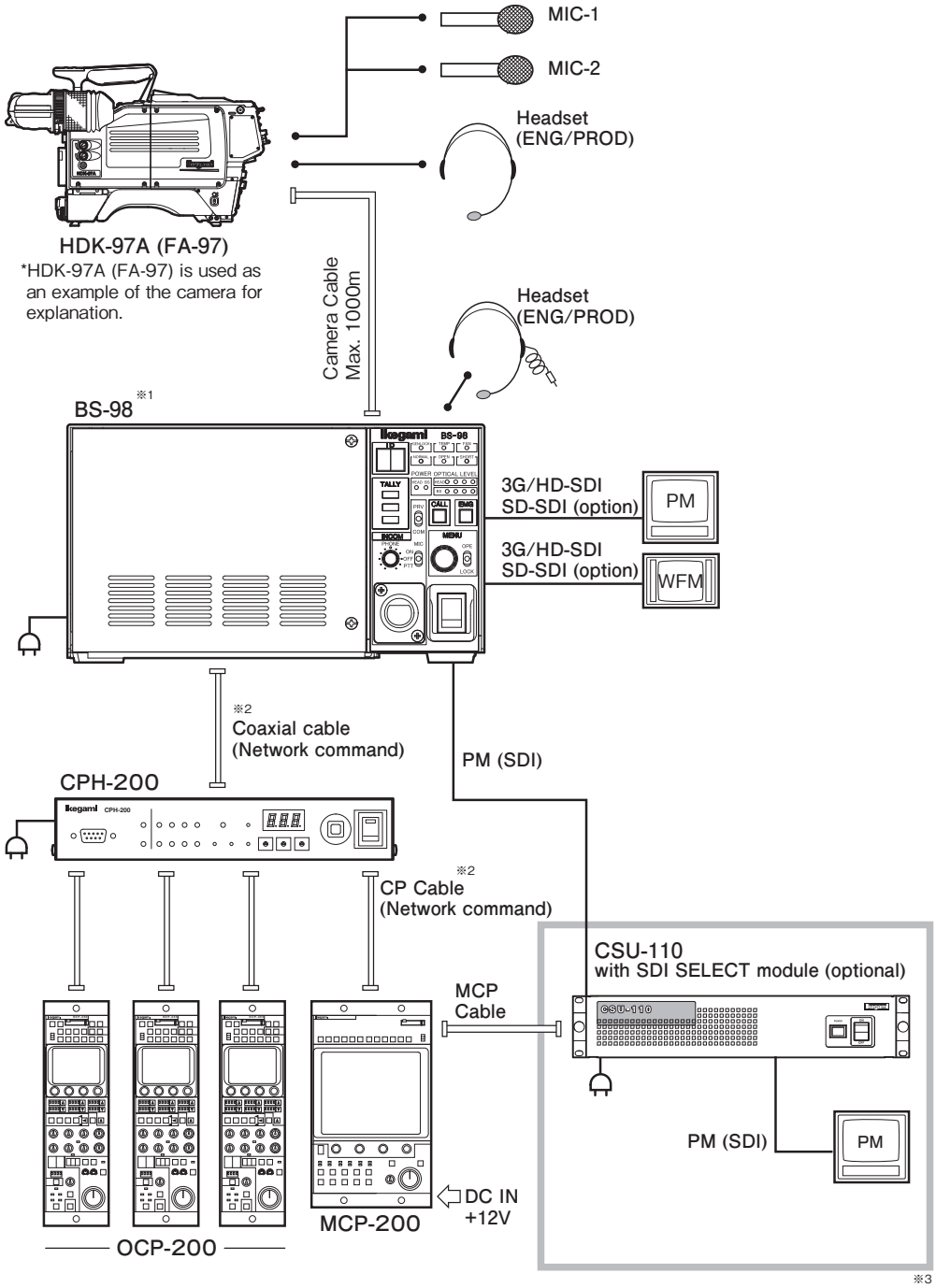
- The camera cable has a plug on one end and a jack on the other end. Make sure the difference before connection.
- Do not forcibly bend the camera cable nor apply excessive force to the camera cable.
- Refer to the instructions accompanying the cable or camera head to be used for how to handle the camera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

# 4.4 System Setup Diagram




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

## ■ Network Operation

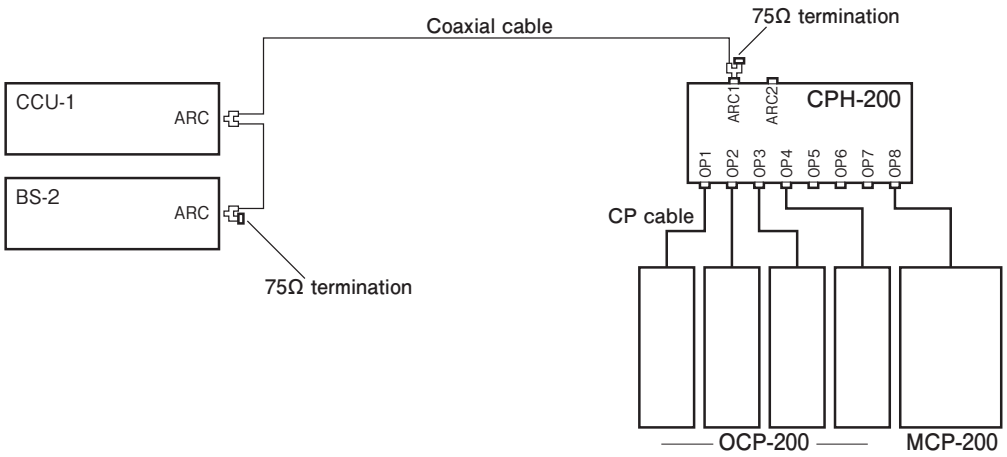



*1 Network ID of the BS set from the BS menu.
*2 For the maximum and minimum extension length of the cables, refer to "BSH-200/CPH-200 Setup Manual".
*3 For network operation, commands can be selected from an OCP, MCP, or CPH. For video signals, the operating configuration to select the signals from the CSU-110 is also accepted.
However, an external power supply (DC +12V) is required when the MCP-200 is used and the extension length of the cables is long.

# 4.5 Operating Systems

## ■ ARCNET Connection (Basic bus connection)

This connection configuration is available only for network-enabled CCU/BS such as the CCU-980 / BS-98.

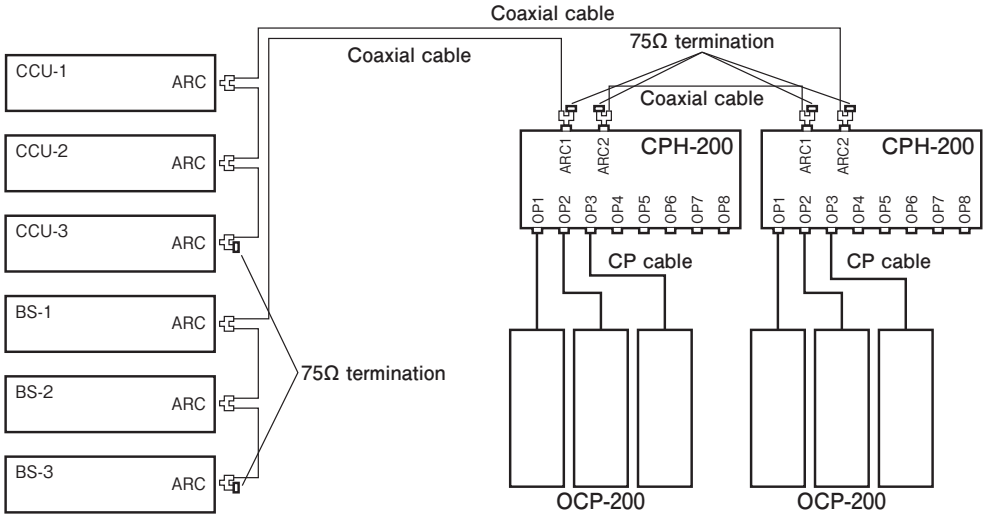



***Note:***

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

## ■ ARCNET Connection (Expansion bus connection)

This connection configuration is available only for network-enabled CCU/BS such as the CCU-980 / BS-98.




***Note:***

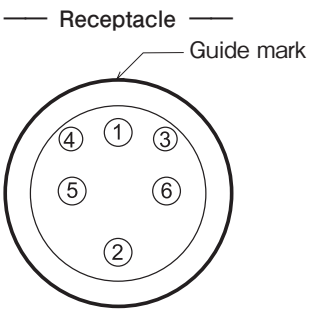
- The OCP/CCP connector and CSU/CCP connector on the CCU/BS cannot be used with the ARCNET connector at the same time in this configuration.
- This product cannot be connected to the BSH-200 (BS HUB).

# 4.6 External Connections

## ■ *CAMERA Connector*

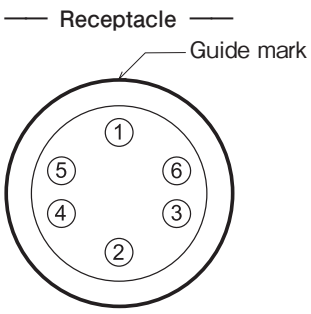
Used to connect the camera head to its CCU/BS.
Two types of CAMERA connector are available.

[3K Series]




Insertion Side
BS side : FFXW.3K or FCFRA

[OPS Series]



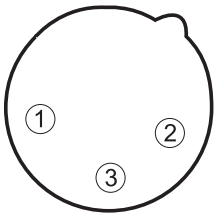

Insertion Side
BS side : OPS-PR

| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| ① | OPT H - C/B | Light contact Camera --> CCU/BS | IN | |
| ② | OPT C/B - H | Light contact CCU/BS --> Camera | OUT | |
| ③ | CONTROL (H) | Control signal (H) CCU/BS --> Camera | OUT | |
| ④ | CONTROL (C) | Control signal (C) Camera --> CCU/BS | IN | |
| ⑤ | POWER (H) | Power (H) supplied to the camera | OUT | |
| ⑥ | POWER (C) | Power (C) supplied to the camera | OUT | |

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

This is an output connector for the analog audio signal that is input from the camera head.

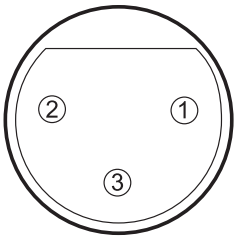
— Male receptacle —




Insertion Side

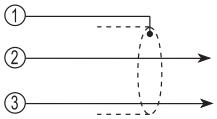
BS side : HA16RM-3PE (76)
Cable side : XLR-3-11C (3-pin female plug) or equivalent

— Female receptacle —



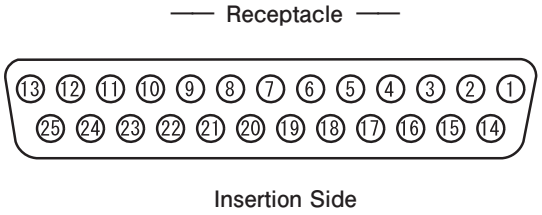

Insertion Side

BS 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 | AUDIO LINE SHIELD | GND |  |
| ② | MIC (H) | AUDIO LINE HOT | OUT | |
| ③ | MIC (C) | AUDIO LINE COLD | OUT | |

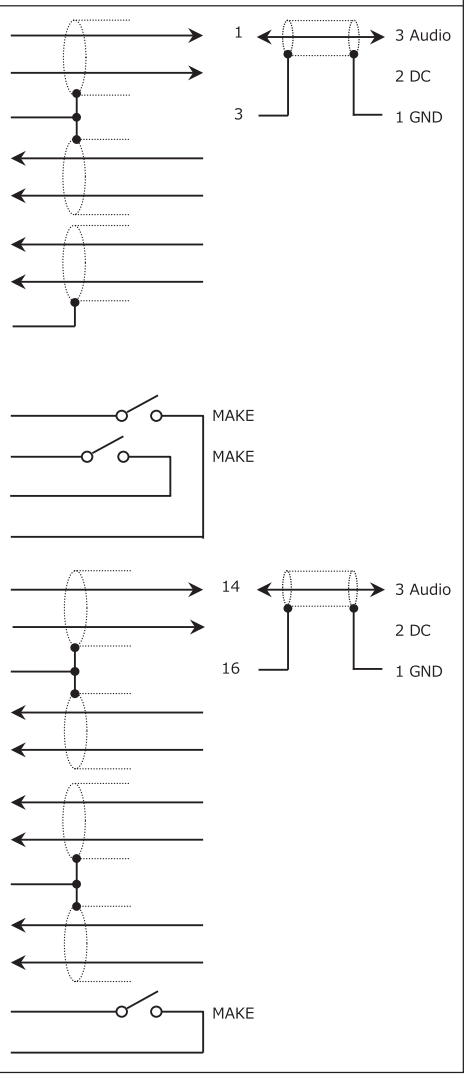
## ■ COMMUNICATION Connector

This is the connector that connects the control inputs from the external INTERCOM system, program voice, and external TALLY system.
The hex jack screw for the Japanese domestic models is 2.6 mm, and the hex jack screw for oversea models are #4-40UNC as the standard specifications.



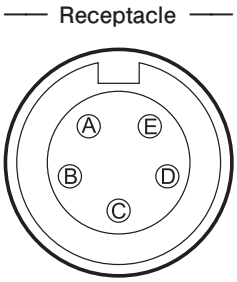

BS side : 【metric】 17LE-13250-27(D3AB)-FA
【inch】 17LE-13250-27(D3AC)-FA
Cable side : DB-25PF-N or equivalent

| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| | | | | 4 WIRE / RTS / Clear-Com |
| ① | ENG B-S(H) | ENG CH Intercom output to the system from the CCU/BS (H) | OUT | |
| ② | ENG B-S(C) | ENG CH Intercom output to the system from the CCU/BS (C) | OUT | |
| ③ | ENG(S) | ENG CH Intercom Shield | | |
| ④ | ENG S-B(H) | ENG CH Intercom input to the CCU/BS from the system (H) | IN | |
| ⑤ | ENG S-B(C) | ENG CH Intercom input to the CCU/BS from the system (C) | IN | |
| ⑥ | PGM-1(H) | Program Audio Channel-1 input (H) | IN | |
| ⑦ | PGM-1(C) | Program Audio Channel-1 input (C) | IN | |
| ⑧ | PGM-1(S) | Program Audio Channel-1 Shield | | |
| ⑨ | GND | Ground | GND | |
| ⑩ | Y TALLY IN | Yellow Tally Input (+) | IN | |
| ⑪ | R TALLY IN | Red Tally Input (+) | IN | |
| ⑫ | R TALLY COMM | Red Tally Common | | |
| ⑬ | GND | Ground | GND | |
| ⑭ | PROD B-S(H) | PROD CH Intercom output to the system from the CCU/BS (H) | OUT | |
| ⑮ | PROD B-S(C) | PROD CH Intercom output to the system from the CCU/BS (C) | OUT | |
| ⑯ | PROD(S) | PROD CH Intercom Shield | | |
| ⑰ | PROD S-B(H) | PROD CH Intercom input to the CCU/BS from the system (H) | IN | |
| ⑱ | PROD S-B(C) | PROD CH Intercom input to the CCU/BS from the system (C) | IN | |
| ⑲ | PGM-2(H) | Program Audio Channel-2 input (H) | IN | |
| ⑳ | PGM-2(C) | Program Audio Channel-2 input (C) | IN | |
| ㉑ | PGM-2(S) | Program Audio Channel-2 Shield | | |
| ㉒ | PGM-3(H) | Program Audio Channel-3 input (H) | IN | |
| ㉓ | PGM-3(C) | Program Audio Channel-3 input (C) | IN | |
| ㉔ | G TALLY IN | Green Tally Input (+) | IN | |
| ㉕ | G TALLY COMM | Green Tally Common | | |



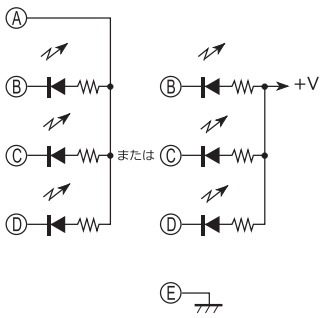
## ■ *TALLY OUT Connector*

Used to send TALLY control signal.




