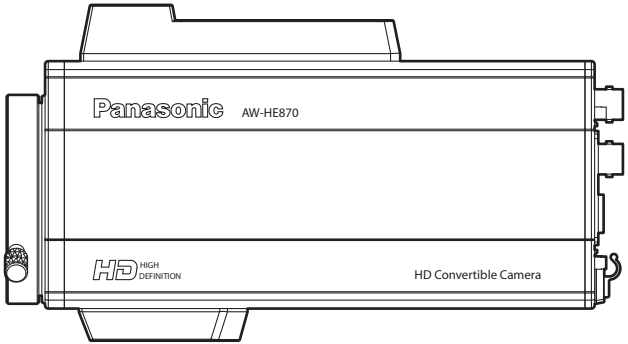
Panasonic

Operating Instructions

HD Convertible Camera

Model No. AW-HE870N

Installation instructions provided



Before operating this product, please read the instructions carefully and save this manual for future use.

F0109S1029 D

VQTB0350-1

CAUTION

RISK OF ELECTRIC SHOCK DO NOT OPEN

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

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

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

For CANADA

This class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

FCC Note:
This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

▭ indicates safety information.

WARNING:

- **TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.**
- **THE APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING AND THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.**

CAUTION:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

Note:

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

indicates safety information.

IMPORTANT SAFETY INSTRUCTIONS

Read these operating instructions carefully before using the unit. Follow the safety instructions on the unit and the applicable safety instructions listed below. Keep these operating instructions handy for future reference.

1) Read these instructions.

2) Keep these instructions.

3) Heed all warnings.

4) Follow all instructions.

5) Do not use this apparatus near water.

6) Clean only with dry cloth.

7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10) Protect the power cord form being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11) Only use attachments/accessories specified by the manufacturer.

12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13) Unplug this apparatus during lightning storms or when unused for long periods of time.

14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

 indicates safety information.

Contents

Preface **7**

Standard accessories **7**

Features **8**

Special notes on operation **9**

Precautions for use **10**

Precautions for installation **12**

Major operating controls and their functions **15**
- ■Front view / Top view / Rear view / Bottom view 15

Mounting **19**
- ■Lens mounting 19
- ■Mounting the camera onto a pan-tilt head, tripod, camera mounting bracket, or other part 20

System configuration (Connections) **24**
- ■Connection of device with a composite/component input connector 24
- ■Connection of a remote operation panel 25
- ■Connection with multiple cameras (Supplying the external synchronizing signals) 26
- ■Connection of the Indoor Pan-tilt Head AW-PH360 27
- ■Connection of the Indoor Pan-tilt Head AW-PH400 30
- ■Connection of the Indoor Pan-tilt Head AW-PH405 33
- ■Connection of the Outdoor Pan-tilt Head AW-PH650 36

How to operate the system **39**
- ■Control exercised from the Remote Operation Panel AW-CB400 39
- ■Control exercised from the Multi-Function Controller AW-RP655 42
- ■Control exercised from the Multi Hybrid Control Panel AW-RP555 46

Use mode setting **49**
- ■Use Mode Setting 49
- ■Selecting 50

Operating procedure **51**

Adjustment **52**
- ■Flange back adjustment 52
- ■Iris gain control in a lens 52
- ■White balance adjustment 53
- ■Black balance adjustment 55
- ■Total pedestal level adjustment 56
- ■Genlock adjustment 57

Contents

Menu item setting/changing 60
■Menu item setting 60

Menu item setting/changing (Halogen, Fluorescent, Outdoor Mode) 62
■Sub menu (Halogen, Fluorescent, Outdoor Mode) ... 62
■Description of the setting screen 63

Menu item setting/changing (User Mode) 70
■Sub menu (User Mode) 70
■Description of the setting screen 73

Changing the settings 86
■Changing the format settings 86
■Changing the component setting 87
■Setting the EBU matrix 88

Setting to initial set (Factory presets) 89
■Setting to initial set 89
■Initial settings of the setting items (Factory preset values) 90

Troubleshooting 93

Appearance 98

Specifications 99

Preface

- This is an HD/SD multi-format camera that adopts 14-bit analog to digital conversion and digital video signal processing, with a compact and lightweight 2/3˝ 3CCD system offering high reliability and availability of multiple functions.
- Setting and switching of the camera's status and its various functions can be performed easily with the menu screen system.
- The camera can be connected with peripheral devices, such as a remote control panel or a pan-tilt head, allowing for system development according to the intended use.
- The camera can be used for even more applications by inserting an option card.

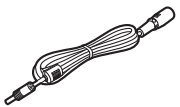
Note

- In order to protect the environment when the HD convertible camera is to be discarded at the end of its service life, ask a specialized contractor to dispose of it properly.

Standard accessories

Operating Instructions 1

DC cable (9.84 ft. [3 m]) 1
Use this to supply the camera's DC power.
(Refer to "⓬ DC 12 V input connector" on page 18.)



Mounting spacer 1
Use this when mounting the drop-prevention wire of the camera.
(Refer to "❸ Camera mounting screw holes" on page 16.)

Features

- **The camera features high reliability through adoption of 14-bit analog to digital conversion and digital video signal processing.**

- **Compatible with multiple formats**
  - The format can be switched between 1080i, 720p, and 480i. The transition from an SD format system to an HD format system can be performed smoothly.
  - “Squeeze” or “Sidecut” can be selected with the SD format.

- **Down converter a standard feature**
  The SD (480i) composite signals can be output continuously*1 from the VIDEO OUT terminal, while simultaneously outputting HD (1080i, 720p) signals.

- **Compact but multifunctional, making a diverse range of video productions possible**
  - Features automatic functions such as ATW, ELC, and AGC.
  - Features Chroma Detail, Dark Detail, and digital Color Matrix correction functions.
  - Noise during imaging on computer screens is reduced by the Synchro Scan function.
  - An optimum condition can be selected to suit the intended use from among four use modes (Halogen, Fluorescent, Outdoor, and User).
  - Supports the SDI card option*2 (AW-HHD870).
  - Adopts operating procedures that are the same as those of our convertible cameras*3.
  - Our pan-tilt heads*4 and control panels can be used*5.

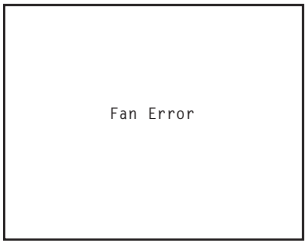
*1: When using external synchronization, only the output signal for the selected video output format (Format) will be synchronized.
*2: Only the optional card (AW-HHD870) that supports the AW-HE870 can be used. It is not possible to use any other cards.
*3: Some operations may vary depending on function.
*4: Compatible models are AW-PH360, AW-PH400, AW-PH405, and AW-PH650. Models AW-PH360 and AW-PH400 are not able to output analog HD video signals.
*5: Compatible models are AW-RP555, AW-RP655 and AW-CB400/AW-RP400. The software version may need to be upgraded. Please contact your dealer.

Special notes on operation

- Turn power off before connecting or disconnecting cables.
  Connection or disconnection of any studio cable or other cable to any unit of equipment must be performed while power is off.

- While the camera is in automatic mode;
  Shooting of bright objects in ELC operation mode may result in a smeared picture unique to the CCD.
  The ATW function under fluorescent illumination can adversely change the white balance.

- There is a cooling fan inside.
  The cooling fan is a consumable part.
  Replace it 3 to 5 years after installation as a general rule.
  When the cooling fan malfunctions, the “Fan Error” message is displayed when the power is turned ON.
  When the “Fan Error” message is displayed, request replacement of the cooling fan.
  (Whenever fan replacement is necessary, be sure to ask the store where you purchased the set.)



Precautions for use

DON'TS

- Do not attempt to disassemble the camera or other units. In order to prevent electric shock, do not remove screws or covers. There are no user-serviceable parts inside.
- Do not abuse the camera. Avoid striking, shaking, etc. The camera contains sensitive components which could be damaged by improper handling or storage.
- Do not let the lens remain uncapped when the camera is not in use. If the lens is not installed, do not leave the lens mount hole uncovered.
- Do not touch the surface of the lens or prism.
- Do not use strong of abrasive detergents when cleaning the camera body.
- Do not aim the camera toward the sun, no matter whether it is turned on or not.
- Do not expose the camera or other units to rain or moisture, and do not try to operate the equipment in wet conditions. Do not operate the camera if it becomes wet.
- Do not operate the camera or other units outdoors during a lightning storm.
- Do not use the camera in an extreme environment where high temperatures or high humidity exist.
- Do not leave the camera or other units turned on when not in use.
  Do not unnecessarily turn the camera power on and off repeatedly.

Precautions for use

DOS

- Refer any servicing to qualified service personnel.
- Handle the camera with care.
- Protect the precision made lens by placing the lens cap over when the camera is not in use. If the lens is not installed, protect the surface of the prism by placing the body cap into the lens mount hole.
- Use a mild blower or lens cleaning tissue designed for coated lenses, to clean the surface of the lens or prism in the event that it should become dirty.
- Use a dry cloth to clean the camera if it is dirty. In case the dirt is hard to remove, use mild detergent and wipe gently.
- Use caution when operating the camera in the vicinity of spot lights or bright lights, as well as light reflecting objects and surfaces.
- Take immediate action if ever the camera should become wet. Turn the power off and have the unit checked by an authorized service facility.
- Follow normal safety precautions to avoid personal injury.
- Use the camera in an environment where the temperature is within 14 °F to 113 °F (–10 °C to +45 °C), and the relative humidity is within 20 % to 90 %.
- Always turn the power off when the camera is not going to be used. Operate the camera only when there is adequate ventilation.

Precautions for installation

The connection and installation should be done by qualified service personnel or system installers. Refer any servicing to qualified service personnel.

Concerning the installation location of the camera
Ensure that the installation location is strong enough to bear at least five times the total weight of the camera, lens, and cables (approx. 55.1 lbs. [25 kg]).
When mounting to a pan-tilt head or to a mounting bracket for installation, ensure that the location is strong enough to accommodate its weight as well.

The camera cannot be installed or used in the following locations.

- Outdoor locations and locations where the camera may be exposed to dripping, splashing or sprayed water
- Locations such as swimming pools where chemicals are used
- Locations such as a kitchen where the high levels of steam and oily vapors are present and locations with flammable atmospheres or other unusual conditions
- Locations where radioactive rays, X-rays or strong radio waves or magnetic fields are generated
- Locations where the temperature may be outside the camera's operating ambient temperature (14 °F to 113 °F [–10 °C to 45 °C]) range
- Locations near the air outlet of an air conditioner or near a door where the camera will be exposed to incoming outside air or other locations where the temperature is subject to sudden change (since these locations may cause the lens area to cloud over and/or condensation to form)
- Locations that are subject to significant vibration, such as on top of a car
- Locations with high levels of humidity or dust

When the camera is not going to be used, do not leave it in place but be absolutely sure to remove it from its mounting, and put it away.

Do not run the camera cable near the wiring of electric lights.
This may result in noise interference.

Concerning electromagnetic interference
The camera's images may become distorted or noise interference may result if the camera is used near a TV or radio transmission antenna or in strong electrical or magnetic fields (such as one generated by motors, transformers, etc.).

Precautions for installation

The connection and installation should be done by qualified service personnel or system installers. Refer any servicing to qualified service personnel.

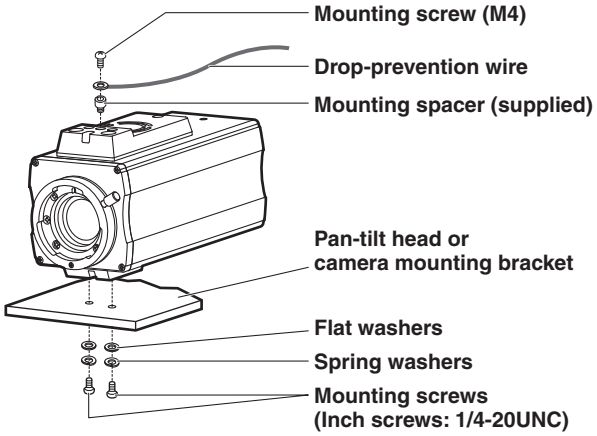
Concerning the mounting screws and drop-prevention wire

Attach the drop-prevention wire as a way to prevent the camera from dropping.

- When the unit is to be mounted onto a Panasonic pan-tilt head, use the mounting screws and drop-prevention wire that are supplied with the pan-tilt head.
- When the unit is to be mounted onto a surface other than a pan-tilt head, provide your own drop-prevention wire, mounting screws, washers, and camera mounting bracket.
  For details of the parts to be provided, refer to the next page.
- Before attaching the drop-prevention wire, fit the supplied mounting spacer in the camera mounting screw hole.

Note

- The mounting spacer must be fitted securely using a flathead screwdriver.



Tightening the mounting screws and mounting spacer

Tighten using the torque levels shown in the table below. After tightening, check for play and unsteadiness.

Screws/Spacer	Clamping torque
Mounting screws (M4)	1.5N • m (15 kgf • cm)
Mounting screws (Inch screws)	2.0N • m (20 kgf • cm)
Mounting spacer	2.0N • m (20 kgf • cm)

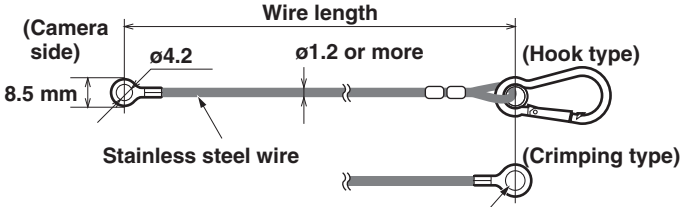
Precautions for installation

The connection and installation should be done by qualified service personnel or system installers. Refer any servicing to qualified service personnel.

Parts to be provided by the customer for installation

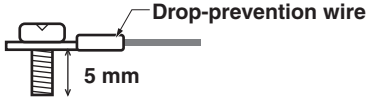
Provide the following parts when the unit is to be mounted onto a surface other than a pan-tilt head.
When the unit is to be mounted onto a Panasonic pan-tilt head, use the mounting screws and drop-prevention wire that are supplied with the pan-tilt head.

① **Drop-prevention wire: 1**
Either crimp the two ends of the wire using stainless steel terminals or attach metal hooks to the two ends of the wire. Use a wire that is sufficiently strong.
Consider the installation location and mounting method to be used, and cut the wire to a length that will have no slack when attached.

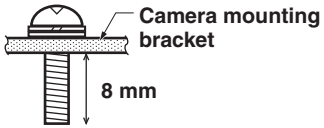


Shape the end of the wire so that it can be attached using an M6 or M8 bolt and nut.
- **Provide the bolt and nut or anchor bolt that is best suited for the installation location and mounting method used.**

② **Mounting screws (M4): 1**
(For attaching the drop-prevention wire)
Determine the length of this screw by factoring in the thickness of the drop-prevention wire's terminal.



③ **Mounting screws (Inch screws: 1/4-20UNC): 2**
(For mounting the camera)
Determine the length of these screws by factoring in the thickness of the camera mounting bracket.



④ **Flat washers: 2 (For mounting the camera)**

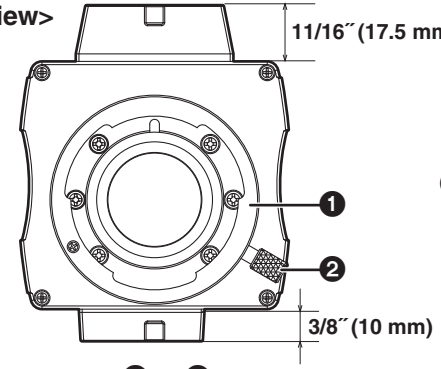
⑤ **Spring washers: 2 (For mounting the camera)**

⑥ **Camera mounting bracket: 1**
Provide a bracket of a material and shape sufficiently capable of withstanding the total weight to be borne.
To determine the position of the holes used for mounting the camera, refer to <Bottom view> on page 15, and make holes with a diameter of 7 mm (to support 1/4-20UNC mounting screws).

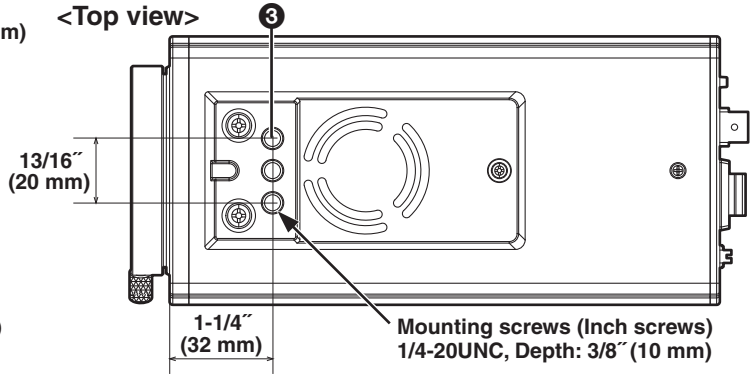
Major operating controls and their functions

■Front view / Top view / Rear view / Bottom view

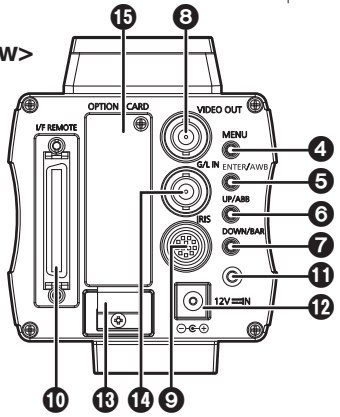
<Front view>



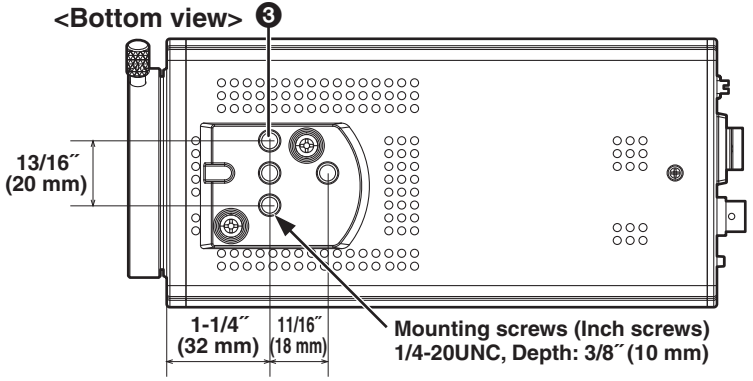
<Top view>



<Rear view>



<Bottom view>



Major operating controls and their functions

❶ Lens mount
2/3″ bayonet type lens or a microscope adapter can be mounted.

❷ Lens fixing ring knob
Mount the lens on the camera and rotate the lens fixing ring knob clockwise in order to fix the lens securely.

❸ Camera mounting screw holes (Inch screws: 1/4-20UNC)
When installing the camera, use these screw holes to secure the camera.
Furthermore, fit the supplied mounting spacer into these screw holes, and use the mounting screws (M4) to attach the drop-prevention wire.
For more details, refer to page 21.

❹ MENU switch [MENU]
A menu will appear on the monitor screen when MENU switch is pressed for at least 3 seconds.
The menu screen is cleared when the switch is pressed for at least 3 seconds while the menu is displayed.
When this switch is pressed while an item is being changed on a sub menu screen, the set values will revert back to those prior to making changes.

❺ ENTER/AWB switch [ENTER/AWB]
If this switch is pressed on the main menu screen, a sub menu screen with selection items appears, and if it is pressed on the sub menu screen, the selection items start flashing to indicate that their settings can be changed.
Pressing this switch while the camera is in a status where settings can be changed finalizes changes.
This switch finalizes the “O.K.” or “CANCEL” selection when pressed in individual confirmation screens (see pages 86 to 89 for details).
When the menu is not displayed or the camera is in shooting mode, the automatic white balance control (AWB) can be set with this switch.

Major operating controls and their functions

❻ UP/ABB switch [UP/ABB]

The item just above can be selected by pressing this switch while the menu is displayed.
When this switch is pressed while an item is able to be changed on a sub menu screen, the value is adjusted higher.
When the menu is not displayed or the camera is in shooting mode, the automatic black balance control (ABB) can be set with this switch.

❼ DOWN/BAR switch [DOWN/BAR]

The item just below can be selected by pressing this switch while the menu is on the screen.
When this switch is pressed while an item is able to be changed on a sub menu screen, the value is adjusted lower.
When the menu is not displayed, the color bar and the shooting conditions are indicated by pressing the switch for about 2 seconds.

❽ Video output connector [VIDEO OUT]

A composite video signal is provided at this connector. (1 V[p-p], 75 Ω BNC connector)

❾ Iris connector [IRIS]

Connect the IRIS cable of the motor drive lens (such as the AW-LZ17MD9AG and AK-LZ20M85G) to this connector.

❿ I/F Remote connector [I/F REMOTE]

This connector is used to connect the remote operation panel (AW-CB400) or pan-tilt head (such as the AW-PH400).
If the AW-CB400 is to be connected to this connector, a camera control cable (AW-CA50T8) is required.

⓫ Power indicator

Green LED lamp lights to indicate that the specified DC power is supplied to the DC 12 V input connector ⓬.

⓬ DC 12 V input connector [12 V ⎓ IN]

The model AW-PS510A AC adapter (optional accessory) is connected here.
For the connection, use a DC cable with ø5.5 plug which is supplied with AW-HE870.

Cautions

1. Connect this to a DC 12 V class 2 power supply only.
2. To prevent fire or shock, the UL listed wire VW-1, style 1007 should be used as for the cable for DC 12 V input connector.

Note

- The polarities of the DC 12 V input connector are reversed on the unit from the polarities on existing convertible cameras.
  Be absolutely sure to use the DC cable provided with the main unit.

⓭ Cable clamp

Clamp the DC cable with ø5.5 plug connected to the DC 12 V input connector ⓬ to prevent it from slipping out.
Be absolutely sure to secure the DC cable using the cable clamp.

⓮ G/L input connector [G/L IN]

External synchronizing signals (BB) are to be supplied to this connector when the camera is to be synchronized with the external synchronizing signals.
Three-value synchronizing signals of the HD format are not supported.

⓯ Optional card slot [OPTION CARD]

Slot for inserting an optional card. For details, refer to the manual for optional cards.

Note

- Only the optional card (AW-HHD870) that supports the unit can be used. It is not possible to use any other cards.

Mounting

The connection and installation should be done by qualified service personnel or system installers. Refer any servicing to qualified service personnel.

■Lens mounting

- Use the 2/3″ bayonet type lens (such as the AW-LZ17MD9AG and AK-LZ20M85G), available as an optional accessory.

Note

- Use the AW-LZ17MD9AG lens when using the camera mounted on the pan-tilt head AW-PH360. Lenses other than the AW-LZ17MD9AG cannot be used.
  Do not mount the camera on the AW-PH360 when the AK-LZ20M85G is installed.
  Weight balance cannot be secured.

- Use the lens extension cable AW-CA12T12A if your IRIS cable is too short.

1. Rotate the lens fixing ring knob counterclockwise and remove the lens mount cap.
2. Mount the lens on the camera and rotate the lens fixing ring knob clockwise in order to fix the lens securely.
3. Connect the IRIS cable to the IRIS connector on the back panel of the camera.

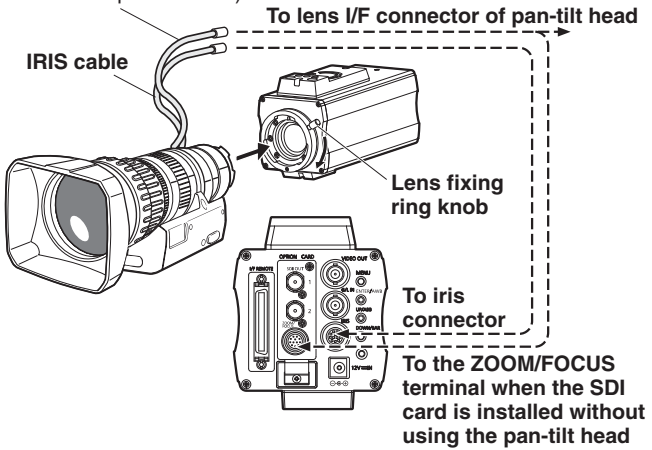
When the pan-tilt head has been used

- Connect the remote cable of the lens to the LENS IF (1) terminal on the pan-tilt head.

When the SDI card (AW-HHD870) is installed without using the pan-tilt head

- Connect the remote cable of the lens to the ZOOM/FOCUS terminal of the SDI card.