Insertion Side

BS side : PRC05-RB5F1
Cable side : PRC 05-P5M or equivalent

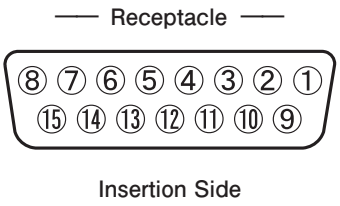
| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| Ⓐ | DC +12 V OUT | DC +12V power output | OUT |  |
| Ⓑ | R TALLY | Red Tally output (ON: GND) | OUT | |
| Ⓒ | Y TALLY/COM TALLY | Yellow Tally output or COMMON TALLY output (ON: GND) | OUT | |
| Ⓓ | G TALLY | Green TALLY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



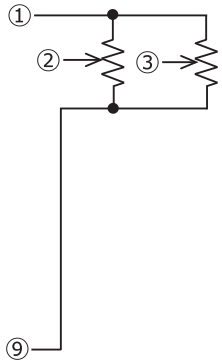
- Select one from Y TALLY output or COMMON TALLY output for the pin C. It can be set from the CCU / BS menu. Use of COMMON TALLY OUT enables to control both R TALLY and G TALLY simultaneously.

## ■ REMOTE Connector

This is a connector used to externally control the microphone gain of the camera head.
The hex jack screw for the Japanese domestic models is 2.6 mm, and the hex jack screw for oversea models are #4-40UNC as the standard specifications.
[It is required that the camera head is compatible with the MIC GAIN REMOTE function.]




BS side : 【metric】 17LE-13150-27(D3AB)-FA
【inch】 17LE-13150-27(D3AC)-FA
Cable side : DA-15PF-N or equivalent

| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| ① | +5.5V | DC + 5.5V output | OUT |  |
| ② | MIC1_FINE_CTL | MIC1 GAIN control voltage input 0 to 5.5V | IN | |
| ③ | MIC2_FINE_CTL | MIC2 GAIN control voltage input 0 to 5.5V | IN | |
| ④ | NC | | | |
| ⑤ | MIC1 GAIN STEP2 | MIC1 GAIN STEP2 ※1 | IN | |
| ⑥ | MIC1 GAIN STEP1 | MIC1 GAIN STEP1 ※1 | IN | |
| ⑦ | MIC1 GAIN STEP0 | MIC1 GAIN STEP0 ※1 | IN | |
| ⑧ | MIC1_REM_CTRL | MIC1 GAIN CONTROL ENABLE ※2 | | |
| ⑨ | GND | GND | IN | |
| ⑩ | NC | | | |
| ⑪ | NC | | | |
| ⑫ | MIC2 GAIN STEP2 | MIC2 GAIN STEP2 ※1 | IN | |
| ⑬ | MIC2 GAIN STEP1 | MIC2 GAIN STEP1 ※1 | IN | |
| ⑭ | MIC2 GAIN STEP0 | MIC2 GAIN STEP0 ※1 | IN | |
| ⑮ | MIC2_REM_CTRL | MIC2 GAIN CONTROL ENABLE ※2 | IN | |



※1 MIC GAIN STEP CONTROL

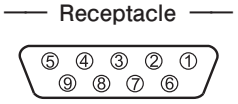
| GAIN STEP2 | GAIN STEP1 | GAIN STEP0 | GAIN |
|---|---|---|---|
| H | H | H | -60 dB |
| H | H | L | -50 dB |
| H | L | H | -40 dB |
| H | L | L | -30 dB |
| L | H | H | -20 dB |
| L | H | L | -10 dB |
| L | L | H | 0 dB |
| L | L | L | +4 dB |

※2 MIC GAIN EXTERNAL REMOTE CONTROL

| MIC1 REM_CTRL | MIC2 REM_CTRL | MIC GAIN CTRL |
|---|---|---|
| L | L | MIC 1 and 2 ON |
| L | H | MIC 1 ON |
| H | L | MIC 2 ON |
| H | H | INTERNAL |

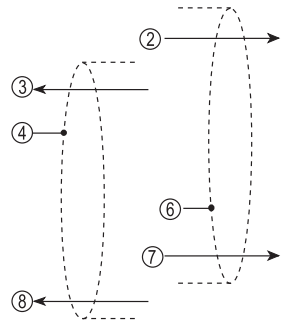
## ■ *DATA TRK (DATA TRUNK)*

This is the input/output connector for the serial communication standard RS-422.



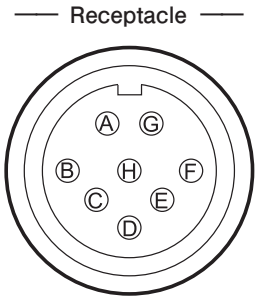

Insertion Side

BS side : DE-9SF-T-N
Cable side : D-sub connector (9-pin male plug and inch screws #4-40UNC)

| 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) | Input Shield | — | |
| ⑤ | N. C | ——————— | — | |
| ⑥ | OUT (S) | Output Shield | — | |
| ⑦ | TR1 OUT (+) | Digital Data Output (+) | OUT | |
| ⑧ | TR1 IN (−) | Digital Data Input (-) | IN | |
| ⑨ | GND | GND | GND | |

## ■ OCP/CCP and CSU/CCP Connector (MPU & REF module)

Used to connect Various control panel.



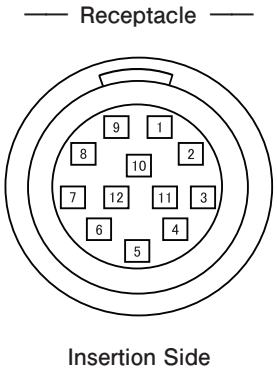

Insertion Side

BS side : RPC05-RB8F1
Cable side : PRC05-PB8M or equivalent

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

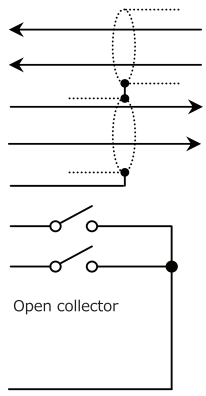
## ■ IF Connector

The serial communication standard RS-422 DATA TRUNK #2, Intercom external control, and preview switch contact are assigned.
In DATA TRUNK #2, it is necessary for the camera head side to support.




BS side : HR10A-10R-12SC (71)
Cable side : HR10A-10P-12PC (73) Crimp Type
: HR10A-10P-12P (73) Solder type

| Pin No. | Name | Function | I/O | External Interface |
|---|---|---|---|---|
| 1 | TR2 IN(+) | DTAT TRUNK2 Digital Data Input (+) | IN | |
| 2 | TR2 IN(-) | DTAT TRUNK2 Digital Data Input (-) | IN | |
| 3 | TR2 OUT(+) | DTAT TRUNK2 Digital Data Output (+) | OUT | |
| 4 | TR2 OUT(-) | DTAT TRUNK2 Digital Data Output (-) | OUT | |
| 5 | TR2(S) | DTAT TRUNK2 Shield | | |
| 6 | REM ISOLATE OFF | Private Incom OFF external control | IN | |
| 7 | EXT MIC OFF | Camera Incom MIC OFF external control | IN | |
| 8 | HP IND | Head Power ON IND output | OUT | |
| 9 | +12V OUT | DC +12V power output | OUT | |
| 10 | GND | Ground | GND | |
| 11 | PREVIEW SW | Preview switch | OUT | |
| 12 | PREVIEW COM | Preview switch GND | GND | |



# BS SETTINGS and ADJUSTMENT

5

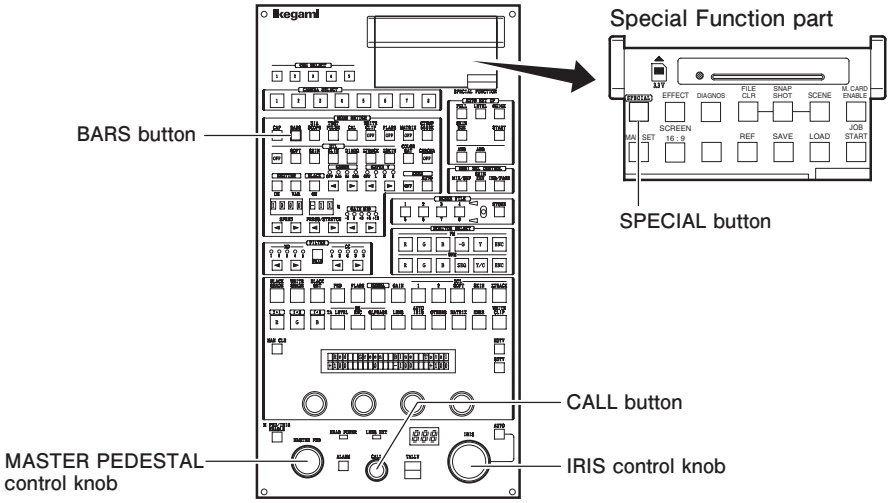
# 5.1 Settings from the BS Menu

The menu operation on setting the CCU/BS is performed from the controlpanel or CCU/BS by itself.
The setting of each item is performed by displaying the main menu/submenu screen on the PM screen. CCU/BS menu is displayed only PM OUT output.

***Note:***

Abbreviations
PM : Abbreviation of Picture Monitor
PM screen : Means the PM OUT output screen of CCU/BS. On the PM screen, various characters are superimposed.

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




| | | |
|---|---|---|
| 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. |

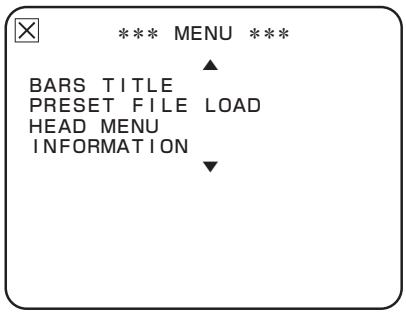
### ■ *Displaying the Main Menu*

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.




***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).

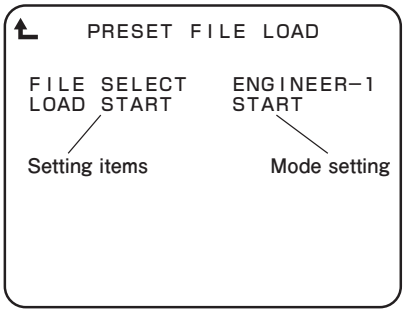
## ■ Displaying the Submenu

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 "↰" 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 any of the following methods :

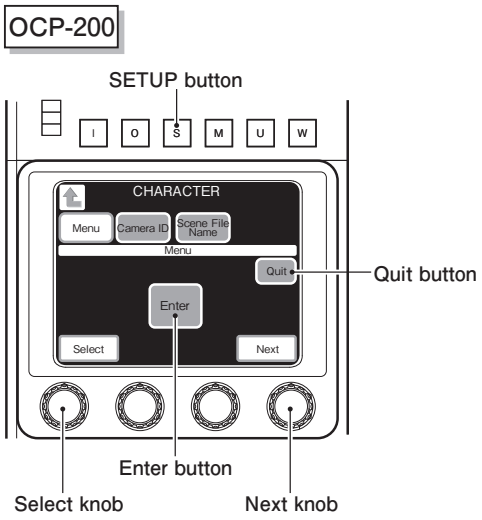
a) Select "☒" on the BS/CCU main menu and press the CALL button.
b) Press the BARS button (to OFF COLOR BARS).

The main menu/submenu disappears.

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

## ■ *Displaying the Main Menu*

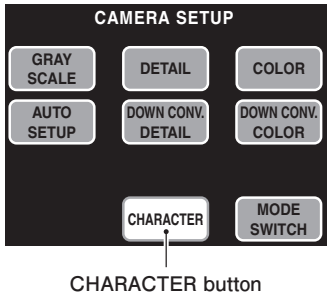
This section explains how to display the main menu on the PM screen.




**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.

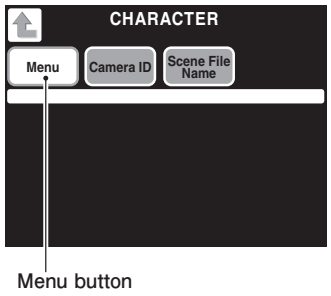
Figure 1




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

The screen shown in Fig.2 is displayed.

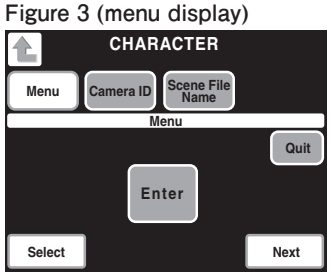
Figure 2




**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.

Figure 3 (menu display)



## ■ 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 any of the following methods :

a) Select "☒" on the BS/CCU main menu and press the Enter button.
b) Press the QUIT button on the LCD.
c) Press the BARS button on the OCP (to OFF COLOR BARS).

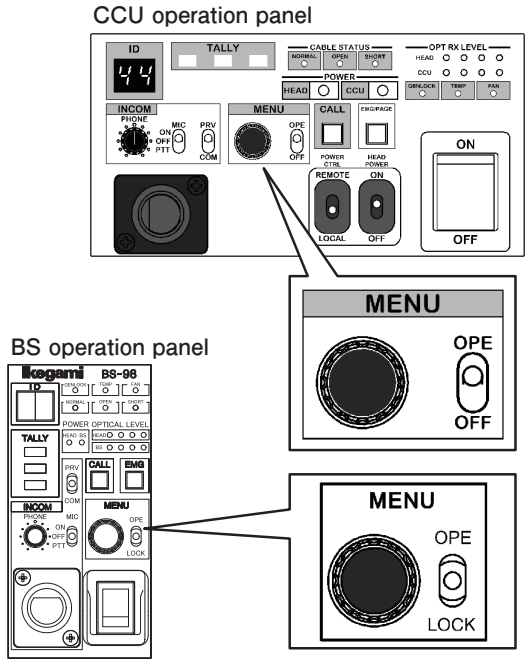
# Basic operation of the menu screen (when operated from the CCU/BS main body)

## ■ Display of the main menu screen

It explains the method to display the main menu on the PM screen.