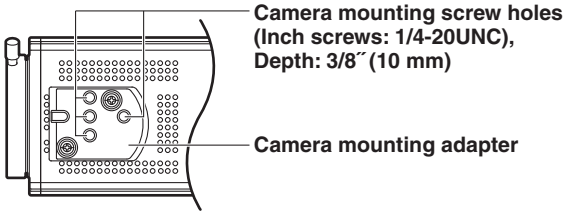
Remote (for zoom/focus control) cable
(When the pan-tilt head is used, connect this cable to the pan-tilt head)



■Mounting the camera onto a pan-tilt head, tripod, camera mounting bracket, or other part

1. Use the camera mounting screw holes to mount onto a pan-tilt head, tripod, camera mounting bracket, or other part.

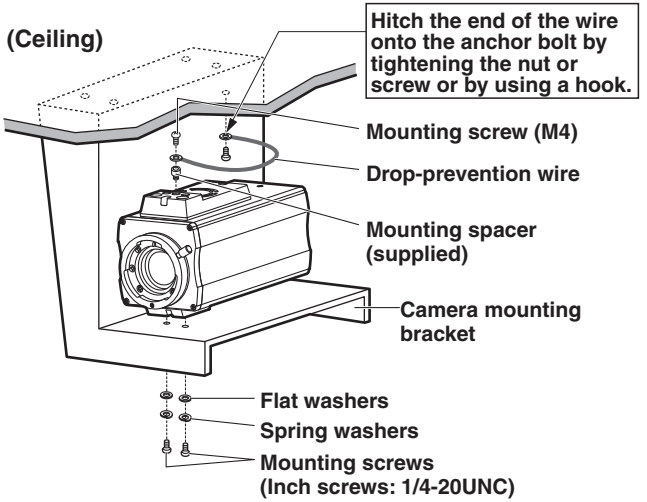
2. Fit the supplied mounting spacer into the camera mounting screw holes on the camera's top surface when mounting the camera with its bottom surface, or on the camera's bottom surface when mounting the camera with its top surface, and attach the drop-prevention wire using the mounting screw (M4).
   When the unit is to be mounted onto a Panasonic pan-tilt head, use the mounting screws and drop-prevention wire that are supplied with the pan-tilt head.
   When the unit is to be mounted onto a tripod, camera mounting bracket, or other part, refer to page 14, and provide your own drop-prevention wire, mounting screws, and washers.

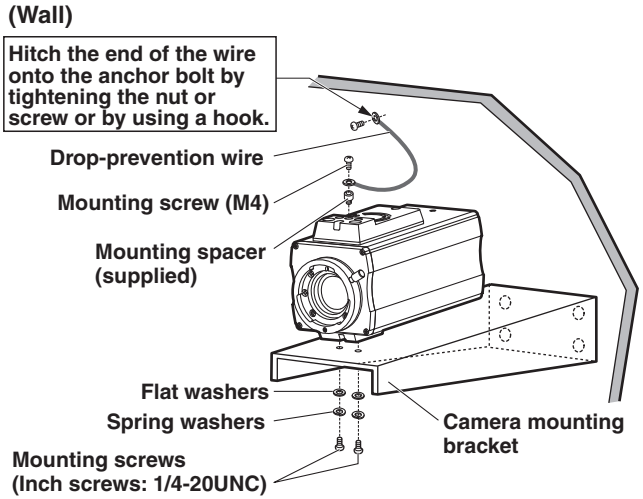


Mounting

The connection and installation should be done by qualified service personnel or system installers. Refer any servicing to qualified service personnel.

- **Example where the camera is mounted on a ceiling or wall**





Notes

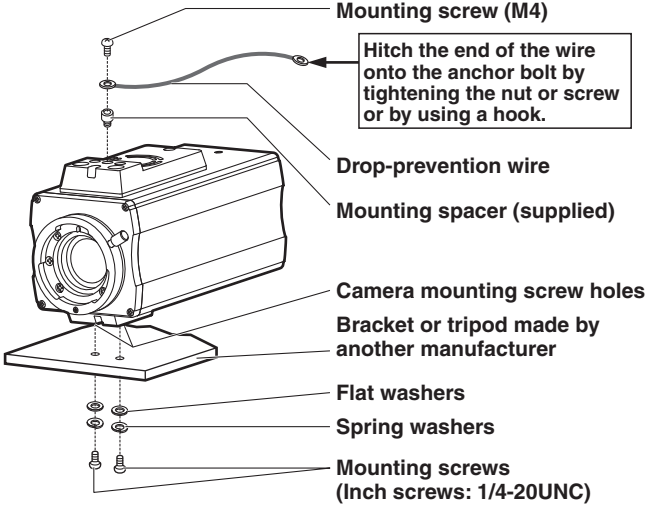
- When attaching one end of the drop-prevention wire to the surface of a ceiling or wall, ensure that it is strong enough to bear at least five times the total weight including the mounting bracket or other part.
- Tighten the mounting screws and mounting spacers using the torque levels shown in the table to the right, and then check for play and unsteadiness.

Screws/Spacer	Clamping torque
Mounting screws (M4)	1.5N • m (15 kgf • cm)
Mounting screws (Inch screws)	2.0N • m (20 kgf • cm)
Mounting spacer	2.0N • m (20 kgf • cm)

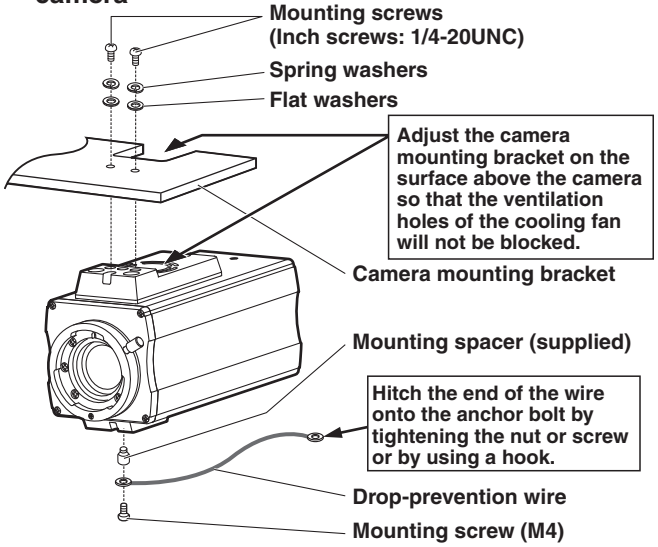
Mounting

The connection and installation should be done by qualified service personnel or system installers. Refer any servicing to qualified service personnel.

- **Example of mounting the camera onto a bracket or tripod made by another manufacturer**



- **Example of mounting on a surface above the camera**



Notes

- Ensure that the installation location is strong enough to bear at least five times the total weight.
- Even when the camera has been mounted on a tripod, be absolutely sure to take steps to prevent the camera from falling.
- Tighten the mounting screws and mounting spacers using the torque levels shown in the table to the right, and then check for play and unsteadiness.

Screws/Spacer	Clamping torque
Mounting screws (M4)	1.5N • m (15 kgf • cm)
Mounting screws (Inch screws)	2.0N • m (20 kgf • cm)
Mounting spacer	2.0N • m (20 kgf • cm)

3. When mounting the camera onto a pan-tilt head (AW-PH400), do not use the anchoring rubber piece supplied with the pan-tilt head.
   If this rubber piece is used, the camera's ventilation holes will be blocked, causing the temperature inside the camera to rise and possibly resulting in a malfunction.

Indoor Pan/tilt Head AW-PH400

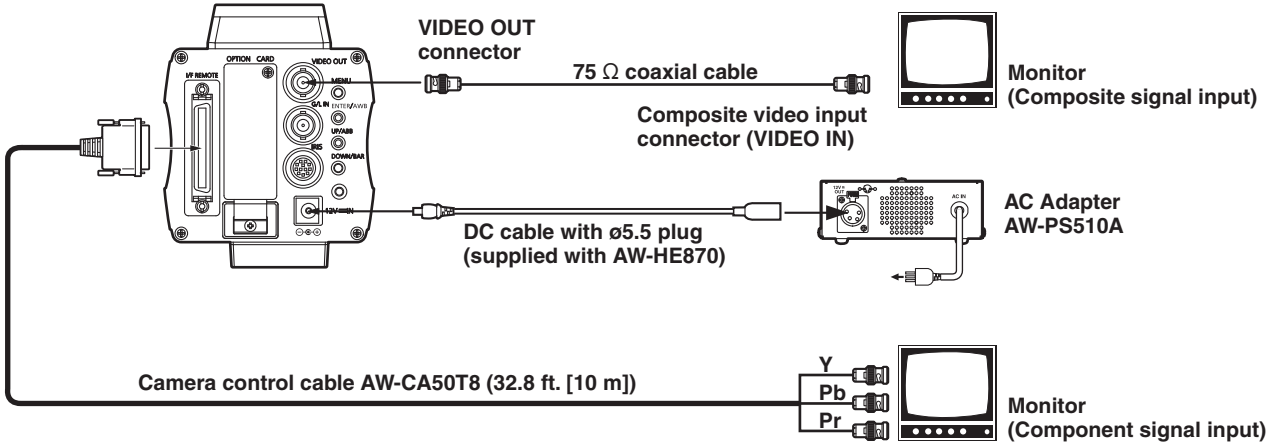
Notes

- For the specifications of the camera mounting screw holes, refer to "Major operating controls and their functions" on page 15.
- When using the camera mounting screw holes on the camera's top surface (when mounting the camera by suspending it), take care not to block the ventilation holes of the cooling fan.
- When using the camera mounting screw holes on the camera's top surface (when mounting the camera by suspending it), attach the drop-prevention wire to the camera mounting screw holes on the camera's bottom surface.
- Do not mount the camera upside down because this will cause the temperature inside the camera to rise, possibly resulting in a malfunction.
- When mounting the camera onto a pan-tilt head, mount it securely after obtaining a full understanding of the mounting procedure in the operating instructions of the pan-tilt head.

System configuration (Connections)

■Connection of device with a composite/component input connector

- Connection to any device which has a composite signal input connector, such as a monitor or a VTR, must be made through the VIDEO OUT connector.
- Use the AW-CA50T8 camera control cable, which is available as an optional accessory, to connect the I/F REMOTE connector on the unit with the device equipped with HD/SD component signal input connectors.
- Composite signals (from the VIDEO OUT connector) and component signals (from the I/F REMOTE connector) can be output at the same time.
- Use the DC cable with ø5.5 plug, supplied with the AW-HE870, for connection to the 12 V input connector.

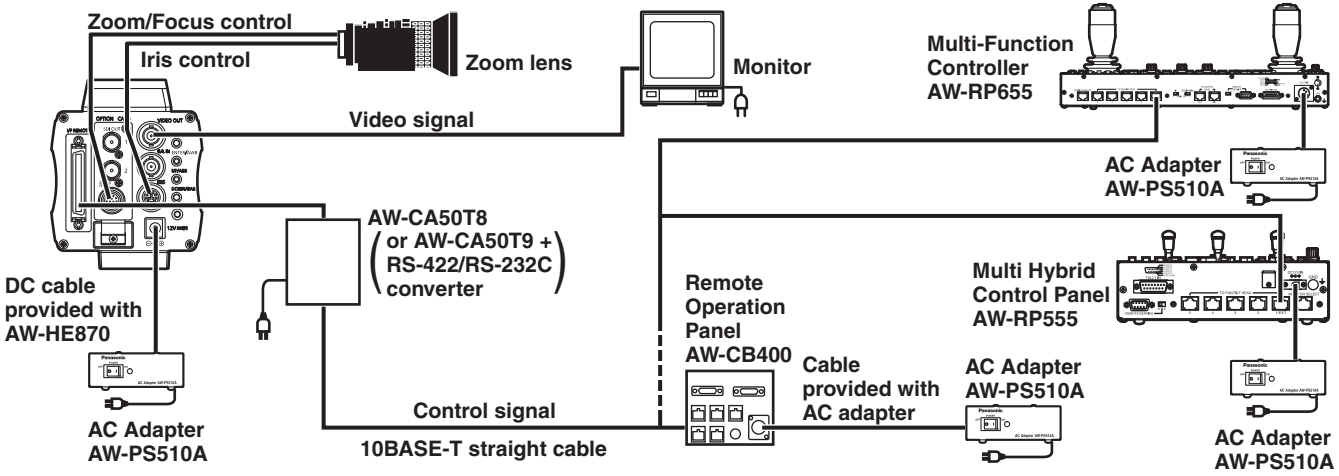


System configuration (Connections)

■Connection of a remote operation panel

When an SDI card (AW-HHD870) has been installed

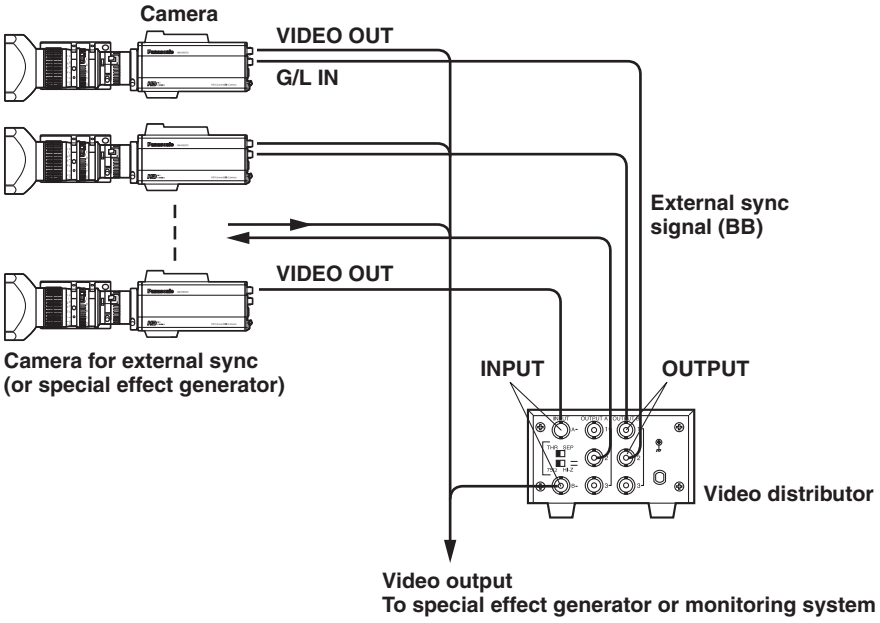
- First, turn off the power of all the equipment before proceeding with the connections.
- Use the AW-PS510A for the AC adapter of the unit.
  Connect the DC 12 V OUT socket on the AW-PS510A to the DC 12 V IN socket on the unit using the DC cable provided with the AW-HE870.
- Connect the CONTROL OUT TO CAMERA connectors [1] to [5] on the ROP with the I/F REMOTE connectors on the unit through the connecting cables (optional accessory) AW-CA50T8 (or AW-CA50T9 + RS-422/RS-232C converter).
- The distance between the ROP and the AW-CA50T8 (or AW-CA50T9 + RS-422/RS-232C converter) can be extended up to a maximum of about 3280 ft. (1000 m) using a 10BASE-T (equivalent to UTP category 5) straight cable.



System configuration (Connections)

■Connection with multiple cameras (Supplying the external synchronizing signals)

- Supply a synchronizing signal (BB) to the G/L input connectors of each camera.
- Do not switch off the camera used for supplying the external synchronizing signals.
- Genlock adjustment is needed when supplying the external synchronizing signals. (page 57)



Notes

- Three-value synchronizing signals of the HD format are not supported.
- When using external synchronization, only the output signal for the selected video output format (Format) will be synchronized (1080i, 720p, or 480i).
  ① When selecting an HD format (1080i or 720p), neither the VIDEO OUT signal (composite signal) nor the Y/C signal output from the AW-CA50T8 S-Video terminal will be synchronized with the external synchronizing signal.
  ② To synchronize the VIDEO OUT signal (composite signal) or the Y/C signal output from the AW-CA50T8 S-Video terminal with the external synchronizing signal, use “480i” as the video output format (selected from the camera menu).

System configuration (Connections)

■Connection of the Indoor Pan-tilt Head AW-PH360

- Turn off the power of all the equipment before proceeding with the connections.
- Connect the AC adapter (AW-PS300A) to the AW-PH360 indoor pan-tilt head.
- Use 10BASE-T straight cables to connect the RP connectors on the pan-tilt heads with the CONTROL OUT TO PAN/TILT HEAD (1 to 5) connectors on the AW-RP655 multi-function controller and AW-RP555 multi hybrid control panel.
  The maximum extension distance is 3281 ft. (1000 m) when using UTP category 5 cables or their equivalent.
- Connect the CONTROL OUT TO PAN/TILT HEAD terminals (P1 to P5) of the AW-RP400 and the RP terminal of the AW-PH360 with a 10BASE-T straight cable when using the AW-RP400 pan/tilt control panel.
  The maximum extension distance is 1640 ft. (500 m) when using UTP category 5 cables or their equivalent.
- Use the camera cable provided with the pan-tilt head to connect the AW-PH360 to the unit.
- Connect the iris control cable of the motorized zoom lens to the IRIS connector on the camera, and connect the zoom/focus cable to the LENS I/F (1) connector on the pan-tilt head.
- Set the Controller Selection switch SW1 located inside the AW-PH360 to the “Left Side (RP605)”.
- Select “SDI supported” as the transmission signal selection setting.

System configuration (Connections)

■Connection of the Indoor Pan-tilt Head AW-PH360 (continued)

When an SDI card (AW-HHD870) has been installed

- Use a coaxial cable to connect the SDI OUT connector on the SDI card and the SDI IN connector on the AW-PH360.
- Use a coaxial cable to connect the Pr/SDI OUT connector on the AW-PH360 to the SDI input connector on the color monitor.

Notes

- HD (1080i or 720p) analog component signals cannot be output from the AW-PH360.
- Refer to the operating instructions of the AW-PH360 for details relating to internal switch settings, etc. of the pan-tilt head.
- Use the AW-LZ17MD9AG lens when using the camera mounted on the pan-tilt head AW-PH360. Lenses other than the AW-LZ17MD9AG cannot be used.
  Do not mount the camera on the AW-PH360 when the AK-LZ20M85G is installed.
  Weight balance cannot be secured.

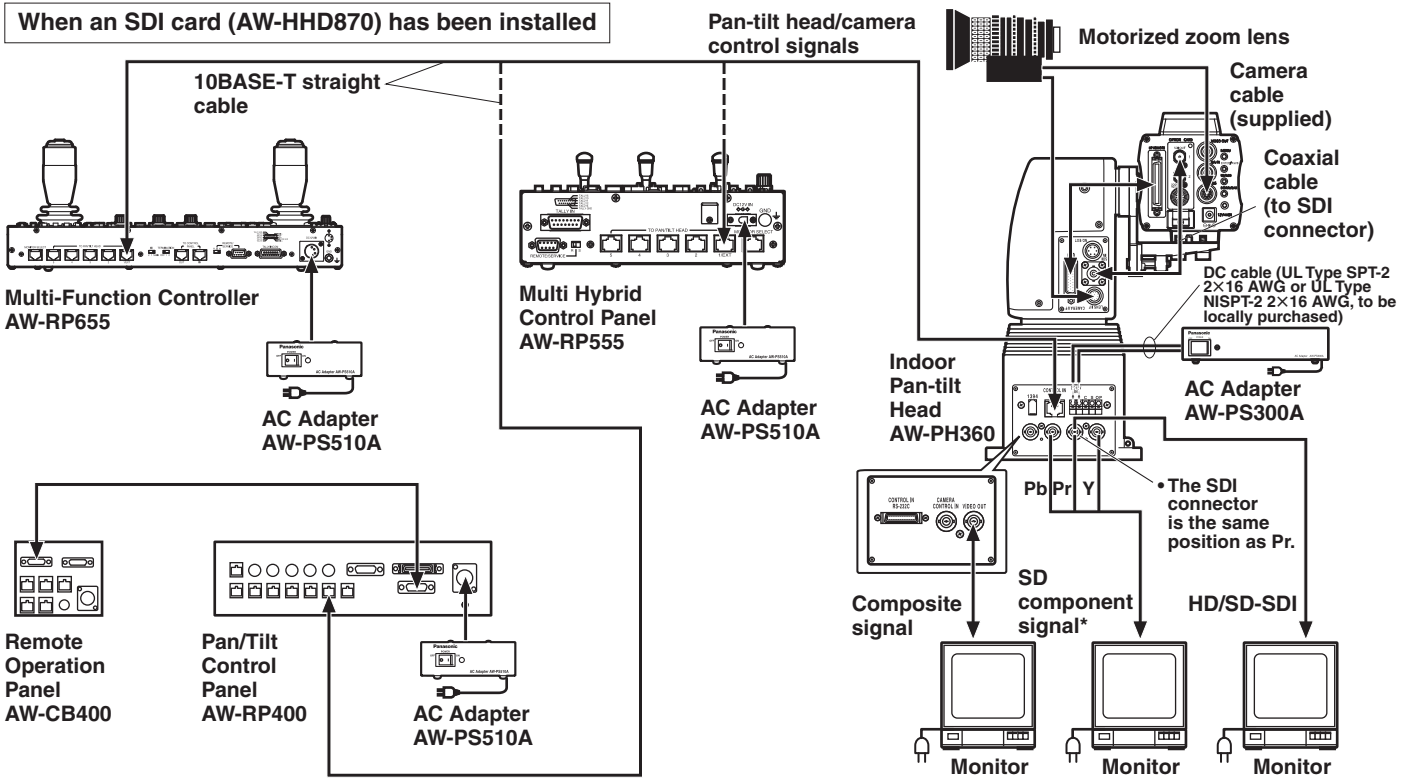
- **AW-IF400 Switch settings (when the AW-RP400 is used)**

SW1	SW2	SET UP			
		1	2	3	4
OFF	ON	OFF	ON	OFF	OFF

System configuration (Connections)

■Connection of the Indoor Pan-tilt Head AW-PH360 (continued)

When an SDI card (AW-HHD870) has been installed



*: The HD component signal cannot be output.

System configuration (Connections)

■Connection of the Indoor Pan-tilt Head AW-PH400

- Turn off the power of all the equipment before proceeding with the connections.
- Connect the AC power cable provided with the AW-PH400 to the AW-PH400 indoor pan-tilt head.
- Use 10BASE-T straight cables to connect the CONTROLLER connectors on the protocol converter AW-IF400 with the CONTROL OUT TO PAN/TILT HEAD (1 to 5) connectors on the AW-RP655 multi-function controller and AW-RP555 multi hybrid control panel.
  The maximum extension distance is 3281 ft. (1000 m) when using UTP category 5 cables or their equivalent.
  Connect the PAN/TILT HEAD terminal of the protocol converter AW-IF400 and the RP terminal of the AW-PH400 with a 10BASE-T straight cable.
  The maximum extension distance is 1640 ft. (500 m) when using UTP category 5 cables or their equivalent.
- Connect the CONTROL OUT TO PAN/TILT HEAD terminals (P1 to P5) of the AW-RP400 and the RP terminal of the pan-tilt head using a 10BASE-T straight cable when using the AW-RP400 pan/tilt control panel.
  The maximum extension distance is 1640 ft. (500 m) when using UTP category 5 cables or their equivalent.
- Use the camera cable provided with the pan-tilt head to connect the AW-PH400 to the unit.
- Connect the iris control cable of the motorized zoom lens to the IRIS connector on the camera, and connect the zoom/focus cable to the LENS I/F (1) connector on the pan-tilt head.

System configuration (Connections)

■Connection of the Indoor Pan-tilt Head AW-PH400 (continued)

When an SDI card (AW-HHD870) has been installed

- Use a coaxial cable to connect the SDI OUT connector on the SDI card and the SDI IN connector on the AW-PH400.
- Use a coaxial cable to connect the SDI connector on the AW-PH400 to the SDI input connector on the color monitor.

Note

- HD (1080i or 720p) analog component signals cannot be output from the AW-PH400.