**1** [In case of CCU]
Set the MENU switch "OPE - OFF" to "OPE" side.

[In case of BS]
Set the MENU switch "OPE - LOCK" to "OPE" side.



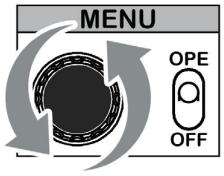

**2** When the MENU operation dial is kept pressed for approximately three seconds, the Main menu screen is displayed on the PM screen.

## ■ Display of the sub-menu screen

Select the item from the main menu screen that is displayed on the PM screen to display the sub menu screen for various settings.

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

**2** Turn the MENU operation dial to set the blinking cursor to the setting item and press the dial. The sub menu is displayed, and various settings become enabled. It provides the operation method that is to select an item by turning and pressing the dial.




***Caution:***

Depending on the function of the setting item, there are items that the setting is changed when the dial is turned or when the dial is pressed.

## ■ Exit the menu screen

End the Main menu screen and Sub menu screen displayed on the PM screen.

**1** Exit the menu screen in the any of the following methods :

a) Select "☒" on the BS/CCU main menu and press the Enter button.
b) Set the MENU switch "OPE - OFF" to the "OFF" side (CCU).
c) Set the MENU switch "OPE - LOCK" to the "LOCK" side (BS).

# Menu Configuration

The following lists the CCU/BS menu configuration.

## ■ MENU

### BARS TITLE

| | |
|---|---|
| ↑ | Return to a main menu screen. |
| DISPLAY | ON/OFF setting of BARS TITLE character display |
| TITLE EDIT | Editing BARS TITLE character |
| POSITION | Setting of the BARS TITLE character indication point |

### PRESET FILE LOAD

| | |
|---|---|
| ↑ | Return to a main menu screen. |
| FILE SELECT | Selection of the file to LOAD |
| LOAD START | Execution of the DATA LOAD |

### HEAD MENU

Control the menu of the camera head

### INFORMATION

| | |
|---|---|
| ↑ | Return to a main menu screen. |
| MODULE SW | Display of the switch settings of the PLS and MPU&REF module |
| ROM VER | Display a version of Firmware |
| CHECK SUM | Display CHECK SUM of Firmware |
| USER ID | Indication of the regional and customer specifications information |

## ■ ENGINEER (1/2)

### SYSTEM FORMAT

| | |
|---|---|
| ↑ | Return to a main menu screen. |
| FRAME RATE | Selection of FRAME RATE |
| 1080xxx | Selection of SYSTEM FORMAT |

### OUTPUT FORMAT

| | |
|---|---|
| ↑ | Return to a main menu screen. |
| OUT-1 | Format selection of HDTV output 1 (2 outputs) |
| OUT-2 | Format selection of HDTV output 2 (2 outputs) |
| OUT-3 | Format selection of HDTV/SDTV output 3 (2 outputs) |

| | | |
|---|---|---|
| PM OUT-1 | | Format selection of PM output 1 |
| PM-2/WFM | | Format selection of PM output 2 or WFM output |
| HD PM | | Select the format of the output 3G/HD-SDI PM |
| SD SCREEN MODE | | Select a screen mode of the SDTV output |
| SYNC OUT | | Select the format of the SYNC OUT output |
| HD-SYNC 2-3ID ADD | ON/OFF | Selection of whether to add 2-3 ID signal to the SYNC output |
| SD-10 FIELD ID SIG | ON/OFF | Selection of whether to add 10 FIELD ID signal to the ENC output |

## RET VIDEO FORMAT

| | | |
|---|---|---|
| ↰ | | Return to a main menu screen. |
| RET 1 ******* IN | FS ON/OFF | Selection of FS ON/OFF and Display of RETURN-1 detection signal format |
| RET 2 ******* IN/OUT | FS ON/OFF | Selection of FS ON/OFF and Display of RETURN-2 detection signal format |
| RET 3 ******* IN | FS ON/OFF | Selection of FS ON/OFF and Display of RETURN-3 detection signal format |
| RET 4 ******* IN/OUT | FS ON/OFF | Selection of FS ON/OFF and Display of RETURN-4 detection signal format |
| ACTIVE-THROUGH | ON/OFF | ON/OFF selection of RETURN active through mode |
| SD SCREEN MODE | | Select a screen mode of the SDTV signal input |

## PHASE CONTROL

| | | |
|---|---|---|
| ↰ | | Return to a main menu screen. |
| SYNC CONT | | Set the vertical phase of SDTV and HDTV for external synchronization |
| HD V PHASE | | Set the vertical phase of HDTV output signal for external synchronization |
| (Format name) | SYS1/SYS2 | The simultaneous output, it is possible to individually adjust the system of SYS2 with SYS1 |
| HD TRUNK | | Adjust the vertical phase of HD TRUNK signal |
| HD MASTER H PHASE | | Adjust the horizontal master phase of HDTV output signal for external synchronization |
| HD OUT-1 H PHASE | | Adjust the horizontal phase of OUT-1 output signal for external synchronization |
| HD OUT-2 H PHASE | | Adjust the horizontal phase of OUT-2 output signal for external synchronization |
| HD OUT-3 H PHASE | | Adjust the horizontal phase of OUT-3 HDTV output signal for external synchronization |
| HD PM H PHASE | | Adjust the horizontal phase of PM OUT output signal for external synchronization |
| HD TRUNK H PHASE | | Adjust the horizontal phase of HD TRUNK output signal for external synchronization |
| SD V PHASE | | Adjust the vertical phase phase of SDTV output signal for external synchronization |
| SD MASTER H PHASE | | Adjust the horizontal master phase of SDTV output signal for external synchronization |
| SD OUT-3 H PHASE | | Adjust the horizontal phase of OUT-3 SDTV output signal for external synchronization |
| SD SC PHASE COARSE | | Coarse adjustment of the phase of the SDTV subcarrier |
| SD SC PHASE FINE | | Fine adjustment of the phase of the SDTV subcarrier |
| SD ENC H PHASE | | Adjust the horizontal phase of SDTV ENC output signal for external synchronization |
| SD PM H PHASE | | Adjust the horizontal phase of SDTV PM output signal for external synchronization |
| SYNC OUT H PHASE | | Adjust the horizontal phase of the external synchronization output (SYNC OUT) |
| SYNC OUT V PHASE | | Adjust the vertical phase of the external synchronization output (SYNC OUT) |

## MIC MANAGEMENT

| | | |
|---|---|---|
| ↰ | | Return to a main menu screen. |
| HD SYS EMBEDDED | ALL ON/OFF | Set whether to embed audio signal to all HDTV output. |
| HD OUT-1 | ON/OFF | Set whether to embed audio signal to HDTV OUT-1 output. |
| HD OUT-2 | ON/OFF | SSet whether to embed audio signal to HDTV OUT-2 output. |
| HD OUT-3 | ON/OFF | Set whether to embed audio signal to HDTV OUT-3 output. |
| HD PM | ON/OFF | Set whether to embed audio signal to HDTV PM OUT output. |
| SD SYS EMBEDDED | ALL ON/OFF | Set whether to embed audio signal to all SDTV output. |
| SD SDI | ON/OFF | Set whether to embed audio signal to SDTV OUT-3 output. |
| SD PM | ON/OFF | Set whether to embed audio signal to SDTV PM OUT output. |
| MASTER DELAY | | Sets the audio delay for all systems |
| HD SYS DELAY | | Sets the audio delay for HDTV systems |
| SD SYS DELAY | | Sets the audio delay for SDTV systems |
| DIGITAL DELAY | | Sets the audio delay for digital audio output |
| MIC1/2 OUT DELAY | | Sets the audio delay for analog audio output |
| MIC1 OUTPUT LEVEL | | Set the output reference level of MIC1 OUT (0dB/4dB) |
| MIC1 LVL ADJ (0dB) | | Set the level 0dB setting of MIC1 OUT |
| MIC1 LVL ADJ (4dB) | | Set the level 4dB setting of MIC1 OUT |
| MIC2 OUTPUT LEVEL | | Set the output reference level of MIC2 OUT (0dB/4dB) |
| MIC2 LVL ADJ (0dB) | | Set the level 0dB setting of MIC2 OUT |
| MIC2 LVL ADJ (4dB) | | Set the level 4dB setting of MIC2 OUT |
| MIC1 CENTER ADJ | | Center OFFSET adjustment of MIC1 GAIN REMOTE external control voltage |
| MIC2 CENTER ADJ | | Center OFFSET adjustment of MIC2 GAIN REMOTE external control voltage |

## INCOM MANAGEMENT

| | | |
|---|---|---|
| ↰ | | Return to a main menu screen. |
| ENG | IF | Selection of the for ENG-line system interface 4W/RTS/Cler-Com. |
| ENG-INPUT | TERM | Selection of the input termination 600Ω/10KΩ of the ENG-line system interface. |
| ENG-OUTPUT | LOAD | Termination setup for ENG-line RTS/Cler-Com system |
| PROD | IF | Selection of the PROD-line system interface 4W/RTS/Cler-Com. |
| PROD-INPUT | TERM | Selection of the input termination 600Ω/10KΩ of the PROD-line system interface. |
| PROD-OUTPUT | LOAD | Termination setup for PROD-line RTS/Cler-Com system |
| ENG-PROD 2LINE/1LINE | | To choose whether to 1-line or 2-lines to the system line |
| FRONT INCOM | | Select the type of headset microphone to be connected to the front of the connector. |
| MIC POWER SUPPLY | | Set whether or not to microphone power the ECM setting |
| PGM1 TERM | | Select the line termination 600/10KΩ of PGM1 |
| PGM1 INPUT LEVEL | | Select the Input level -20dB/0dB/4dB of PGM1 |

| | |
|---|---|
| PGM2 TERM | Select the line termination 600/10KΩ of PGM2 |
| PGM2 INPUT LEVEL | Select the Input level -20dB/0dB/4dB of PGM2 |
| PGM3 TERM | Select the line termination 600/10KΩ of PGM3 |
| PGM3 INPUT LEVEL | Select the Input level -20dB/0dB/4dB of PGM3 |
| PGM MIX FRONT INCOM | The selection as to whether or not to mix the PGM to FRONT INCOM |
| PGM -> FR-INCOM LEVEL | The adjustment of the PGM mix level in FRONT INCOM |

## ENGINEER (2/2)

### HDTV VIDEO PROCESS

| | |
|---|---|
| ↰ | Return to a main menu screen. |
| GAMUT CLIP | Select ON/OFF of the GAMUT CLIP function |
| LEVEL | Set the level of GAMUT CLIP |
| HDTV BARS TYPE | Select the type of HDTV COLOR BARS |
| ARIB BARS TYPE | Select a pattern of ARIB BARS |
| SMPTE BARS TYPE1 | Select a pattern of SMPTE BARS #1 |
| SMPTE BARS TYPE2 | Select a pattern of SMPTE BARS #2 |
| CHAR LEVEL | HDTV output character level. Factory setting |
| CHAR BG LEVEL | HDTV output character background level. Factory setting |

### SDTV VIDEO PROCESS

| | |
|---|---|
| ↰ | Return to a main menu screen. |
| HV SLIM DTL TYPE | Set horizontal and vertical SLIM DTL type of the SDTV system. |
| V SLIM DTL FREQ | Set the frequency or boost band for SDTV system |
| FINE DTL | Setting of FINE DTL |
| COMB | COMB FILTER setting. Factory setting |
| COMB GAIN | COMB FILTER GAIN. Factory setting |
| H FILTER | Set of SDTV output horizontal filter |
| V FILTER | Set of SDTV output vertical filter |
| MOTION DETECT | Set the motion detection of Down Converter |
| GAMUT CLIP | Select ON/OFF of the GAMUT CLIP function |
| LEVEL | Set the level of GAMUT CLIP |
| SDTV SETUP SEL | Factory setting |
| SDTV BARS TYPE | Select the type of SDTV COLOR BARS |
| CHAR LEVEL | Set of SDTV output Character Level |
| CHAR BG LEVEL | Set of SDTV output character background level |

| | |
|---|---|
| **HD PM VIDEO PROCESS** | |
| ↰ | Return to a main menu screen. |
| CHAR LEVEL | Set of HDTV PM output Character Level |
| CHAR BG LEVEL | Set of HDTV PM output character background level |
| CAM HEAD STATUS DISP | ON/OFF setting of the camera head status display |
| DISP POSITION | Setting the display position of the character |
| **SD PM VIDEO PROCESS** | |
| ↰ | Return to a main menu screen. |
| CHAR LEVEL | Set of SDTV PM output Character Level |
| CHAR BG LEVEL | Set of SDTV PM output character background level |
| **FUNCTION SETTING** | |
| ↰ | Return to a main menu screen. |
| ARCNET ID SET | Setting of ARCNET ID (Decimal Number) |
| CAM PGM NO. ENABLE | Set CCU/BS of whether or not to manage the camera program number |
| CAM PGM NO. SET | Setting of the camera program number |
| BS FRONT ID DISPLAY | Selection of items to be displayed in the FRONT ID DISPLAY |
| PM TALLY SEL | Selection of COMM TALLY OUT or Y TALLY OUT |
| CAM CODE | Regional options |
| SAFETY&H.PWR | Regional options |
| REPEATER MODE | Regional options |
| CAM PWR CONT | Regional options |
| Q-TV MODE | Set of Composite QTV |
| HD TRUNK | ON / OFF function of HD TRUNK (Only 3G transmission compatible camera. It works with 3G transmission mode.) |
| HD Q-TV | ON / OFF function of HD QTV (Only 3G transmission compatible camera) |
| WARNING BIG CHAR | Display to the DIAGNOSIS INFORMATION results by big character |
| FIBER SINGLE MODE | ON / OFF of the FIBER SINGLE MODE function |
| **ENGINEER SET FILE RENEW** | |
| ↰ | Return to a main menu screen. |
| FILE SELECT | Selection of files to be updated |
| DATA RENEW MODE | Update execution of the file data |
| **PASSWORD ENTRY** | I will put a password to protect ENGINEER SET FILE RENEW function. (Valid for S3-3 ON of PLS module) |

## PROGRAM UPDATE

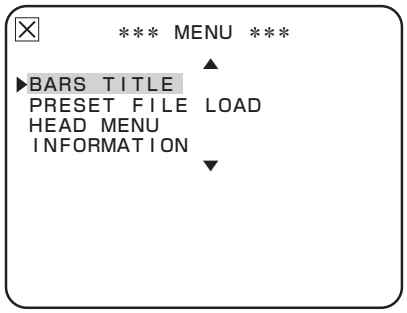
| | |
|---|---|
| ↰ | Return to a main menu screen. |
| CCU/BS ROM | Run the update of Firmware |
| Current Ver STR-****V** | Displaying the Firmware version of the current |

# BARS TITLE

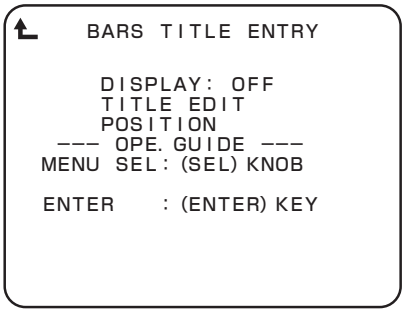
Superimposing the character on COLOR BARS becomes enabled.