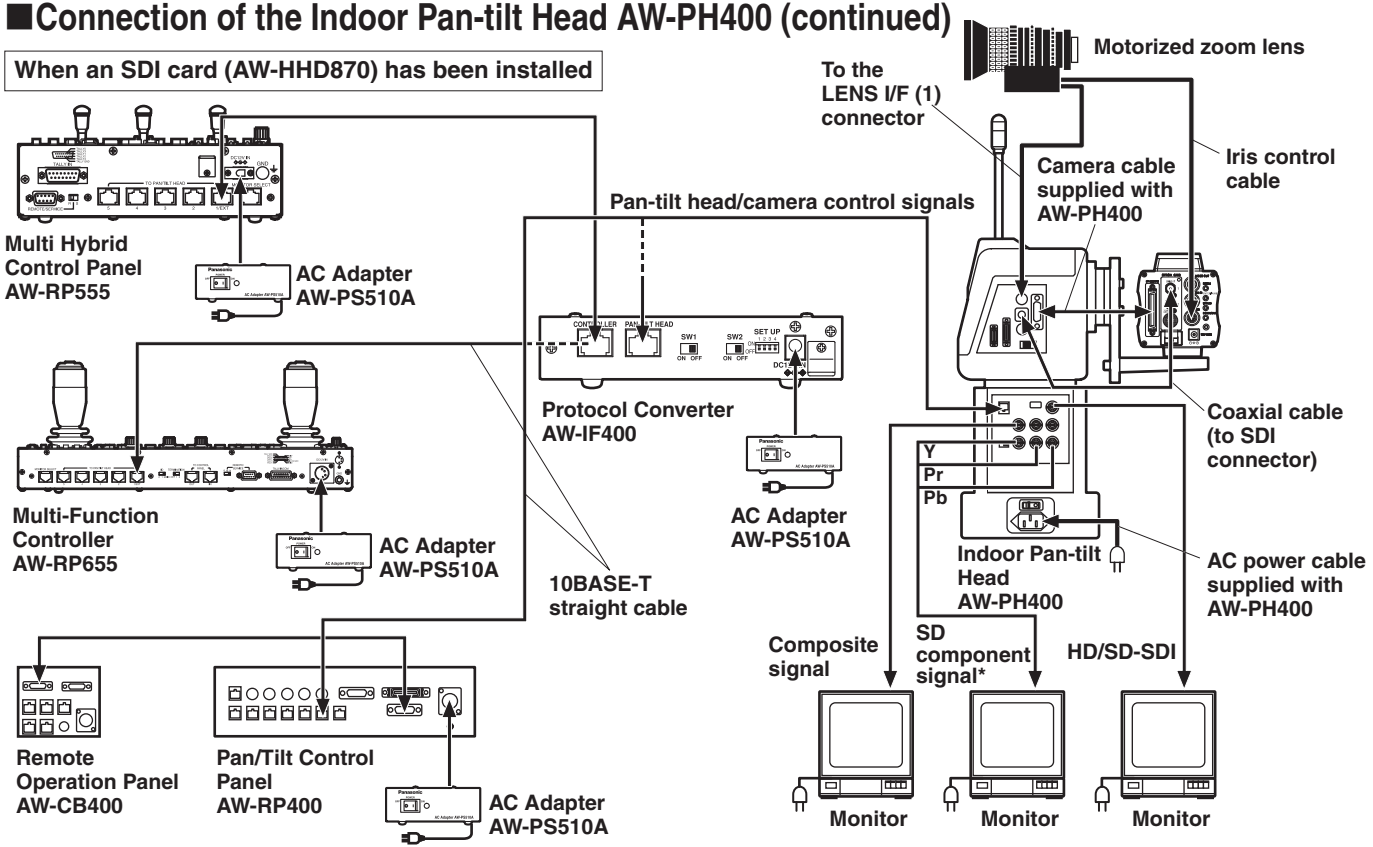
- **AW-IF400 Switch settings (when the AW-RP555/AW-RP655 is used)**

SW1	SW2	SET UP				
		1	2	3 (Tilt range)		4
OFF	OFF	ON	OFF	ON (300 deg.)	OFF (190 deg.)	OFF

System configuration (Connections)

■Connection of the Indoor Pan-tilt Head AW-PH400 (continued)

When an SDI card (AW-HHD870) has been installed



*: The HD component signal cannot be output.

System configuration (Connections)

■Connection of the Indoor Pan-tilt Head AW-PH405

- Turn off the power of all the equipment before proceeding with the connections.
- Connect the AC power cable provided with the AW-PH405 to the AW-PH405 indoor pan-tilt head.
- Use 10BASE-T straight cables to connect the RP connectors on the pan-tilt heads with the CONTROL OUT TO PAN/TILT HEAD (1 to 5) connectors on the AW-RP655 multi-function controller and AW-RP555 multi hybrid control panel.
  The maximum extension distance is 3281 ft. (1000 m) when using UTP category 5 cables or their equivalent.
- Connect the CONTROL OUT TO PAN/TILT HEAD terminals (P1 to P5) of the AW-RP400 and the CONTROLLER terminal of the protocol converter AW-IF400 using a 10BASE-T straight cable when using the AW-RP400 pan/tilt control panel.
  The maximum extension distance is 1640 ft. (500 m) when using UTP category 5 cables or their equivalent.
  Connect the PAN/TILT HEAD terminal of the protocol converter AW-IF400 and the RP terminal of the AW-PH405 with a 10BASE-T straight cable.
  The maximum extension distance is 3281 ft. (1000 m) when using UTP category 5 cables or their equivalent.
- Use the camera cable provided with the pan-tilt head to connect the AW-PH405 to the unit.
- Connect the iris control cable of the motorized zoom lens to the IRIS connector on the camera, and connect the zoom/focus cable to the LENS I/F (1) connector on the pan-tilt head.

System configuration (Connections)

■Connection of the Indoor Pan-tilt Head AW-PH405 (continued)

When an SDI card (AW-HHD870) has been installed

- Use a coaxial cable to connect the SDI OUT connector on the SDI card and the SDI IN connector on the AW-PH405.
- Use a coaxial cable to connect the SDI connector on the AW-PH405 to the SDI input connector on the color monitor.

Note

- When transmitting HD (1080i or 720p) analog component signals, the switch inside the AW-PH405 main unit must be set to the HD position (the operation of the cable compensation circuit is not involved). Consult your dealer.

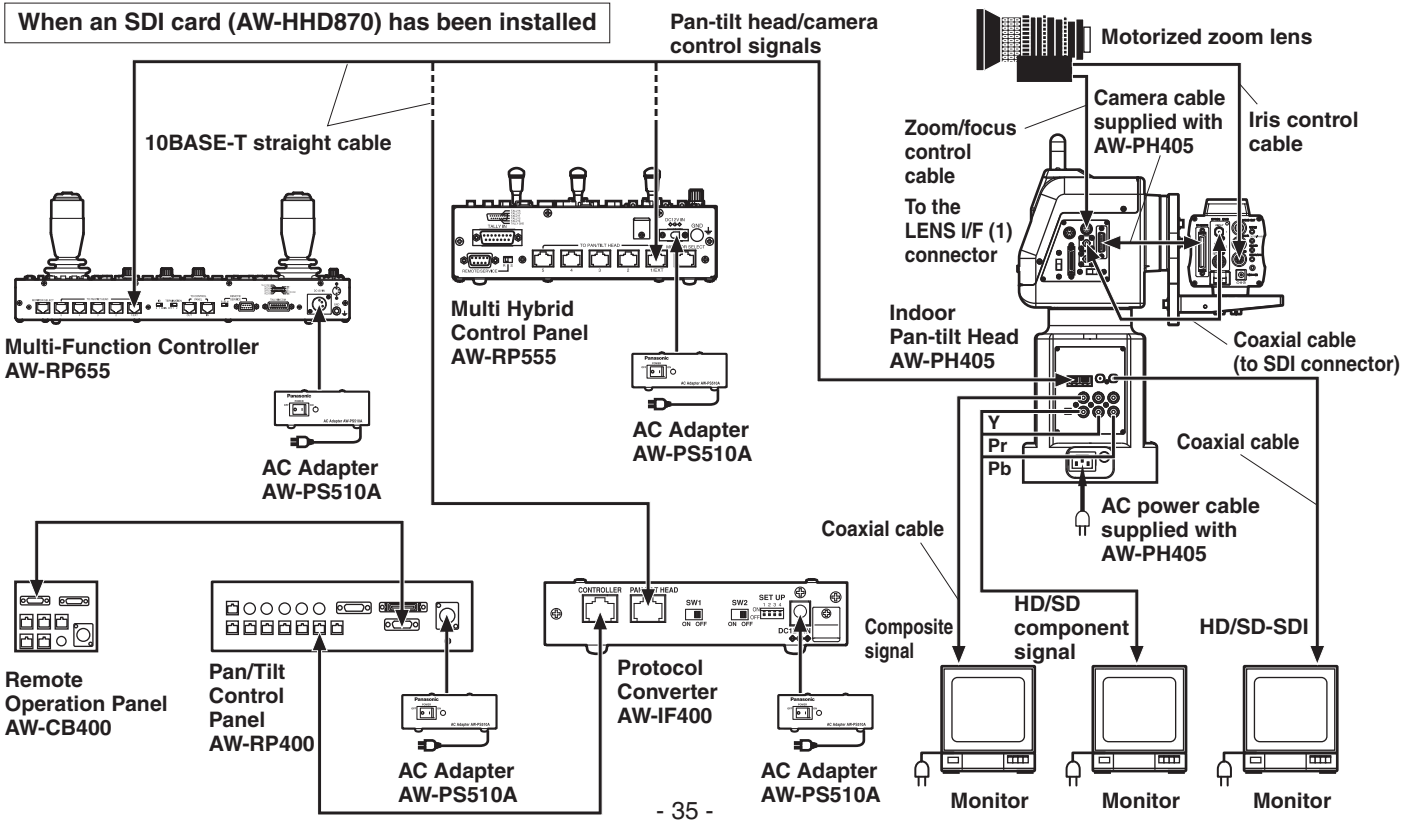
- **AW-IF400 Switch settings (when the AW-RP400 is used)**

SW1	SW2	SET UP			
		1	2	3	4
OFF	ON	OFF	ON	OFF	OFF

System configuration (Connections)

■Connection of the Indoor Pan-tilt Head AW-PH405 (continued)

When an SDI card (AW-HHD870) has been installed



System configuration (Connections)

■Connection of the Outdoor Pan-tilt Head AW-PH650

- Turn off the power of all the equipment before proceeding with the connections.
- Connect the AC adapter provided with the AW-PH650 to the AW-PH650 outdoor pan-tilt head.
- Use 10BASE-T straight cables to connect the RP connectors on the pan-tilt heads with the CONTROL OUT TO PAN/TILT HEAD (1 to 5) connectors on the AW-RP655 multi-function controller and AW-RP555 multi hybrid control panel.
  The maximum extension distance is 3281 ft. (1000 m) when using UTP category 5 cables or their equivalent.
- Connect the CONTROL OUT TO PAN/TILT HEAD terminals (P1 to P5) of the AW-RP400 and the CONTROLLER terminal of the protocol converter AW-IF400 using a 10BASE-T straight cable when using the AW-RP400 pan/tilt control panel.
  The maximum extension distance is 1640 ft. (500 m) when using UTP category 5 cables or their equivalent.
  Connect the PAN/TILT HEAD terminal of the protocol converter AW-IF400 and the RP terminal of the AW-PH650 with a 10BASE-T straight cable.
  The maximum extension distance is 3281 ft. (1000 m) when using UTP category 5 cables or their equivalent.
- Use the camera cable provided with the pan-tilt head to connect the AW-PH650 to the unit.
- Connect the iris control cable of the motorized zoom lens to the IRIS connector on the camera, and connect the zoom/focus cable to the LENS I/F (1) connector on the pan-tilt head.

System configuration (Connections)

■Connection of the Outdoor Pan-tilt Head AW-PH650 (continued)

When an SDI card (AW-HHD870) has been installed

- Use a coaxial cable to connect the SDI OUT connector on the SDI card and the SDI IN connector on the AW-PH650 main unit.
- Use a coaxial cable to connect the coaxial connector (SDI OUT) on the AW-PH650 to the SDI input connector on the color monitor.

Notes

- When transmitting HD (1080i or 720p) analog component signals, set SW2 and SW3 on the COMP circuit board to the HD position. The cable compensation circuit will not be activated even if SW1 is set to ON at this time so use this switch at the OFF setting.
- For the connections inside the housing and other details, refer to the operating instructions of the AW-PH650.

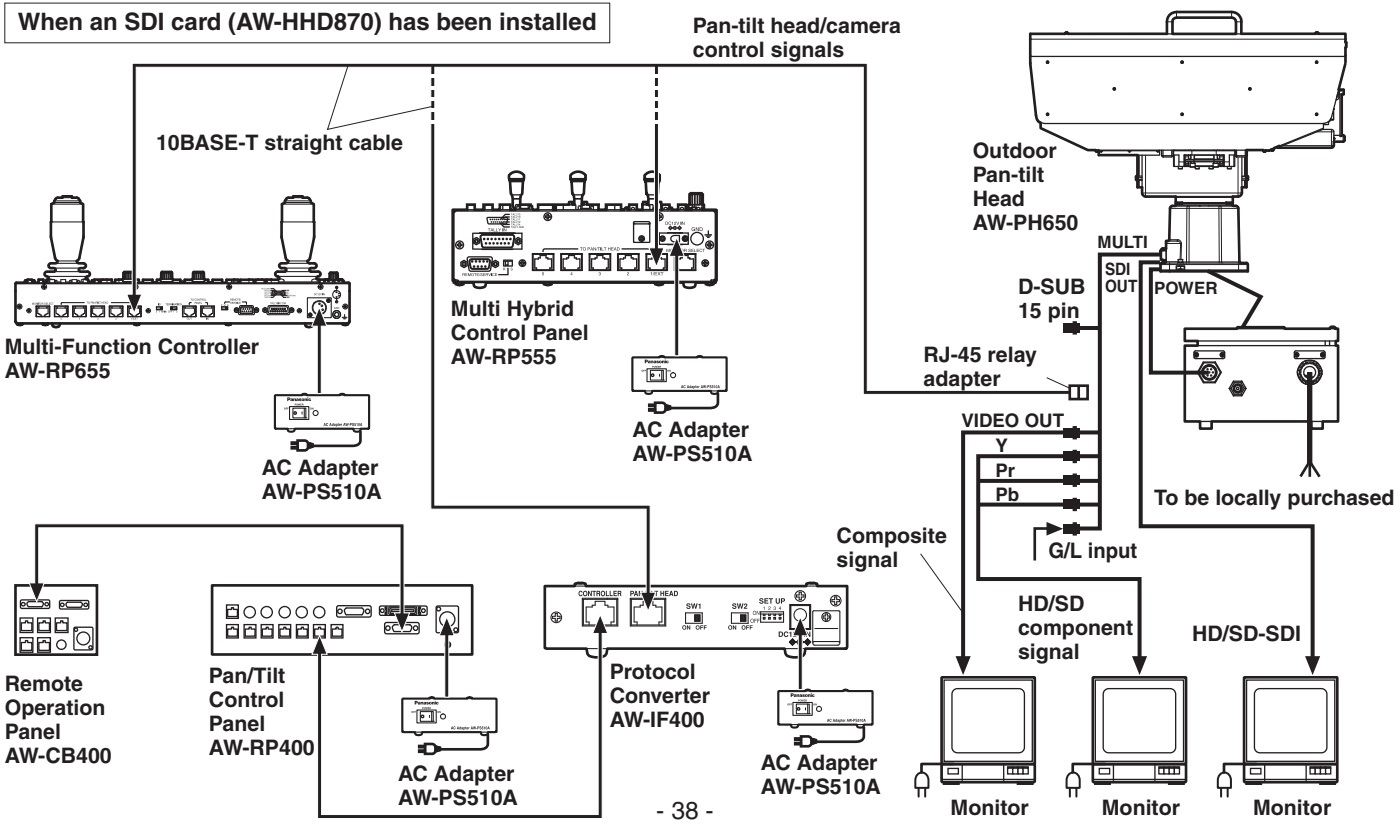
- **AW-IF400 Switch settings (when the AW-RP400 is used)**

SW1	SW2	SET UP			
		1	2	3	4
OFF	ON	OFF	ON	OFF	OFF

System configuration (Connections)

■Connection of the Outdoor Pan-tilt Head AW-PH650 (continued)

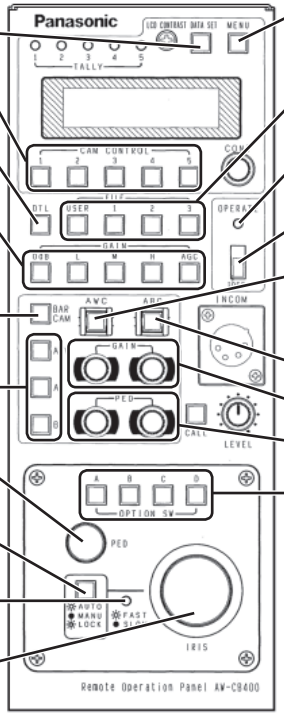
When an SDI card (AW-HHD870) has been installed



How to operate the system

■Control exercised from the Remote Operation Panel AW-CB400

When using the AW-CB400, its switches and dials function as shown in the figure below.



For capturing the camera statuses, and synchronizing the data. Flashes while data is being synchronized. *1

For selecting the cameras and pan-tilt head systems to be operated.

For switching DTL ON and OFF.
The LOW/HIGH selection can be made on the LCD menu when turned ON.

For selecting GAIN 0dB, L, M, H or AGC.
(The selected button lights.) *2
The L/M/H buttons can be set in increments of 1 dB between 0 dB and 18 dB on the LCD of the CB400. *3, *11
Furthermore, the MAX GAIN setting of the AGC can be performed from the LCD of the CB400.

For switching between CAM or BAR.

For switching WHITE BAL ATW, A or B.
(The selected button lights.) *2

For adjusting the TOTAL PEDESTAL.
(–150 to +150) *4

For switching IRIS AUTO, MANU and LOCK.

This lights when the ZOOM/FOCUS operations are performed using the OPTION switch or when "FAST" has been selected as the status of the IRIS dial reaction speed.

For adjusting the iris when IRIS is set to MANUAL. *4

For switching the GAIN/PED display and controller setting menu display.
For details on the camera's functions, open the camera's menu and select the settings.

For switching the SCENE file (User/Halogen/Fluorescent/Outdoor). (The selected button lights.)

Lights when the OPERATE switch is turned ON.
Flashes when an alarm (Fan Error) is received from the camera. *5

The camera can be operated when this switch is turned ON.

For executing AWB.
This button lights without the AWB function being activated when the white balance mode of the main unit is set to ATW, PRESET 3200K, or PRESET 5600K, or when the Color Bar is displayed. *6

For executing ABB. *6, *7

For adjusting R/B GAIN. (–150 to +150) *4, *8

For adjusting R/B PED. (–150 to +150) *4, *9

These are the OPTION switches, and each switch makes it possible to operate one of the items listed below.
(The items are set on the controller setting menu.)
- Camera menu operations
  A: MENU B: ENTER
  C: UP D: DOWN
- ZOOM TELE/WIDE operations *10
- FOCUS NEAR/FAR operations *10

■Control exercised from the Remote Operation Panel AW-CB400 (continued)

*1 : SCENE FILE, CAM/BAR, and DETAIL OFF/LOW/HIGH of each SCENE, as well as the GAINUP, AGC MAX GAIN, W/B MODE, R/B GAIN and T/R/B PED statuses are synchronized.
Statuses are also acquired from the camera when the SCENE is switched or when the CAMERA MENU is turned OFF (including switching from MENU ENABLE to DISABLE).

*2 : When PRESET 3200K or PRESET 5600K is selected in the camera menu, everything turns off when the camera menu is turned OFF.

*3 : Everything turns off after setting 0 dB, GAIN assigned by L/M/H, or anything other than AGC on the camera's OSD menu.

*4 : The R/B GAIN, R/B PED, PED, and IRIS dials are used to switch variable speeds between "Fast" and "Slow" respectively.
At the same time that the IRIS dial is pushed down, the speed at which the ZOOM/FOCUS operations are performed using the OPTION switch is switched between "FAST" and "SLOW".

*5 : Flashing stops when communication is disconnected because the OPERATE switch has been turned OFF, CAMERA SELECT has been switched, the communication cable has been disconnected, etc.

*6 : The lamp of the ABB or AWB switch flashes while automatic white balance or automatic black balance is being executed, respectively. When ABB or AWB is completed successfully, the corresponding lamp goes off; when it is not completed successfully, it lights up.

*7 : The switch lights without ABB being executed when the Color Bar is being displayed.

*8 : The R/B GAIN is cleared to zero when AWB is completed successfully.
The R/B GAIN function is not activated when the W/B mode is ATW, PRESET 3200K, or PRESET 5600K.

*9 : The R/B PEDESTAL is cleared to zero when ABB is completed successfully.
The R/B PED function is not activated when the W/B mode is PRESET 3200K, or PRESET 5600K.

*10 : The ZOOM/FOCUS operation using the OPTION switch becomes possible when the SDI card is installed without using the pan-tilt head.

*11 : In GAIN adjustment mode, the range of –6 dB to –1 dB cannot be adjusted. When a setting outside of 0 dB to 18 dB is desired, this can be specified in the camera menu's gain setting (Gain).

How to operate the system

■Control exercised from the Remote Operation Panel AW-CB400 (continued)

Procedure for camera menu operation (AW-CB400)

① Set the CAMERA MENU CNT item in the LCD menu of the AW-CB400 to ENABLE.

② Press the [A] button of the [OPTION SW] on the AW-CB400 for 2 seconds.

③ The camera menu of the AW-HE870 is displayed on the monitor.

④ Select a menu item. Press the [C] button of the [OPTION SW] to scroll up the item list.
Press the [D] button of the [OPTION SW] to scroll down the selected item.
Press the [B] button of the [OPTION SW] to confirm the item selection.

⑤ Once an item is selected, change the set value of the AW-HE870.
Press the [C] button of the [OPTION SW] to change the set value in the positive direction, and press the [D] button of the [OPTION SW] to change the set value in the negative direction.

⑥ Press the [A] button of the [OPTION SW] for 2 seconds to exit the camera menu.

**It may be necessary to upgrade the software version in order to operate an AW-HE870 from an AW-CB400.
Ask your dealer for details.**

How to operate the system

■Control exercised from the Multi-Function Controller AW-RP655

Each time the MODE button is pressed, the setting is switched between CAM and BAR.
The MODE button lights up at the BAR setting.

This is used to switch between AUTO and MANU for the gain. The GAIN button lights when the AUTO setting is selected.

For switching WHITE BAL A, B or ATW. *1

For executing AWB. *2, *3

Jog dial (main)

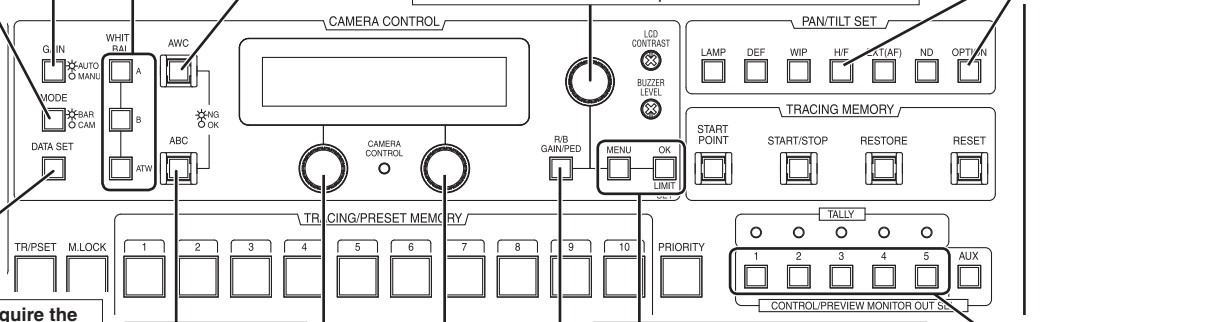
When the LCD is in the gain adjustment mode (GAIN button: MANU)
Select the desired gain setting from GAIN 0 dB to 18 dB.*8

When the LCD is in the gain adjustment mode (GAIN button: AUTO)
Select the desired gain setting from AGC MAX GAIN 6 dB, 12 dB or 18 dB.

When the LCD is in the pedestal adjustment mode
Adjust the PEDESTAL TOTAL setting (–30 to +30).

When the camera menu mode is established
Perform the camera menu operations.

Flashes when an alarm (Fan Error) is received from the camera. *4



This is used to acquire the statuses of the camera and synchronize the data. *6

For executing ABB. *2, *5

These are used for menu operation.

Switch between gain adjustment mode and pedestal adjustment mode.

For selecting the cameras and pan-tilt head systems to be operated.

Jog dial (L)

When the LCD panel is in the gain adjustment mode
Adjust the R GAIN setting (–150 to +150).

When the LCD panel is in the pedestal adjustment mode
Adjust the R PEDESTAL setting (–150 to +150). *7

Jog dial (R)

When the LCD panel is in the gain adjustment mode
Adjust the B GAIN setting (–150 to +150).

When the LCD panel is in the pedestal adjustment mode
Adjust the B PEDESTAL setting (–150 to +150). *7

When the camera menu is used
The jog dial performs the same operations as the MENU switch on the camera main unit.