***Reference:***

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




To position the flashing cursor on the "BARS TITLE", and determine.

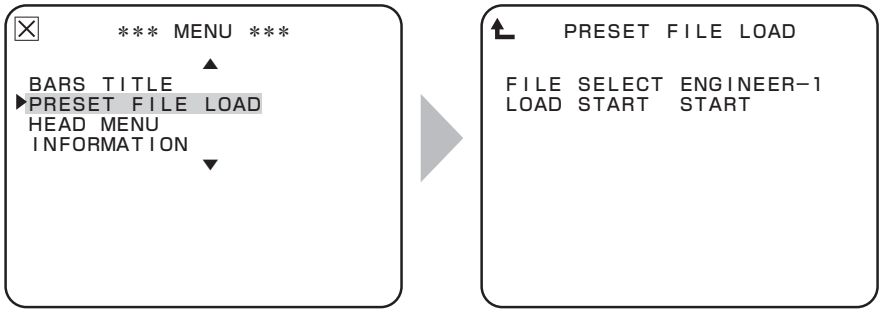



The submenu "BARS TITLE ENTRY" is displayed, on which you can perform various settings.

DISPLAY : ON / OFF selection of BARS TITLE character display
TITLE EDIT : BARS TITLE character editing mode
POSITION : Set of BARS TITLE character display position

# PRESET FILE LOAD

PRESET FILE DATA transfers to the memory.




To position the flashing cursor on the "PRESET FILE LOAD", and determine.

The submenu "PRESET FILE LOAD" is displayed, on which you can perform various settings.

| Setting Item | Set Value | Description |
|---|---|---|
| FILE SELECT | ENGINEER-1 | Sets the ENGINEER-1 file |
| | ENGINEER-2 | Sets the ENGINEER-2 file |
| | ENGINEER-3 | Sets the ENGINEER-3 file |
| | FACTORY | Sets the FACTORY file |
| LOAD START | READY | Data transfer (LOAD) before execution. |
| | START | Data transfer (LOAD) start. |
| | CANCEL | Data transfer (LOAD) cancellation. |

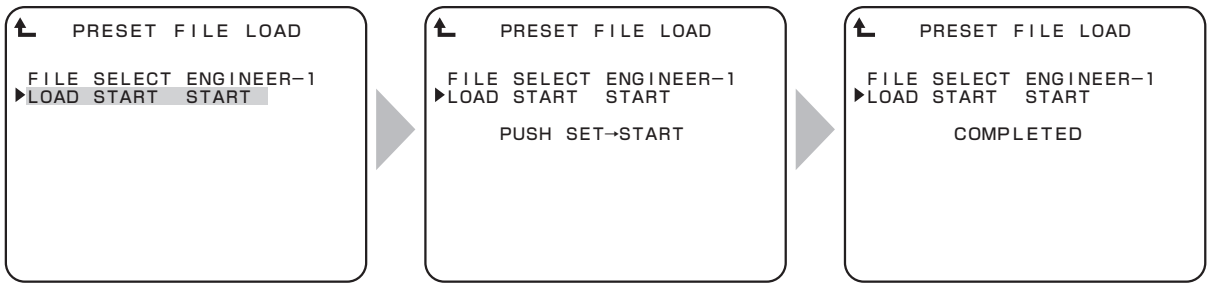
**1** Set the blinking cursor to FILE SELECT and select a target file to transfer (LOAD) the data.

When the blinking cursor is moved to "LOAD START" and finalized, the mode set value changes from "READY" to "START".

**2**
- When "CANCEL" is selected, the setting is canceled, and the status returns to "READY" status.
- When "START" is selected, "PUSH SET -> START" is displayed at the lower section of the screen. When "START" is selected, proceed to Step 3.

**3** While "PUSH SET -> START" is selected, finalize the operation. The data transfer (LOAD) starts.

When loading of the file completes, the message "FAIL-SAFE DATA LOAD COMPLETED" appears on the screen. Then, BS/CCU re-start automatically, and the operation completes.



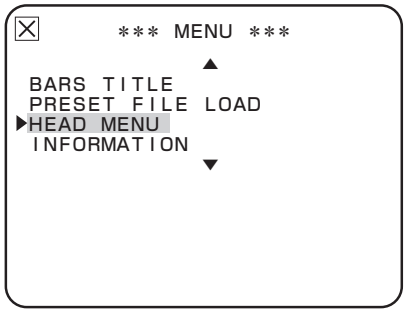

Position the flashing cursor on "LOAD START", and confirm the selection.

When "START" is selected, the message is displayed in the bottom of the screen.

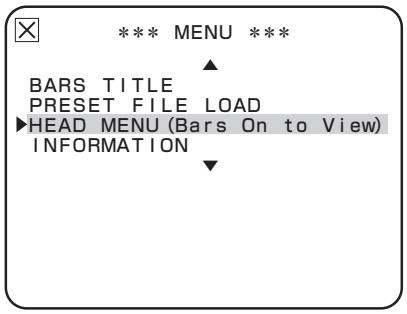
"FAIL-SAFE DATA LOAD COMPLETED" is displayed in the middle of the screen, and then restart.

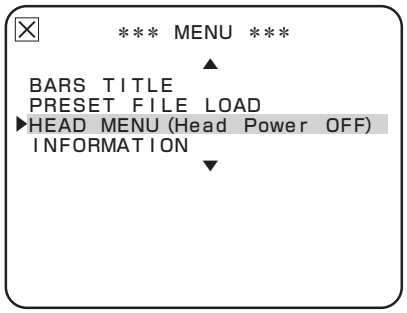
# HEAD MENU

The camera head menu is displayed, and its control is possible.




Operating the camera head menu becomes enabled from CCU/BS.
For the contents of the camera menu, refer to the manual of each camera head.



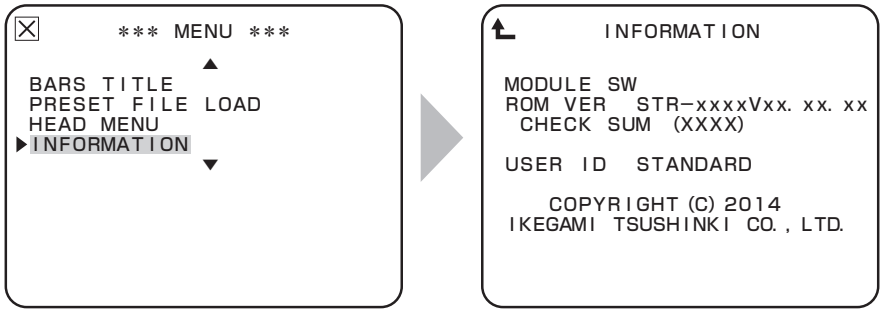




***Note:***

When operating HEAD MENU, it is required that COLOR BARS is ON. When COLOR BARS is OFF, "HEAD MENU (Bars On to View)" is displayed, and the selecting operation is disabled.
In addition, when the camera head is not connected or when HEAD POWER is OFF, "HEAD MENU (Head Power OFF)" is displayed, and selecting operation is disabled.

# INFORMATION

INFORMATION displays the switch settings and ROM version.



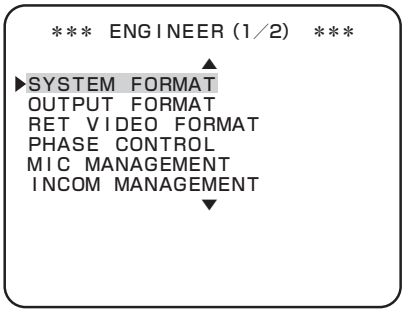

To position the flashing cursor on the "INFORMATION", and determine.

The submenu "INFORMATION" is displayed.

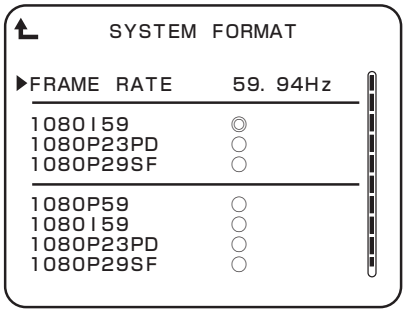
| Setting Item | Set Value | Description |
|---|---|---|
| MODULE SW | Only display | Displays the switch settings of the PULSE module and MPU&REF module. |
| ROM VER | Only display | Displays ROM ROM (Firmware) version. |
| CHECK SUM | Only display | Displays the ROM (Firmware) check sum. |
| USER ID | Only display | I will display the customer's specification and information area. |

# SYSTEM FORMAT

SYSTEM FORMAT sets the system format.




To position the flashing cursor on the "SYSTEM FORMAT", and determine.



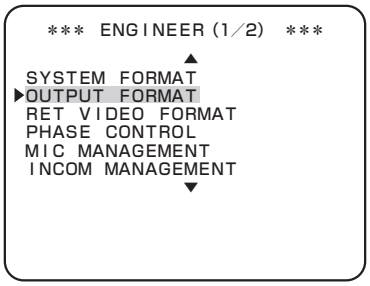

Set the blinking cursor to the format to be set and execute the setting as the mark on the screen becomes " ◎ ".
The figure is one example when the frame rate is 59.94 Hz. The select-able format is the one that the camera head corresponds to.

***Note:***

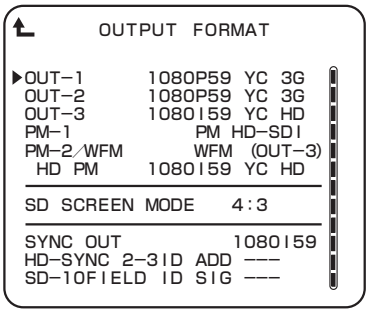
The formats, which are displayed on MENU and are select-able, are the ones that the connected camera head is compatible with only.

# OUTPUT FORMAT

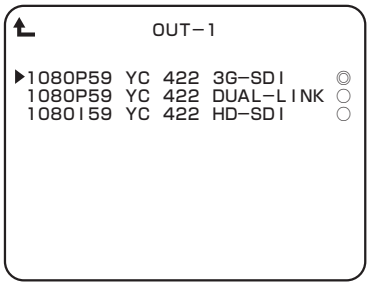
Set the output format of each output.




Set the blinking cursor to "OUTPUT FORMAT" and finalize.




The sub menu "OUTPUT FORMAT" is displayed.



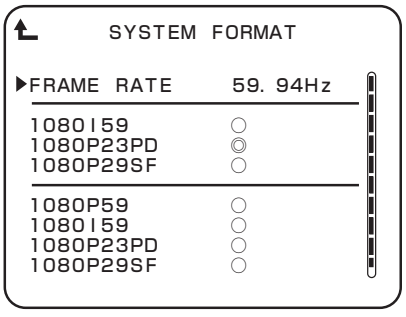

When "OUT-1", "OUT-2", "OUT-3", and "HD PM" are selected, sub menus open, and the format select screen opens.
The figure is OUT-1 select screen when the SYSTEM FORMAT is 1080P59 3G as one example.
Items that can be selected vary depending on each format and output system.

---

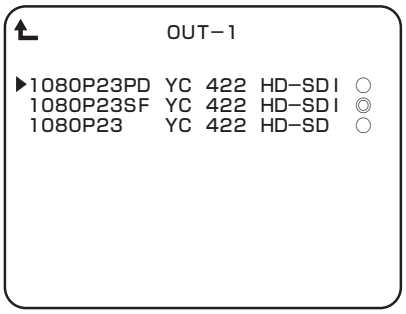
***Note:***

For converter output

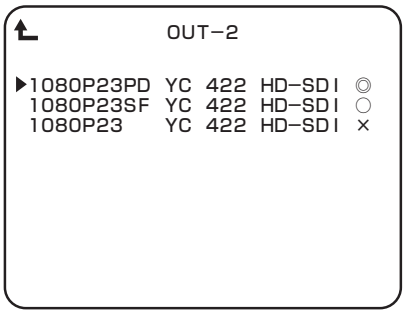
When 1080P23PD is selected in SYSTEM FORMAT, the select-able FORMAT of each output are three types that are 1080P23PD, 1080P23SF, and 1080P23. Within these, 1080P23SF and 1080P23 use the converter; therefore, only one of these can be selected.
Simultaneous output of 1080P23SF and 1080P23 is not possible.
1080P23PD and 1080P23SF or 1080P23PD and 1080P23 are the simultaneous output.




When SYSTEM FORMAT selects 1080P23PD format.

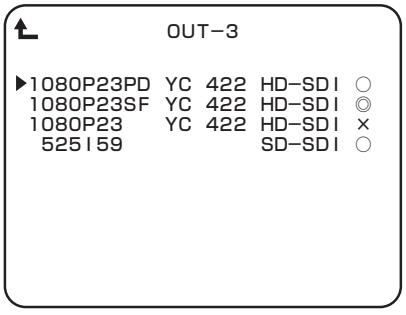



OUT-1 selects 1080P23SF.




OUT-2 selection screen

The converter is used at 1080P23SF; therefore, the selection for OUT-2 becomes either one of 1080P23PD or 1080P23SF.
Selecting 1080P23 is disabled.



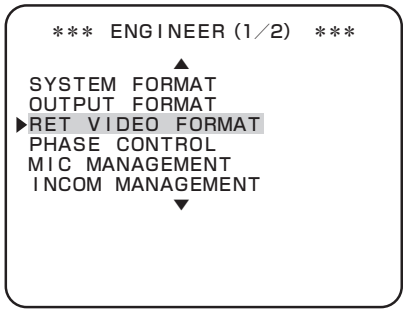

Selection for OUT-3 also becomes either one of 1080P23PD or 1080P23SF.
(When SDTV option is implemented, SD-SDI is select-able.)