■Control exercised from the Multi-Function Controller AW-RP655 (continued)

***1 : When PRESET 3200K or PRESET 5600K is selected in the camera menu, everything turns off when the camera menu is turned OFF.**

***2 : The lamp of the ABB or AWB switch flashes while automatic white balance or automatic black balance is being executed, respectively. When ABB or AWB is completed successfully, the corresponding lamp goes off; when it is not completed successfully, it lights up.**

***3 : The switch lights without AWB being executed when the white balance mode of the main unit is ATW, PRESET 3200K, or PRESET 5600K, or when the Color Bar is being displayed.**

***4 : Flashing stops when communication is disconnected because the OPERATE switch has been turned OFF, CAMERA SELECT has been switched, the communication cable has been disconnected, etc.**

***5 : The switch lights without ABB being executed when the Color Bar is being displayed.**

***6 : SCENE FILE, CAM/BAR, and GAINUP of each SCENE, as well as the W/B MODE, R/B GAIN and T/R/B PED statuses are synchronized.**

***7 : The R/B GAIN adjustment is not available when set to ATW, PRESET 3200K, or PRESET 5600K. Furthermore, the R/B PEDESTAL adjustment is not available when set to PRESET 3200K or PRESET 5600K.**

***8 : In GAIN adjustment mode, the range of –6 dB to –1 dB cannot be adjusted. When a setting outside of 0 dB to 18 dB is desired, this can be specified in the camera menu's gain setting (Gain).**

How to operate the system

■Control exercised from the Multi-Function Controller AW-RP655 (continued)

When the AW-HE870, to which the motor drive lens is connected, has been directly connected to the controller, zooming and focusing can be operated using the controller's joystick.
(When an SDI card is installed without using the pan-tilt head)

Procedure for camera menu operation (AW-RP655)

① Press the MENU button to set the LCD panel display to the menu mode.

② Turn the jog dial (main) to select the CAMERA SETTING.

③ Press the OK button.

④ The SCENE Selection menu display appears on the LCD panel.
Select the preferred scene and press the OK button.

```
SCENE          HALOGEN
             → OK Key
```

⑤ The right display appears on the LCD panel:

```
OPEN CAMERA MENU ?
             → OK Key
```

When the OK button is pressed again, the menu of the AW-HE870 appears on the monitor.

⑥ Turn the jog dial (main) to select menu items of the AW-HE870 and change the data.
When changing the data, the data settings are incremented by turning the dial clockwise and decremented by turning it counterclockwise.
Turn the jog dial (main) while pressing the OK button to change the data setting in increments of 10 (it is not possible to change the data setting beyond setting range of data).
Push the jog dial (main) down to enter the settings.

⑦ To exit the camera menu, press the MENU button or R/B GAIN/PED button.

- **When controlling the AW-HE870, the G/L SETTING is not displayed.**
  The G/L must be set using the camera menu of the AW-HE870.
- **It may be necessary to upgrade the software version in order to operate an AW-HE870 from an AW-RP655.**
  Ask your dealer for details.

How to operate the system

■Control exercised from the Multi Hybrid Control Panel AW-RP555

Each time the GAIN button is pressed, the setting is switched in the sequence of GAIN AUTO → 0dB → L (9dB) → H (18dB), and the mode is displayed by the LEDs as shown below.

[ON: LED lighted; OFF: LED off]

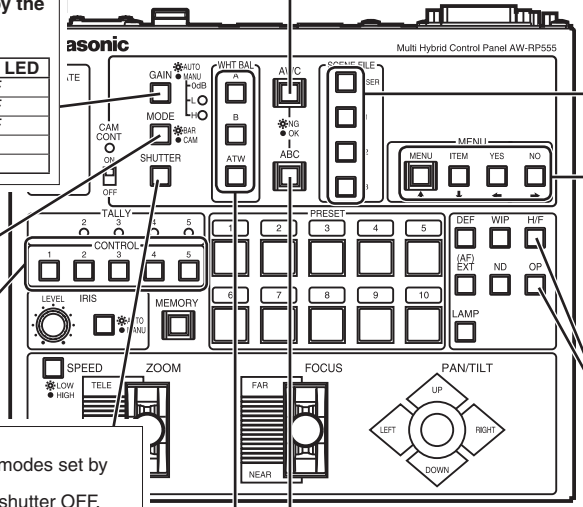
	GAIN button	MANU L LED	MANU H LED
AUTO	ON	OFF	OFF
0dB	OFF	OFF	OFF
LOW	OFF	ON	OFF
HIGH	OFF	OFF	ON
Others	OFF	ON	ON

Each time the MODE button is pressed, the setting is switched between CAM and BAR. The MODE button lights up at the BAR setting.

For selecting the cameras and pan-tilt head systems to be operated.

Shutter mode selection
Each time this button is pressed, one of the shutter modes set by the controller or "shutter OFF" is selected.
The SHUTTER button lights up in all modes except shutter OFF.
The shutter mode settings established by the PRESET buttons are as follows.

MODE	PRESET No.	MODE	PRESET No.
1/100	PRESET1	1/4000	PRESET6
1/250	PRESET2	1/10000	PRESET7
1/500	PRESET3	SYNCHRO-SCAN	PRESET8
1/1000	PRESET4	ELC	PRESET9
1/2000	PRESET5	OFF	PRESET10



For executing AWB. *1, *2

For switching the SCENE file (User/Halogen/Fluorescent/ Outdoor).

Use these buttons to perform the camera menu operations.
MENU: This operates in the same way as MENU on the camera.
ITEM: This operates in the same way as ENTER on the camera.
YES: This operates in the same way as UP on the camera.
NO: This operates in the same way as DOWN on the camera.

Flashes when an alarm (Fan Error) is received from the camera. *3

For executing ABB. *1, *4

For switching WHITE BAL A, B or ATW. *5

■Control exercised from the Multi Hybrid Control Panel AW-RP555 (continued)

***1 : The lamp of the ABB or AWB switch flashes while automatic white balance or automatic black balance is being executed, respectively. When ABB or AWB is completed successfully, the corresponding lamp goes off; when it is not completed successfully, it lights up.**

***2 : The switch lights without AWB being executed when the white balance mode of the main unit is ATW, PRESET 3200K, or PRESET 5600K, or when the Color Bar is being displayed.**

***3 : Flashing stops when communication is disconnected because the OPERATE switch has been turned OFF, CAMERA SELECT has been switched, the communication cable has been disconnected, etc.**

***4 : The switch lights without ABB being executed when the Color Bar is being displayed.**

***5 : When PRESET 3200K or PRESET 5600K is selected in the camera menu, everything turns off.**

How to operate the system

■Control exercised from the Multi Hybrid Control Panel AW-RP555 (continued)

When the AW-HE870, to which the motor drive lens is connected, has been directly connected to the controller, zooming and focusing can be operated using the controller's joystick.
(When an SDI card is installed without using the pan-tilt head)

Procedure for camera menu operation (AW-RP555)

① Press the [MENU] button of the AW-RP555 for 2 seconds.

② The camera menu of the AW-HE870 is displayed on the monitor.

③ Select a menu item. Press the [YES] button to scroll up the selected item.
Press the [NO] button to scroll down the selected item.
Press the [ITEM] button to confirm the item selection.

④ Once an item is selected, change the set value of the AW-HE870.
Press the [YES] button to change the set value in the positive direction, and press the [NO] button to change the set value in the negative direction.

⑤ Press the [MENU] button for 2 seconds to exit the camera menu.

It may be necessary to upgrade the software version in order to operate an AW-HE870 from an AW-RP555.
Ask your dealer for details.

Use mode setting

■Use Mode Setting

The camera has four use modes, and various functions for four use modes have been preset.
Functions can be set as best suited to each use mode.

● **Halogen mode**
Suited to indoor shooting, such as at weddings, parties, lecture meetings, events, etc.
Settings can be changed using a simple menu.

● **Fluorescent mode**
Suited to indoor shooting under fluorescent lighting.
Settings can be changed using a simple menu.

● **Outdoor mode**
Suited to outdoor shooting.
Settings can be changed using a simple menu.

● **User mode**
Settings can be changed using a detail menu.

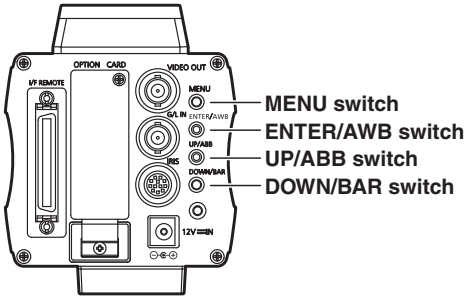
Use mode setting

■Selecting

1. Turn the camera on while keeping the MENU switch depressed.
   The use mode setting menu appears on the monitor screen.

2. The cursor moves each time the UP/ABB switch or the DOWN/BAR switch is pressed.
   Move the cursor to the desired use mode.

3. Press the ENTER/AWB switch.
   The selecting use mode comes into effect.
   After the use mode setting menu is shown for about 5 seconds, the camera returns to be ready for operation.
   Then, the camera operates in the selected use mode.




```
** Use Mode Set **
➡Halogen
 Fluorescent
 Outdoor
 User
```

Operating procedure

1 Turn on the power of the camera and other units.

2 Adjust the lighting of the subject to the appropriate level.

3 Select the operating mode.
Once the mode has been selected, it need not be selected again when the camera is going to be used under the same conditions.

4 Adjust the flange back of the lens, and adjust the iris and focus.
- The flange back adjustment must be performed when the camera is used for the first time and when the lens has been changed.

5 Adjust the white balance.
- The white balance must be adjusted when the camera is used for the first time and when it is going to be used again after it has not been used for a prolonged period.
- It must be adjusted when the lighting conditions or brightness has been changed.
- Once the white balance has been adjusted, it need not be adjusted again when the camera is going to be used under the same conditions.

6 Adjust the black balance.
- The black balance must be adjusted when the camera is used for the first time and when it is going to be used again after it has not been used for a prolonged period.
- It must be adjusted when the ambient temperature has changed significantly or when one season changes to another.
- Once the black balance has been adjusted, it need not be adjusted again when the camera is going to be used under the same conditions.

7 Take the shots.
(On completion, turn off the power of the camera and other units.)

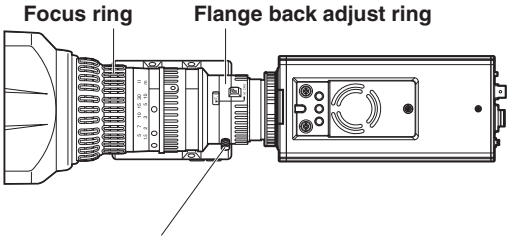
8 Refer to page 60 and following when the camera settings are to be changed to match the intended application or prevailing conditions.
(These settings are already appropriate when the camera is shipped if the prevailing conditions of shooting are normal.)

Adjustment

■Flange back adjustment (For zoom lens)

This is for adjusting the zoom lens focus over the entire focusing range from the TELE end to the WIDE end.

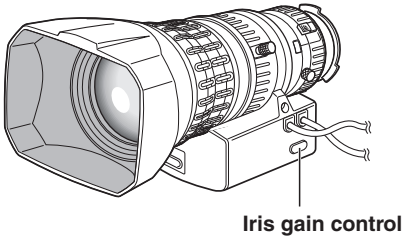
1. Fully open the iris by shooting a dark object.
2. Aim the camera at any object over 6.56 ft. (2 m) away from the camera, and then loosen the flange back lock knob.
3. Set the lens to its TELE end first and adjust its focus with the focus ring.
4. Set the lens to its widest angle next and adjust its focus with the flange back adjust ring.
5. Adjust the focus ring and the flange back adjust ring alternately for the best focus within the zooming range. Tighten the flange back lock knob upon completion of focusing.



■Iris gain control in a lens

- An iris gain control hole (G, S) is usually provided in the front of the lens. Adjustment of the iris gain, with a screwdriver through the hole may be done as follows.
  (Shape and location of the hole may vary depending on the type of lens.)

  1. Turn the iris selection switch to position A (AUTO).
  2. Rotate the iris gain control to the maximum gain, but in a range where no hunting or oscillating of the iris ring develops.