## OUTPUT FORMAT setting item list

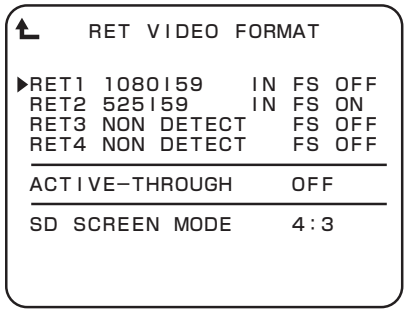
| Setting items | Setting | Content |
|---|---|---|
| OUT-1 | Changes depending on the FORMAT. | Selects OUT-1 output from the sub menu. |
| OUT-2 | Changes depending on the FORMAT. | Selects OUT-2 output from the sub menu. |
| OUT-3 | Changes depending on the FORMAT. | Selects OUT-3 output from the sub menu.<br>When SDTV option is implemented, SD-SDI also becomes selectable. |
| PM-1 | PM HD-SDI | PM-1 OUT output is set to HD-SDI. The output format is selected by "HD PM" item. |
| | PM SD-SDI | PM-1 OUT output is set to SD-SDI. Only when SDTV option is implemented, selection is enabled. |
| PM-2/WFM | WFM (OUT-3) | The signal that is the same as the one selected at OUT-3 is output. |
| | PM HD-SDI | PM-2 OUT output is set to HD-SDI. The output format is the same as PM-1. |
| | PM SD-SDI | PM-2 OUT output is set to SD-SDI. Only when SDTV option is implemented, selection is enabled. |
| HD PM | Changes depending on the FORMAT. | The output format for when PM HD-SDI is selected to PM-1 and PM-2 OUT is selected. |
| SD SCREEN MODE | 4:3 | The aspect ratio of SDTV output is set to 4:3. |
| | 16:9 | The aspect ratio of SDTV output is set to 16:9. |
| | LETTER | SDTV output is set to the letter box mode. |
| SYNC OUT | Changes depending on the FORMAT. | For the HDTV system, Tri-Level synchronizing signal, of which output is possible with the SYSTEM FORMAT currently selected, can be selected.<br>SDTV is the 2Vp-p SDTV rate synchronizing signal (not BBS). |
| HD-SYNC 2-3ID ADD (Can be set only when 1080P23PD) | ON | Set as the pulse signals that counted the first to fifth frames superimpose in the SYNC output. |
| | OFF | Above signals are not superimposed. |
| | --- | Is not selectable. |
| SD-10 FIELD ID SIG (Can be set only when 1080P23PD) | ON | Set as the pulse signals (Level 40IRE) that counted the first to fifth frames to 15H and 278H superimpose in the ENC output. |
| | OFF | Above signals are not superimposed. |
| | --- | Is not selectable. |

# RET VIDEO FORMAT

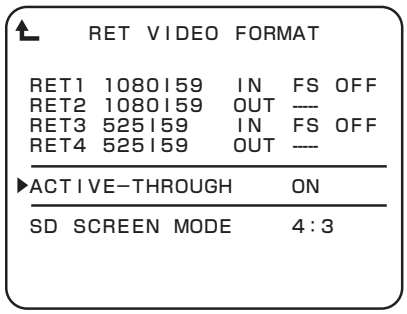
RET VIDEO FORMAT sets the return video signals.




To position the flashing cursor on the "RET VIDEO FORMAT", and determine.




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



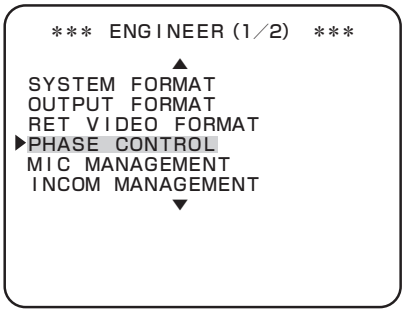

When the "ACTIVE-THROUGH" ON

| Setting Item | Set Value | Description |
|---|---|---|
| RET-1 | Input signal display FS ON/OFF | Signals that are input to RETURN-1 are automatically recognized and the format is displayed. When an asynchronous signal or a signal with a different frame rate is input, FS (Frame Synchronizer) automatically turns on. |
| RET-2 | Input and output signal display FS ON/OFF | Signals that are input to RETURN-2 are automatically recognized and the format is displayed. When an asynchronous signal or a signal with a different frame rate is input, FS (Frame Synchronizer) automatically turns on. |
| RET-3 | Input signal display FS ON/OFF | Signals that are input to RETURN-3 are automatically recognized and the format is displayed. When an asynchronous signal or a signal with a different frame rate is input, FS (Frame Synchronizer) automatically turns on. |
| RET-4 | Input and output signal display FS ON/OFF | Signals that are input to RETURN-4 are automatically recognized and the format is displayed. When an asynchronous signal or a signal with a different frame rate is input, FS (Frame Synchronizer) automatically turns on. |
| ACTIVE-THROUGH | OFF | RET_IN channels 1 to 4 on the rear side function as input ports. |
| | ON | RET_IN channels 1 and 3 on the rear side function as input ports, and channels 2 and 4 function as output ports. |
| SD SCREEN MODE | 4:3 | The aspect ratio of SDTV input signal is set to 4:3. |
| | 16:9 | The aspect ratio of SDTV input signal is set to 16:9. |
| | LETTER | SDTV input signal is set to the letter box mode. |

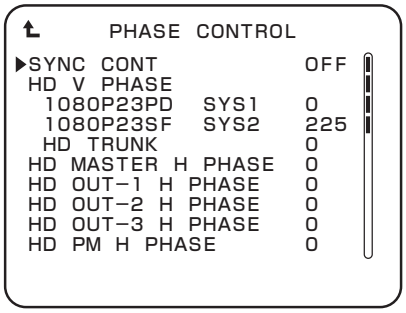
- Three rate signals of 3G-SDI/HD-SDI/SD-SDI are automatically recognized.
- When the ACTIVE-THROUGH function is used, both CCU and the camera head have the two return channel specification. When the CCU/BS power is not on, through output is not executed.
- SDTV input signal is conformable to the SDI signal only and not VBS.
- When the input signal format switches to a signal that does not require FS while the FS (Frame Synchronizer) is on, the FS does not turn off automatically. If FS is not necessary, turn off FS manually.

# PHASE CONTROL

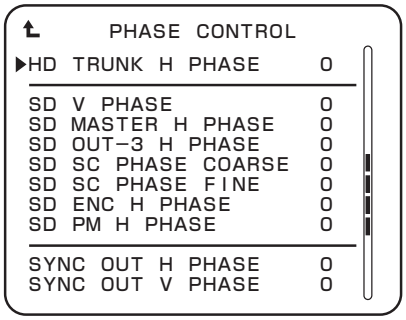
PHASE CONTROL sets the various video phase.




To position the flashing cursor on the "PHASE CONTROL", and determine.




The submenu "PHASE CONTROL" is displayed, on which you can perform various settings.




| Setting Item | Set Value | Description |
|---|---|---|
| SYNC CONT | --- | The external synchronizing signal is not input. It is operating with the internal synchronization. |
| | OFF | To the external synchronizing signal, both HDTV/SDTV output in the same phase. |
| | GL +90H | HDTV Output : For output in 90H DELAY against external synchronization signal. |
| | | SDTV output : For output in 42H DELAY against external synchronization signal. |
| | GL -90H | HDTV Output : For output in 90H ADVANCE for external synchronization signal. |
| | | SDTV output : For output in 42H ADVANCE for external synchronization signal. |
| HD V PHASE | SYS1 | It adjusts the vertical phase of HDTV output line 1 signal to the external synchronization. |
| | SYS2 | It adjusts the vertical phase of HDTV output line 2 signal to the external synchronization. |
| | HD TRUNK | It adjusts the vertical phase of HD TRUNK output signal to the external synchronization. |
| HD MASTER H PHASE | Changes depending on the FORMAT. | It adjusts the horizontal master phase of HDTV output signal to the external synchronization. |
| HD OUT-1 H PHASE | Changes depending on the FORMAT. | It adjusts the horizontal phase of HDTV OUT-1 output signal to the external synchronization. |
| HD OUT-2 H PHASE | Changes depending on the FORMAT. | It adjusts the horizontal phase of HDTV OUT-2 output signal to the external synchronization. |
| HD OUT-3 H PHASE | Changes depending on the FORMAT. | It adjusts the horizontal phase of HDTV OUT-3 output signal to the external synchronization. |
| HD PM H PHASE | Changes depending on the FORMAT. | It adjusts the horizontal phase of HDTV PM output signal to the external synchronization. |
| HD TRUNK H PHASE | Changes depending on the FORMAT. | It adjusts the horizontal phase of HDTV TRUNK output signal to the external synchronization. |

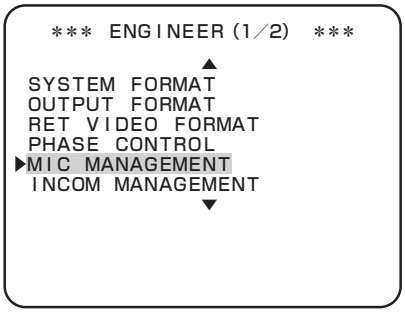
· HD V PHASE SYS2 is enabled only when the simultaneous output is set to OUTPUT FORMAT.
Ex.) When OUT-1 is set to 1080P23PD and OUT-2 is set to 1080P23SF for OUTPUT FORMAT
1080P23PD output phase and 1080P23SF output phase can be set at SYS1 and SYS2 respectively.

| Setting Item | Set Value | Description |
|---|---|---|
| SD V PHASE | 0 to 524 or<br>0 to 624 | It adjusts the vertical phase of SDTV output signal to the external synchronization. |
| SD MASTER H PHASE | -429 to 429 | It adjusts the horizontal master phase of SDTV output signal to the external synchronization. |
| SD OUT-3 H PHASE | -428 to 429 | It adjusts the horizontal phase of SDTV OUT-3 output signal to the external synchronization. |
| SD SC PHASE COARSE | -100 to 100 | It coarse adjustment the subcarrier phase of SDTV output signal to the external synchronization. |
| SD SC PHASE FINE | -100 to 100 | It coarse adjustment the subcarrier phase of SDTV output signal to the external synchronization. |
| SD ENC H PHASE | -428 to 429 | It adjusts the horizontal phase of SDTV ENC output signal to the external synchronization. |
| SD PM H PHASE | -428 to 429 | It adjusts the horizontal phase of SDTV PM output signal to the external synchronization. |
| SYNC OUT H PHASE | Changes depending on the FORMAT. | It adjusts the horizontal phase of the external synchronization output (SYNC OUT). |
| SYNC OUT V PHASE | Changes depending on the FORMAT. | It adjusts the vertical phase of the external synchronization output (SYNC OUT). |

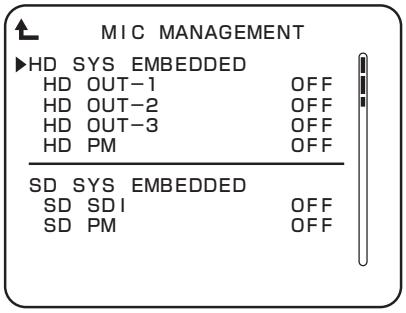
・SDTV output is optional. When an optional is not mounted, the phase adjusting item of SDTV displays "---", and selecting becomes disabled.

# AUDIO MANAGEMENT

AUDIO MANAGEMENT sets the audio output.




To position the flashing cursor on the "MIC MANAGEMENT", and determine.




The submenu "MIC MANAGEMENT" is displayed, on which you can perform various settings.

| Setting Item | Set Value | Description |
|---|---|---|
| HD SYS EMBEDDED | ALL ON/OFF | Sets whether to embed audio signal to all HDTV outputs. |
| HD OUT-1 | ON/OFF | Sets whether to embed audio signal to HDTV OUT-1 outputs. |
| HD OUT-2 | ON/OFF | Sets whether to embed audio signal to HDTV OUT-2 outputs. |
| HD OUT-3 | ON/OFF | Sets whether to embed audio signal to HDTV OUT-3 outputs. |
| HD PM | ON/OFF | Sets whether to embed audio signal to HDTV PM OUT outputs. |
| SD SYS EMBEDDED | ALL ON/OFF | Sets whether to embed audio signal to all SDTV outputs. |
| SD SDI | ON/OFF | Sets whether to embed audio signal to SDTV OUT-3 outputs. |
| SD PM | ON/OFF | Sets whether to embed audio signal to SDTV PM OUT outputs. |
| MASTER DELAY | 0 to 21 | It sets the audio signal delay amount of all systems. |
| HD SYS DELAY | 0 to 21 | It sets the audio signal delay amount of the HDTV system. |
| SD SYS DELAY | 0 to 21 | It sets the audio signal delay amount of the SDTV system. |
| DIGITAL DELAY | 0 to 21 | It sets the digital audio output delay amount. |
| MIC1/2 OUT DELAY | 0 to 21 | It sets the analog audio output delay amount. |
| MIC1 OUTPUT LEVEL | 0dB/4dB | It sets the MIC1 OUT output standard level (0 dB/4 dB). |
| MIC1 LVL ADJ (0dB) | 1 to 1023 | It sets the MIC1 OUT 0dB setting level. |
| MIC1 LVL ADJ (4dB) | 1 to 1023 | It sets the MIC1 OUT 4dB setting level. |
| MIC2 OUTPUT LEVEL | 0dB/4dB | It sets the MIC2 OUT output standard level (0 dB/4 dB). |
| MIC2 LVL ADJ (0dB) | 1 to 1023 | It sets the MIC2 OUT 0dB setting level. |
| MIC2 LVL ADJ (4dB) | 1 to 1023 | It sets the MIC2 OUT 4dB setting level. |
| MIC1 CENTER ADJ | EXECUTE/CANCEL | It adjusts the center OFFSET of the external MIC1 GAIN REMOTE control voltage. |
| MIC2 CENTER ADJ | EXECUTE/CANCEL | It adjusts the center OFFSET of the external MIC2 GAIN REMOTE control voltage. |

・MIC1/2 CENTER ADJ function

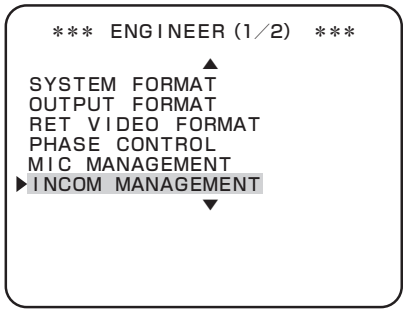
The microphone gain from the potentiometer connected to external system by the MIC GAIN REMOTE function to the camera head can be changed continuously. However, there are cases that the mechanical and electrical center values and the control voltage do not match depending on the potentiometer performance and features of each unit. In this case, the MAX/MIN control amount becomes one-sided to the center value.

This function is to offset to the mechanical center position of the potentiometer to the center of the control value.

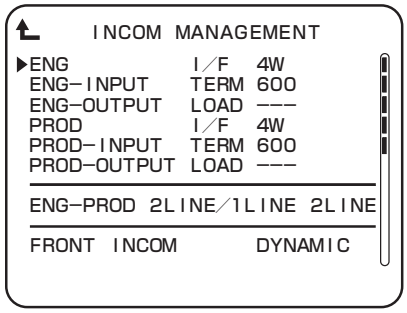
Generally, this setting is conducted at the factory, and adjustment is not required. If "CENTER ADJ" is executed at a wrong position, the control range becomes abnormal. Pay close attention when adjusting.

# INCOM MANAGEMENT

INCOM MANAGEMENT sets the intercom output.




To position the flashing cursor on the "INCOM MANAGEMENT", and determine.




The submenu "INCOM MANAGEMENT" is displayed, on which you can perform various settings.

| Setting Item | Set Value | Description |
|---|---|---|
| ENG IF | 4W | It sets Engineer line intercom system in 4-wire. |
| | RTS | It sets Engineer line intercom system in RTS. |
| | CC | It sets Engineer line intercom system in Cler-Com. |
| ENG-INPUT TERM (Valid only 4W setting) | 600 | It sets Input termination impedance of the Engineer line intercom system in 600Ω. |
| | 10k | It sets Input termination impedance of the Engineer line intercom system in 10kΩ. |
| ENG-OUTPUT LOAD (Valid only RTS/CC setting) | OPEN | It sets system impedance setting of the Engineer line RTS/Cler-Com in OPEN. |
| | 200 | It sets system impedance setting of the Engineer line RTS/Cler-Com in 200Ω. |
| PROD IF | 4W | It sets Producer line intercom system in 4-wire. |
| | RTS | It sets Producer line intercom system in RTS. |
| | CC | It sets Producer line intercom system in Cler-Com. |
| PROD-INPUT TERM (Valid only 4W setting) | 600 | It sets Input termination impedance of the Producer line intercom system in 600Ω. |
| | 10k | It sets Input termination impedance of the Producer line intercom system in 10kΩ. |
| PROD-OUTPUT LOAD (Valid only RTS/CC setting) | OPEN | It sets system impedance setting of the Producer line RTS/Cler-Com in OPEN. |
| | 200 | It sets system impedance setting of the Producer line RTS/Cler-Com in 200Ω. |
| ENG-PROD 2LINE/1LINE | 2LINE | This is the setting when the line system is used as individual two lines of Engineer/Producer. |
| | 1LINE | Integrate Producer line to Engineer line to make them to one line. |
| FRONT INCOM | DYNAMIC | It sets headset microphone to be connected to the front of the instrument in DYNAMIC type. |
| | CARBON | It sets headset microphone to be connected to the front of the instrument in CARBON type. |
| | ECM | It sets headset microphone to be connected to the front of the instrument in ECM type. |
| MIC POWER SUPPLY | ON/OFF | It sets whether or not the power is supplied when the microphone is set to EMC. |
| PGM1 TERM | 600 | It sets line termination impedance of the Program Audio #1 in 600Ω. |
| | 10k | It sets line termination impedance of the Program Audio #1 in 10kΩ. |
| PGM1 INPUT LEVEL | 4dB | It sets input level of the Program Audio #1 in +4dBs. |
| | 0dB | It sets input level of the Program Audio #1 in 0dBs. |
| | -20dB | It sets input level of the Program Audio #1 in -20dBs. |
| PGM2 TERM | 600 | It sets line termination impedance of the Program Audio #2 in 600Ω. |
| | 10k | It sets line termination impedance of the Program Audio #2 in 10kΩ. |
| PGM2 INPUT LEVEL | 4dB | It sets input level of the Program Audio #2 in +4dBs. |
| | 0dB | It sets input level of the Program Audio #2 in 0dBs. |
| | -20dB | It sets input level of the Program Audio #2 in -20dBs. |
| PGM3 TERM | 600 | It sets line termination impedance of the Program Audio #3 in 600Ω. |
| | 10k | It sets line termination impedance of the Program Audio #3 in 10kΩ. |
| PGM3 INPUT LEVEL | 4dB | It sets input level of the Program Audio #3 in +4dBs. |
| | 0dB | It sets input level of the Program Audio #3 in 0dBs. |
| | -20dB | It sets input level of the Program Audio #3 in -20dBs. |
| PGM MIX FRONT INCOM | OFF/PGM1,2,3 | It sets whether or not the PGM is mixed to the INCOM output at the HEADSET. |
| PGM -> FR-INCOM LEVEL | x0.00 to 2.00 | It sets level of PGM to mix in INCOM output at the HEADSET. |

***Note:***

・Setting of ENG/PROD IF and Items that can be linked

| ENG/PROD IF | 4W | RTS | Cler-Com |
|---|---|---|---|
| INPUT TERM | 600 / 10k | --- | --- |
| OUTPUT LOAD | --- | OPEN / 200 | OPEN / 200 |

Generally, OUTPUT LOAD is set to "OPEN". When BS/CCU is detached from the external system, set to "200".

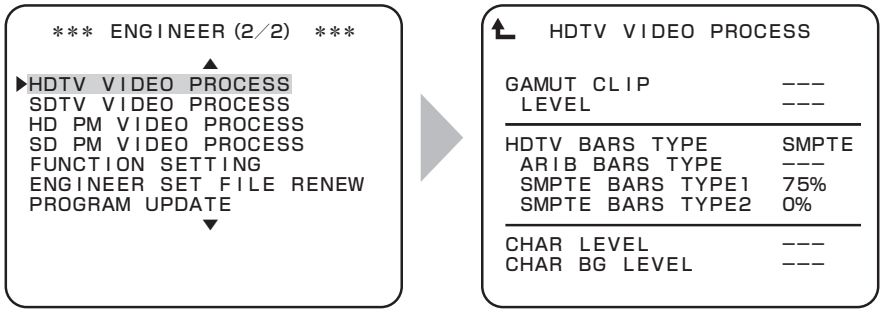
・Setting of FRONT INCOM and Items that can be linked

| FRONT INCOM | DYNAMIC | CARBON | ECM |
|---|---|---|---|
| MIC POWER SUPPLY | Fixed to OFF | Fixed to ON | ON / OFF |
| Input level (Hidden) | -60dBu | -10dBu | -40dBu |

Set according to the microphone type of the headset to be used.

# HDTV VIDEO PROCESS

HDTV VIDEO PROCESS sets the various HDTV video processes.



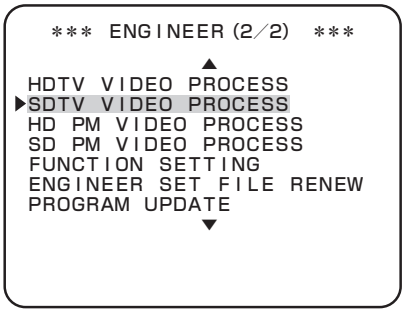

To position the flashing cursor on the "HDTV VIDEO PROCESS", and determine.

The submenu "HDTV VIDEO PROCESS" is displayed, on which you can perform various settings.

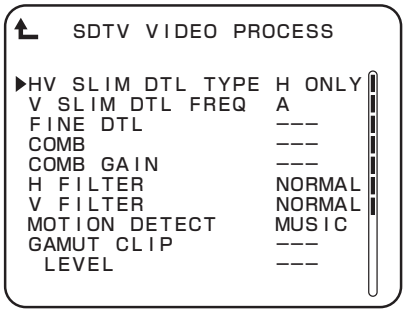
| Setting Item | Set Value | Description |
|---|---|---|
| GAMUT CLIP LEVEL | ON | Sets ON / OFF of GAMUT CLIP. |
| | 98.0% to 109.0% | Sets CLIP LEVEL of GAMUT CLIP ON time. |
| HDTV BARS TYPE | SMPTE | Sets the HDTV color bar complying with the SMPTE-standard color bar. |
| | ARIB | Sets the HDTV color bar complying with the ARIB-standard multi-format color bar. |
| | 100/75 | Sets the HDTV color bar complying with the 100/0/75/0 color bar. |
| | 100/100 | Sets the HDTV color bar complying with the 100/0/100/0 color bar. |
| | 75/75 | Sets the HDTV color bar complying with the 75/0/75/0 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". |
| CHAR LEVEL | ----- | Sets the character level of the HDTV OUT signals. Sets in the factory. |
| CHAR BG LEVEL | ----- | Sets the background level of characters on the HDTV OUT signals. Factory setting. |

# SDTV VIDEO PROCESS

SDTV VIDEO PROCESS sets the various SDTV video processes.




To position the flashing cursor on the "SDTV VIDEO PROCESS", and determine.




The submenu "SDTV VIDEO PROCESS" is displayed, on which you can perform various settings.

***Note:***

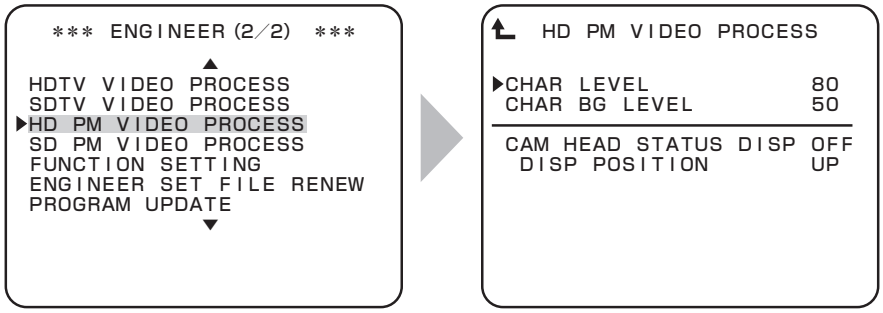
SPRC module is an option.
Selecting this item becomes disabled when the SPRC module is not implemented.

| 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 | A | Sets a boost band.Number of effective lines × 0.41 |
| | B | Sets a boost band.Number of effective lines × 0.38 |
| | C | Sets a boost band.Number of effective lines × 0.36 |
| | D | Sets a boost band.Number of effective lines × 0.34 |
| FINE DTL *2 | 0 to 8 | Sets the effect of FINE DTL. |
| COMB | - | COMB FILTER. Sets in the factory. (option) |
| COMB GAIN | - | COMB FILTER GAIN. Sets in the factory. (option) |
| H FILTER *3 | NARROW | Sets the horizontal filter.<br>The frequency characteristics improve in the order of "NARROW" < "NORMAL" < "WIDE" < "SUPER". |
| | NORMAL | |
| | WIDE | |
| | SUPER | |
| 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. It is suitable for the shooting of the music program. |
| | 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 field handling is done. |
| | SPORTS | Suitable for broadcasting quick-motion sports. |
| GAMUT CLIP LEVEL | ON | Sets ON / OFF of GAMUT CLIP. |
| | 98.0% to 109.0% | Sets CLIP LEVEL of GAMUT CLIP ON time. |
| SDTV SETUP SEL | - | Sets in the factory. (option) |
| CHAR LEVEL | 0 to 200 | Sets the character level of the SDTV OUT signals. Sets in the factory. |
| CHAR BG LEVEL | -100 to 100 | Sets the background level of characters on the SDTV OUT signals. Sets in the factory. |

*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 It is enabled only when the camera head to be connected is compatible with the module.
*3 When the format of the camera head is 720P59.94, only "NORMAL" can be selected.

# HD PM VIDEO PROCESS

HD PM VIDEO PROCESS sets the various HDTV PM video processes.



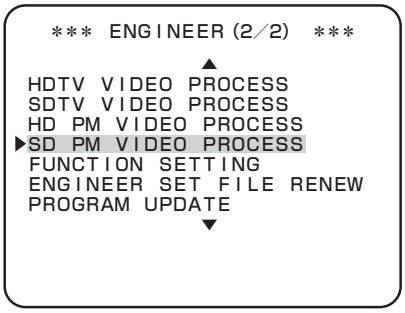

To position the flashing cursor on the "HD PM VIDEO PROCESS", and determine.

The submenu "HD PM VIDEO PROCESS" is displayed, on which you can perform various settings.

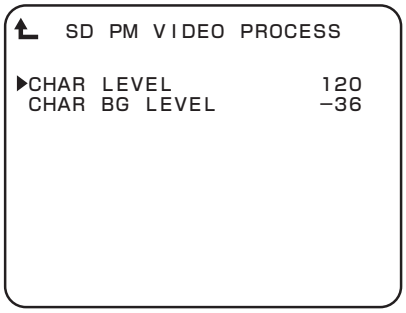
| Setting Item | Set Value | Description |
|---|---|---|
| CHAR LEVEL | 0 to 100 | It sets the character level of the HDTV PM OUT signal. |
| | 0 to 100 | It sets the character background level of the HDTV PM OUT signal. |
| CAM HEAD STATUS DISPLAY | ON / OFF | It sets whether or not the status of the camera head is view on PM OUT. |
| DISP POSITION | UP | Set the character display position at the top. |
| | DOWN | Set the character display position at the bottom. |
| | UP L | Set the character display position at the top left. |
| | DOWN L | Set the character display position at the bottom left. |
| | UP R | Set the character display position at the top right. |
| | DOWN R | Set the character display position at the bottom right. |

# SD PM VIDEO PROCESS

SD PM VIDEO PROCESS sets the various SDTV PM video processes. (* option)




To position the flashing cursor on the "SD PM VIDEO PROCESS", and determine.




The submenu "SD PM VIDEO PROCESS" is displayed, on which you can perform various settings.

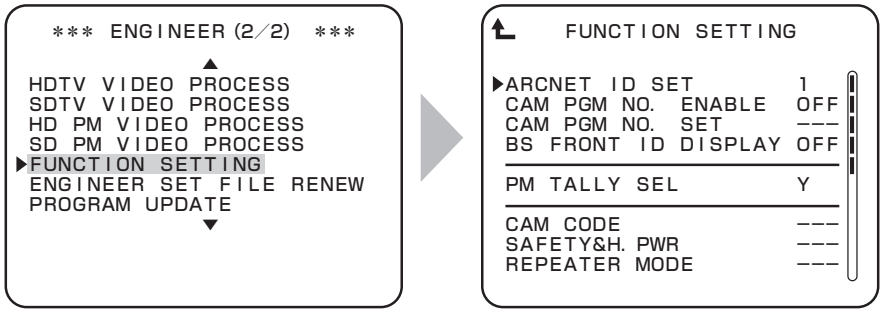
***Note:***

SPRC module is an option.
Selecting this item becomes disabled when the SPRC module is not implemented.

| Setting Item | Set Value | Description |
|---|---|---|
| CHAR LEVEL | 0 to 200 | Sets the character level of the SD PM OUT signals. |
| CHAR BG LEVEL | -100 to 100 | Sets the background level of characters on the SD PM OUT signals. |

# FUNCTION SETTING

FUNCTION SETTING sets the various function settings.




To position the flashing cursor on the "FUNCTION SETTING", and determine.

The submenu "FUNCTION SETTING" is displayed, on which you can perform various settings.

| Setting Item | Set Value | Description |
|---|---|---|
| ARCNET ID SET | 1 to 255 | Sets the NETWORK ID of ARCNET (10 decimal). |
| CAM PGM NO. ENABLE | OFF / ON | It sets whether or not the camera program number is controlled by CCU/BS. |
| CAM PGM NO. SET | OFF / 1 to 99 | Sets the camera program number. |
| BS FRONT ID DISPLAY | OFF | The seven segment displays at the front side of the equipment do not display anything. |
| | ARC ID | The seven segment displays at the front side of the equipment displays ARCNET NETWORK ID (HEX). |
| | PGM NO. | The seven segment display at the front side of the equipment displays the camera program number. |
| PM TALLY SEL | Y | Assign the TALLY OUT (PM TALLY) pin "C" to the Y TALLY control. |
| | COMM | Assign the TALLY OUT (PM TALLY) pin "C" to the Red/Green TALLY common control. |
| CAM CODE | — | Regional options |
| SAFETY&H.PWR | — | Regional options |
| REPEATER MODE | — | Regional options |
| CAM PWR CONT | — | Regional options |
| Q-TV MODE | Changes depending on the FORMAT. | It set and displays the analog QTV band width and the number of channels. |
| HD TRUNK | ON / OFF / --- | ON/OFF setting of the HDTV TRUNK VIDEO line. It is enabled only when the 3G-compatible camera is connected and when the 1.5G format is operating. |
| HD Q-TV | ON / OFF / --- | ON/OFF setting of the HDTV QTV VIDEO line. It is enabled only when the 3G-compatible camera is connected. |
| WARNING BIG CHAR | OFF / ON | The warning item for the self-diagnosis result (DIAGNOSTIC INFORMATION) is displayed in a big character. |
| FIBER SINGLE MODE | OFF / ON | It sets ON/OFF of the fiber single mode. |

For ARCNET and the camera program number, refer to the manuals of the control panel and the camera head that correspond to the network.

***NOTE:***

Turn on the "HEAD POWER" switch of the front panel of CCU whenever CCU operaters "FIBER SIGNAL MODE".

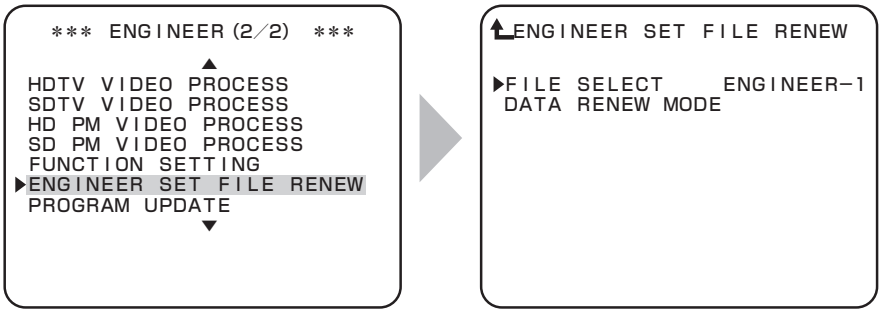
# ENGINEER SET FILE RENEW

The user registers and updates the memory (file) to back up the CCU/BS setting.

***Note:***

ENGINEER SET FILE

Up to three setting statuses of the equipment that the user customized can be saved in the internal memory. The data registered and updated here can be invoked from "PRESET FILE LOAD" on the first page of MENU.




To position the flashing cursor on the "ENGINEER SET FILE RENEW", and determine.

The submenu "ENGINEER SET FILE RENEW" is displayed, on which you can perform various settings.

***1*** Set the blinking cursor to "FILE SELECT" and select a file to be created and updated.

***Note:***

The file is overwritten and updated.

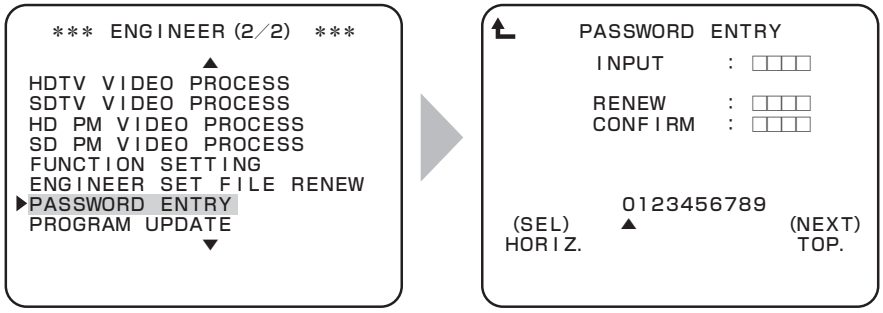
***2*** Set the blinking cursor to "DATA RENEW MODE" and finalize.

At the lower section of the screen, "PUSH SET -> RENEW" is displayed.

When finalized, the target ENGINEER file is updated.
After writing the data, "COMPLETED" is displayed.

# PASSWORD ENTRY

Protect the ENGINEER SET FILE RENEW function with a password.
This function becomes enabled when the PLS module S3-3 is on and displayed on the MENU, and selecting becomes enabled.




To position the flashing cursor on the "PASSWORD ENTRY", and determine.

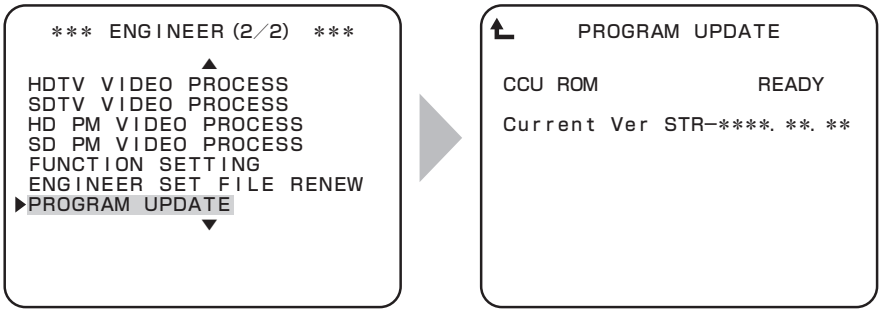
Input the current password to "INPUT". When inputting a password for the first time, input "0000".
Set a new password to "RENEW" and then input a same password to "CONFIRM".

***Note:***

The initial password is "0000". The PASSWORD ENTRY is displayed when S3 No.3 ON of the PULSE module or the password except "0000" is registered.
In addition, this function is for preventing overwrite of the data by incorrect operation, and does not aim at perfect security.

# PROGRAM UPDATE

PROGRAM UPDATE updates firmware of the CCU / BS.




To position the flashing cursor on the "PROGRAM UPDATE", and determine.

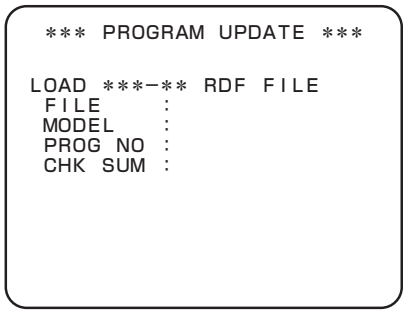
The submenu "PROGRAM UPDATE" is displayed, on which you can perform various settings.

| Setting Item | Set Value | Description |
|---|---|---|
| CCU/BS ROM | READY | Ready for update. |
| | CANCEL | Cancels update. |
| | EXECUTE | Update firmware of the CCU / BS. |

***1*** Position the flashing cursor on "CCU/BS ROM", and determine.

Flashing cursor moves to the mode setting, and also the display of the mode setting value switches from "READY" to "CANCEL".

***2*** - When "CANCEL" is selected, the setting is canceled and "PROGRAM UPDATE" exits.
- When "EXECUTE" is selected, the following screen is displayed.




Please refer to manual control panel to be used.

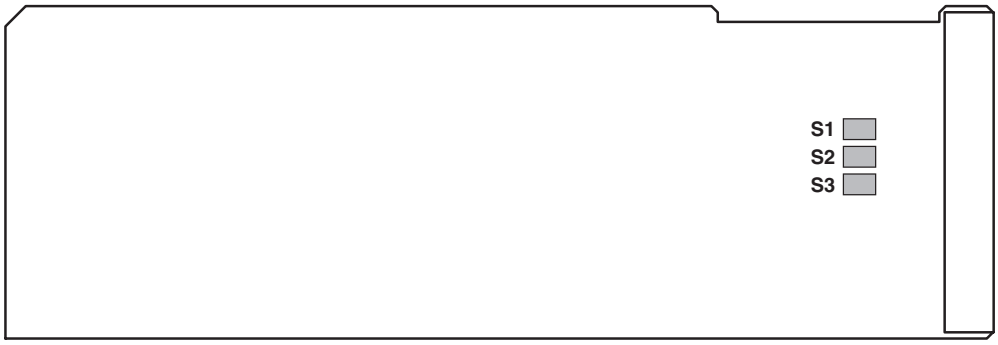
# 5.2 Settings Using Switches on the Module

It is necessary to set hard switches of each module according to the external system connected to CCU/BS.

## Tally Mode Settings

Set the mode of the tally control signal input to the COMMUNICATION connector on the rear of the CCU/BS.

Switching is executed with S1 to S3 of the IO module.



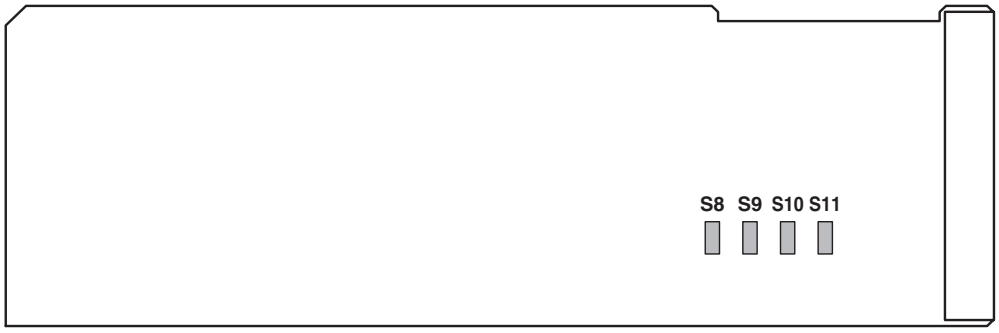

IO Module

**POWER ⇔ MAKE**

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

# PGM Settings

It sets the PGM (program audio) signal and audio trunk signal to be input to CCU/BS.
Generally, the setting is executed from the CCU/BS menu, so the setting by using the following module switches is not necessary.




IO Module


S8 PGM-1 4dB UP
S9 PGM-2 4dB UP
S10 PGM-3 4dB UP
S11 TRUNK 4dB UP

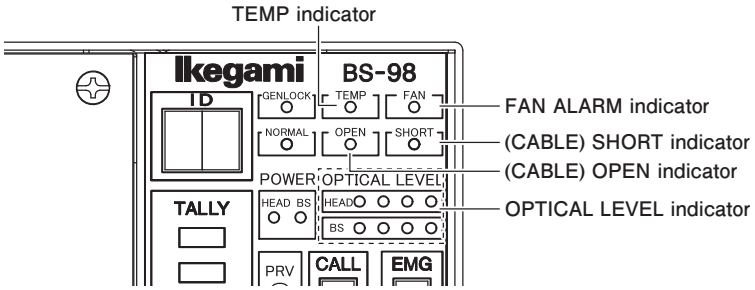
| Switch No. | Function Name | Setting | Description |
|---|---|---|---|
| S8 | PGM-1 4dB UP | OFF | To the input of PGM-1 line, +4 dB UP OFF. |
| | | ON | To the input of PGM-1 line, +4 dB UP ON. |
| S9 | PGM-2 4dB UP | OFF | To the input of PGM-2 line, +4 dB UP OFF. |
| | | ON | To the input of PGM-2 line, +4 dB UP ON. |
| S10 | PGM-3 4dB UP | OFF | To the input of PGM-3 line, +4 dB UP OFF. |
| | | ON | To the input of PGM-3 line, +4 dB UP ON. |
| S11 | TRUNK 4dB UP | OFF | To the input of TRUNK line, +4 dB UP OFF. |
| | | ON | To the input of TRUNK line, +4 dB UP ON. |

# TROUBLE SHOOTING and MAINTENANCE

6

# 6.1 Indicator on the Front of BS Lights

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




## ■ When the OPTICAL LEVEL indicator lights

Indicators next to "HEAD" indicate the reception status on the camera head side, and indicators next to "BS" indicate the reception status on the BS side.

| Cause | Action |
|---|---|
| The optical connector must be dirty.<br>The lighting state of the OPTICAL LEVEL indicator changes. | Clean the optical connector end of the cable or the equipment side. |

## ■ 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 |
|---|---|
| FAN ALARM indicator will light when the fan is in internal BS has stopped. | 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. |

## ■ When the TEMP indicator lights

| Cause | Action |
|---|---|
| The TEMP indicator lights when the BS internal temperature is abnormally high. | When this indicator lights on, check that the ventilation hole on the front panel and the exhaust hole on the rear panel are not covered or clogged with dust. Avoid a place with direct sunlight. |

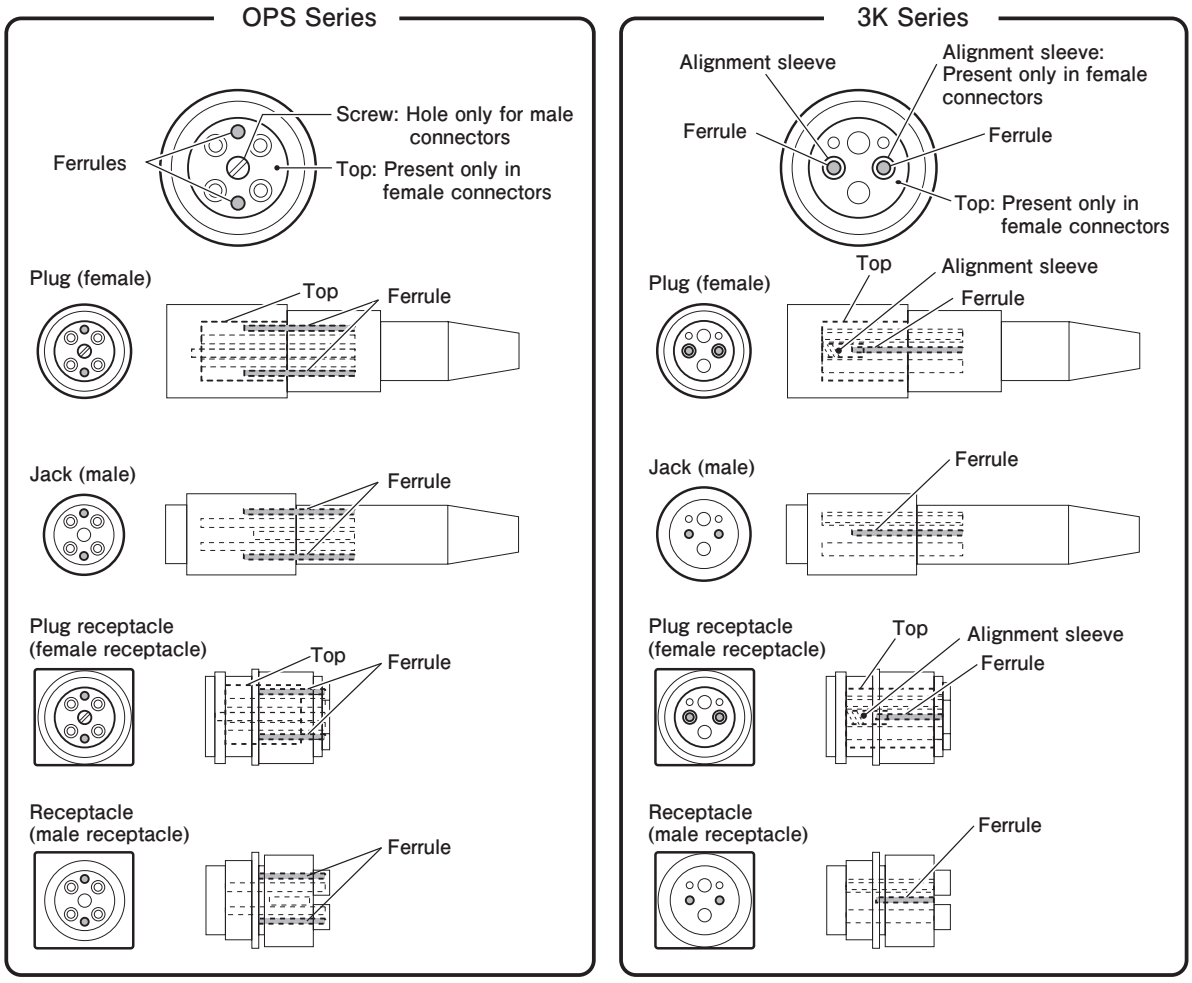
***CAUTION:***

If you disregard TEMP warning and temperature rises, it must be system reboot compulsorily due to device protection.

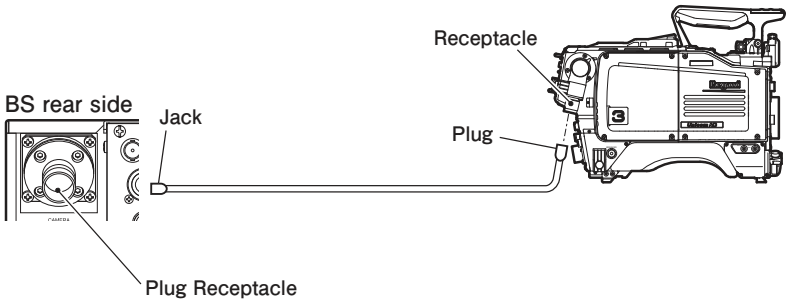
## ■ *Cleaning Optical Connectors*

The camera cable connecting the camera head and the CCU/BS 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*



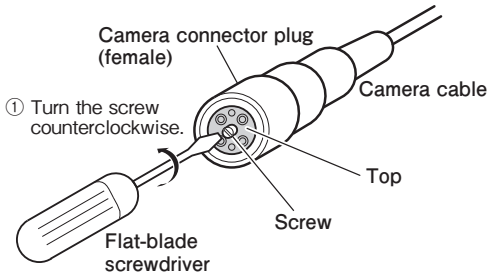

Clean the four sections: receptacle on the camera head, plug receptacle on the BS, and plug/jack on both ends of the camera cable. The cleaning method for male connectors differs from that for female connectors.

## ■ *OPS Series Connectors*

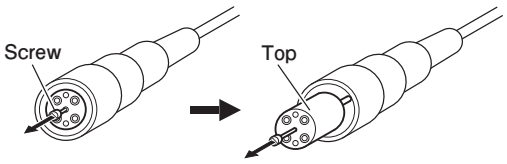
The following explains how to clean Ferrules using a Tajimi OPS series camera cable plug (female) as an example.

**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.

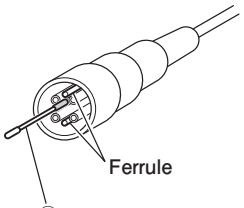



② Pull the screw to remove the top from the connector.

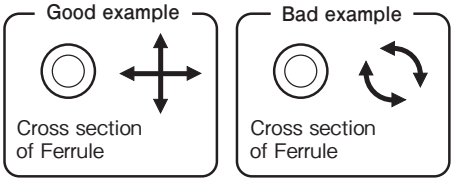
**3** Wipe the Ferrule with a cotton swab dampened with alcohol.

***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

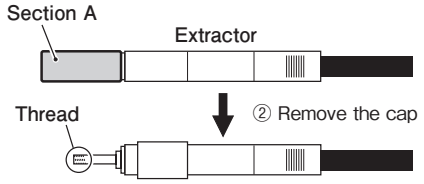
The following explains how to clean Ferrules using a Lemo 3K series camera cable plug (female) as an example.

***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.

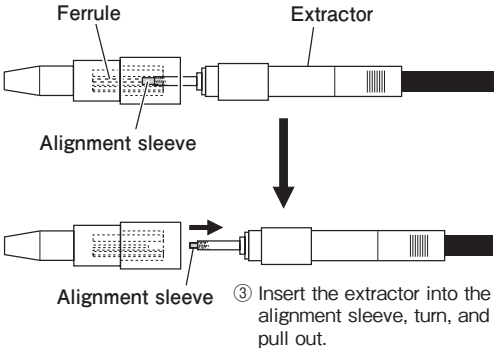
**1** Prepare a dedicated extractor and place the extractor in a position parallel to the connector.

**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.

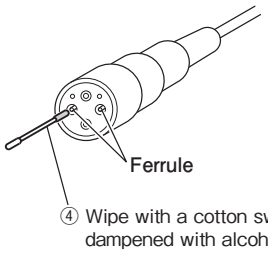
Leave the alignment sleeve attached to the extractor.

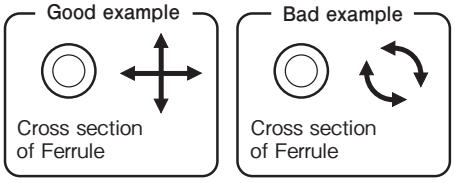



**4** Wipe the Ferrule with a cotton swab dampened with alcohol.

***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.

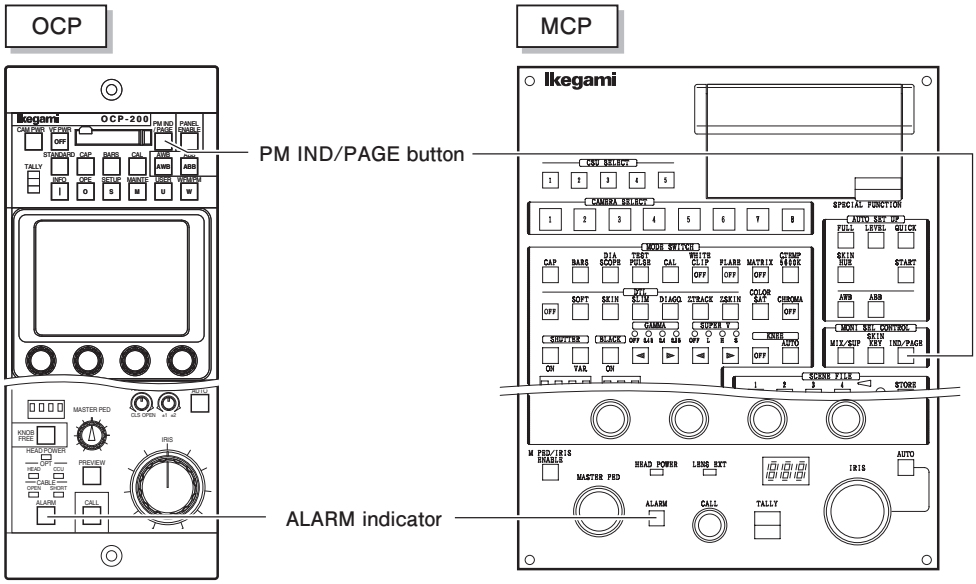
Male connectors have neither "top" nor "alignment sleeve"; therefore, steps 1 to 3 and 8 above are not required.

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

The BS-98 is equipped with a self diagnostic function which monitors whether the BS and camera head are running normal. As soon as the BS power is turned ON, the self diagnostic function starts running, and always runs during operation.
If the BS 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:***

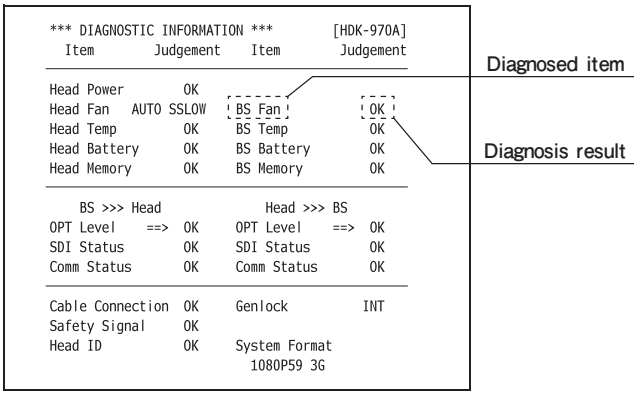
Even if the ALARM indicator does not flash, you can check whether BS and camera are running normal by pressing the PM IND/PAGE switch on the control panel twice to display the self diagnostic information on the Picture Monitor.




## BS Self Diagnostic Information

### ■ *Self Diagnostic Information Screen*

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



## ■ *List of Self Diagnostic Information*

The following tables list the self diagnostic information for the standard specification.

List of Self Diagnostic Information

| Diagnosed Item | | Description | Diagnosis Result | Meaning |
|---|---|---|---|---|
| Head Power | | Power status of the camera head | ON | The camera head is powered ON. |
| | | | OFF | The camera head is powered OFF. |
| 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 manual mode |
| | | | NG | Fan has stop. |
| 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. |
| 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 in the MPU module of the camera head | OK | Normal |
| | | | NG | Data in the module is destroyed |
| BS Fan | | Rotating status of the fans on the rear and inside of the BS | OK | Normal |
| | | | NG | Internal cooling fan either has stopped. |
| BS Temp | | Internal temperature of the BS | OK | Normal |
| | | | NG | The temperature is abnormally high or the difference between the internal temperature and outside-air temperature is at least 25°C. |
| BS Battery | | Status of the battery in the BS CONT/REF module | OK | Normal |
| | | | NG | The backup battery voltage is low. |
| BS Memory | | Status of the RAM in the BS MPU&REF module | OK | Normal |
| | | | NG | Data in the module is destroyed. |
| BS >>> Head (BS to Head transmission) | OPT Level | Optical signal level sent from the BS to the camera head (Detect the optical receiving level at the camera head side and display the status). | OK | Good |
| | | | ATTEN | The amount of light received decreased. |
| | | | WARN | The amount of light received significantly decreased. |
| | | | NG | Light cannot be received. |
| | SDI Status | Status of SDI signal | OK | The format is normal and there is no CRC error. |
| | | | NG | The format is abnormal or there is a CRC error. |
| | Comm Status | Status of the command signal sent from the BS to the camera head | OK | Normal |
| | | | NG | No command signals are sent, or a CPU error occurs. |
| Head >>> BS (Head to BS transmission) | OPT Level | Optical signal level sent from the camera head to the BS (Detect the optical receiving level at the BS side and display the status). | OK | Good |
| | | | ATTEN | The amount of light received decreased. |
| | | | WARN | The amount of light received significantly decreased. |
| | | | NG | Light cannot be received. |
| | SDI Status | Status of SDI signal | OK | The format is normal and there is no CRC error. |
| | | | NG | The format is abnormal or there is a CRC error. |
| | Comm Status | Status of the command signal sent from the camera head to the BS | OK | Normal |
| | | | NG | No command signals are sent, or a CPU error occurs. |

| Diagnosed Item | Description | Diagnosis Result | Meaning |
|---|---|---|---|
| Cable Connection | Camera cable connection status between the camera head and the BS | OK | Normal |
| | | OPEN | Cable is not connected, or there is an open. |
| | | SHORT | A short circuit occurs in the cable. |
| Safety signal | Status of the safety signal sent from the camera head to the BS | OK | Normal |
| | | NG | The safety signal is not received, or the connected camera head is not supported by this BS. |
| Head ID | Status of the model identification signal sent from the camera head to the BS | OK | Normal |
| | | NG | The model identification signal is not received, or the connected camera head is not supported by this BS. |
| Power Tap (CCU only) | The tap status of the transformer for power feeding to the camera head inside of the CCU | 1, 2, 3, 4 | The voltage fed from CCU to the camera head is higher in an order of 1 -> 2 -> 3 -> 4. |
| Genlock | Status of external SYNC signal | INT | No external SYNC signals are input (operation is performed with internal SYNC signals.) Internal mode |
| | | NTSC | When external SYNC signal is NTSC |
| | | NTSC 10f | When external SYNC signal is NTSC +10 FIELD ID |
| | | 1080P59 | When external SYNC signal is 1080P59.94 |
| | | 1080I59 | When external SYNC signal is 1080I59.94 |
| | | 1080P23 | When external SYNC signal is 1080P23.98 |
| | | 1080P23SF | When external SYNC signal is 1080P23.98SF |
| | | 1080P29 | When external SYNC signal is 1080P29.97 |
| | | 720P59 | When external SYNC signal is 720P59.94 |
| | | PAL | When external SYNC signal is PAL |
| | | 1080P50 | When external SYNC signal is 1080P50 |
| | | 1080I50 | When external SYNC signal is 1080I50 |
| | | 720P50 | When external SYNC signal is 720P50 |
| | | UNKNOWN | External SYNC signals are input, but synchronization is not performed. |
| 10 Field Lock | When the output format is "1080P23. PD", "1080P23.SF" or "1080P23"., output phase of first frame of "1080P23". or "1080P23.PD" is either locked or unlocked to external SYNC signal. | LOCK | Locked to external SYNC signal. |
| | | UNLOCK | Unlocked to external SYNC signal. |
| System Format | It indicates FORMAT that is set with SYSTEM FORMAT. | 1080I59 | 1080I/59.94 Y Pb Pr 4:2:2 |
| | | 1080P23PD | 1080P/23.98 2-3 pulldown Y Pb Pr 4:2:2 |
| | | 1080P29SF | 1080P/29.97 Segment frame Y Pb Pr 4:2:2 |
| | | 720P59 | 720P/59.94 Y Pb Pr 4:2:2 |
| | | 1080P59 3G | 1080P/59.94 Y Pb Pr 4:2:2 |
| | | 1080I59 3G | 1080I/59.94 G B R 4:4:4 |
| | | 1080P23PD 3G | 1080P/23.98 2-3 pulldown G B R 4:4:4 |
| | | 1080P29SF 3G | 1080P/29.97 Segment frame G B R 4:4:4 |
| | | 1080I119 3G | 1080I/119.88 Y Pb Pr 4:2:2 |
| | | 720P119 3G | 720/P119.88 Y Pb Pr 4:2:2 |
| | | 1080I50 | 1080I/50 Y Pb Pr 4:2:2 |
| | | 1080P25SF | 1080P/25 Segment frame Y Pb Pr 4:2:2 |
| | | 720P50 | 720P/50 Y Pb Pr 4:2:2 |
| | | 1080P50 3G | 1080P/50 Y Pb Pr 4:2:2 |
| | | 1080I50 3G | 1080I/50 G B R 4:4:4 |
| | | 1080P25SF 3G | 1080P/25 Segment frame G B R 4:4:4 |
| | | 1080I100 3G | 1080I/100 Y Pb Pr 4:2:2 |
| | | 720P100 3G | 720/P100 Y Pb Pr 4:2:2 |

# 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.

# BS-98
## Base Station
## OPERATION MANUAL

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