Automatic iris power zoom lens

Adjustment

■White balance adjustment

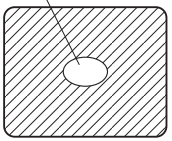
● Automatic white balance control (AWB: AWB A/AWB B)

- When “AWB A” or “AWB B” has been selected as the white balance setting on the Color Set sub menu (pages 62, 70), two sets of color temperature conditions can be preset (stored in the memory): one set for A and another set for B.
- When the camera is going to be used under the same conditions, you may operate the camera properly by simply changing the white balance mode to either AWB A or AWB B.
  There is no need to readjust the camera to the ambient conditions.
- The preset conditions will be renewed whenever you input new conditions.

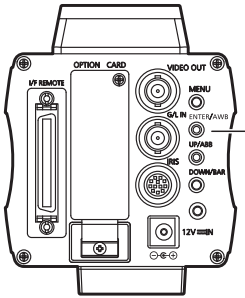
1. Select the white balance mode either AWB A or AWB B.

2. Aim the camera at a white object (a white wall or a white handkerchief) and zoom in to enlarge the image as much as possible.
   For white balance setting aim the camera at a white object and try to position it in the center of the monitor screen. The object must appear in over 10 % of the total monitor screen area. Try to avoid overly bright objects in the scene.

The white object must occupy over 10 % of the monitor screen area.



3. In normal shooting mode, press the ENTER/AWB switch for over 2 seconds to set the white balance.



ENTER/AWB switch

Notes

- White balance may not be correctly set if the lighting of the object is too weak.
- Since the camera has a built-in memory, the set white balance will remain in the memory even if power is turned off. Therefore, it is not necessary to reset the white balance if the color temperature of those objects remains unchanged. However, it must be reset if the color temperature changes, such as when you move from indoors to outside, or vice versa.
- The R/B gain adjustment of painting setting will be automatically reset to ±0 after setting the white balance. (Painting setting of the camera menu in only User Mode.)

● Automatic tracking white balance setting (ATW)

White balance will be automatically set to continuously match changes of light source and color temperature while the white balance setting is set to ATW.

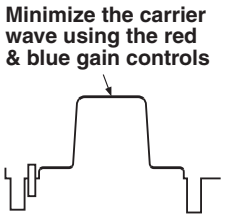
Notes

- ATW might not function properly when high brightness light (ex. fluorescent lamp) beams into a screen.
- White balance may not be accurately set if there is no white object in the scene being shot.

● Manual white balance setting

Manual setting is possible in User Mode only.

1. Select the white balance mode either AWB A or AWB B by menu.
2. Aim the camera at a large white object to set the automatic white balance.
3. Adjust the red gain/blue gain control in the Painting item of Color Set sub menu of User Mode until the carrier wave of the white portion of the video signal is at the minimum width or the white object in the monitor screen appears pure white. (Use an oscilloscope or a waveform monitor for precise adjustment.)



Waveform for white balance set chart

● Preset of 3200K or 5600K white balance

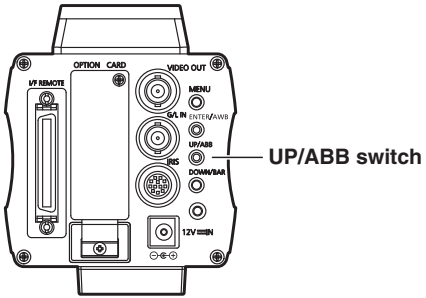
When the white balance setting is set to either “3200K” or “5600K” the white balance will be automatically set to the color temperature 3200K or 5600K, respectively.

Adjustment

■Black balance adjustment

- Close the lens. If the motor drive lens is controlled from the camera, the lens is automatically closed when the black balance is adjusted.
- The R/B pedestal adjustment of painting setting will be automatically reset to ±0 after setting the black balance. (Painting setting in only User Mode.)

Press the UP/ABB switch for over 2 seconds and the black balance will be set in 30 seconds.
In user mode, black balance fine adjustment can be performed by changing the R pedestal/B pedestal setting with the Painting item of Color Set sub menu after setting the black balance.

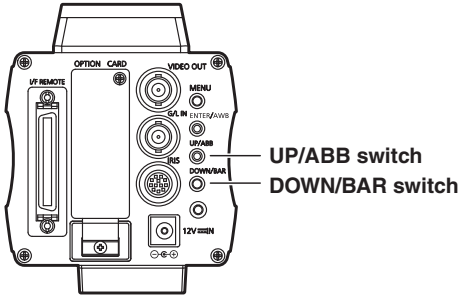


Adjustment

■Total pedestal level adjustment

(Use an oscilloscope or a waveform monitor for this adjustment.)
This step is to adjust the black levels (pedestal levels) of two or more cameras to be the same.
Please contact your dealer for the adjustment.

1. Close the lens.
2. Select Pedestal item in the Brightness Set sub menu.
3. Set the pedestal level to 5 IRE (0.035 V) with the UP/ABB switch or the DOWN/BAR switch.




```
** Brightness Set **
  Picture Level          0
  Light PEAK/AVG         0
  Light Area       Top Cut
  Shutter Mode        Step
   Step/Synchro        Off
  Gain                 0dB
   AGC Max Gain        ---
➡ Pedestal               0


 Return
```

Adjustment

■Genlock adjustment

Phase adjustments must be performed with the camera menu when external synchronizing signals are supplied to the system in cases where multiple cameras are used or peripheral devices are connected.
Please contact your dealer for the adjustment.

Notes

- When horizontal phase adjustment is moved, color phase is also moved.
  Adjust color phase whenever horizontal phase adjustment is moved.
- Phases of the composite and Y/C signals are interlocked for adjustments.
- Three-value synchronizing signals of the HD format are not supported.
- When using external synchronization, only the output signal for the selected video output format (Format) will be synchronized (1080i, 720p, or 480i).
  ① When selecting an HD format (1080i or 720p), neither the VIDEO OUT signal (composite signal) nor the Y/C signal output from the AW-CA50T8 S-Video terminal will be synchronized with the external synchronizing signal.
  ② To synchronize the VIDEO OUT signal (composite signal) or the Y/C signal output from the AW-CA50T8 S-Video terminal with the external synchronizing signal, use “480i” as the video output format (selected from the camera menu).

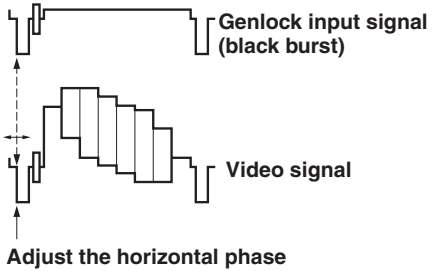
● Horizontal phase control

The phases of the HD signals (1080i, 720p) and SD signals (480i) are interlocked for adjustments.

- **When adjusting the phase of HD signals**
  Observe the waveforms of signal outputs on other HD equipment and the HD analog signal output of this unit on a two-channel oscilloscope.
  Then match the horizontal phase of both signals by adjusting them with the horizontal phase control of the camera menu.

Adjustment

- **When adjusting the phase of SD signals**
  Observe the waveforms of the external synchronizing input signal (black burst signal) and video output signal on a two-channel oscilloscope.
  Then match the horizontal phase of both signals by adjusting them with the horizontal phase control of the camera menu.



Adjustment by camera menu

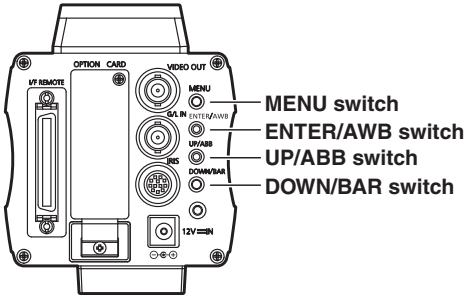
① Press the DOWN/BAR switch for over 2 seconds to display the color bar.

② Press the MENU switch for 3 seconds or more to display the main menu.

③ Press the UP/ABB switch or the DOWN/BAR switch to move the cursor to [G/L Set], then press the ENTER/AWB switch to display the G/L Set sub menu.

④ Select [H Phase] on the G/L Set sub menu.

⑤ Adjust the horizontal phase with the UP/ABB and DOWN/BAR switch.
The level of [H Phase] adjustment can be selected with [H Phase, SC Fine Step].

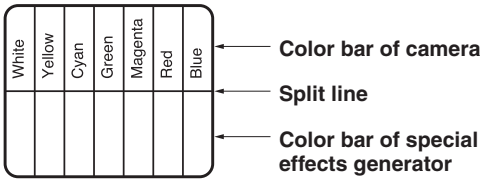



```
## G/L Set ##
➡ H Phase                  0
  SC Coarse           90deg
  SC Fine                  0
  H Phase,SC Fine Step     1




  Return
```

Adjustment

● Color phase adjustment

Color phase adjustment is necessary only for the composite or Y/C signals of the SD format.
Adjust the color phase of the camera to the basic color tone such as program output signal (split color bar output signal) from the color special effect generator.



Adjustment by camera menu

① Press the DOWN/BAR switch for over 2 seconds to display the color bar.

② Press the MENU switch for 3 seconds or more to display the main menu.

③ Press the UP/ABB switch or the DOWN/BAR switch to move the cursor to [G/L Set], then press the ENTER/AWB switch to display the G/L Set sub menu.

④ Select [SC Coarse] on the G/L Set sub menu.
Make coarse adjustment with the UP/ABB switch and the DOWN/BAR switch.

⑤ Select [SC Fine] on the sub menu.
Perform fine adjustment with the UP/ABB switch and the DOWN/BAR switch.
The amount of adjustment for adjusting [SC Fine] can be selected with [H Phase, SC Fine Step].

Menu item setting/changing

■Menu item setting

- Each of the four use modes of the camera (Halogen, Fluorescent, Outdoor and User) has a main menu. (Refer to page 61.)
- Each item of the main menu has a sub menu, which consists of several settings.
- These settings have been preset to the optimum values to suit each use mode, and can be changed to suit actual shooting conditions.

Notes

- The setting items displayed on the G/L Set screen and the Other Set 2 screen apply to all the scenes. No matter which individual scene any of these settings have been selected for, the settings for all the scenes will be changed.
- The sub menu titles common to all scenes are enclosed with "##" in order to distinguish them from sub menus that are unique to individual scenes.
- Characters displayed on the menu may be cut off depending on the monitor used.

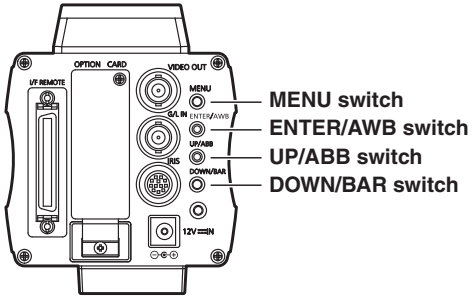
● Setting (when using the camera by itself)

1. Keep the MENU switch depressed for 3 seconds or more, to display the main menu of each use mode. For selecting the use mode, refer to page 49.
2. Each time the UP/ABB switch or DOWN/BAR switch is pressed, the selected item moves up or down.
3. When the ENTER/AWB switch is pressed after selecting the desired item, the sub menu for the selected item appears on the screen.
4. Select an item to be set or changed using the UP/ABB switch and DOWN/BAR switch, and press the ENTER/AWB switch. (The item can now be changed, and it starts blinking.)
5. Change the item's setting using the UP/ABB switch and DOWN/BAR switch, and enter the new setting using the ENTER/AWB switch.
   - Set values can be reverted to those prior to changes when the MENU switch is pressed while in a status where settings can be changed.

Menu item setting/changing

6. Upon completion of the settings, keep the MENU switch depressed for 3 seconds or more to close the main menu screen.

The camera will now operate according to the new settings.



● Main menu screen

Main menu of Halogen, Fluorescent, Outdoor Mode

```
** Halogen Mode Set **
➡ Brightness Set
  Color Set
  Sharpness(DTL) Set
  G/L Set
  Other Set 1
  Other Set 2


  Initialize Data
```

Displays the use mode

Main menu of User Mode

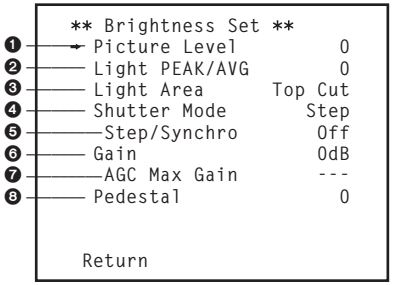
```
** User Mode Set **
➡ Brightness Set
  Color Set
  HD Detail Set
  SD Detail Set
  Color Matrix Set
  Color Correction Set
  G/L Set
  Other Set 1
  Other Set 2
  Initialize Data
```

Displays the use mode

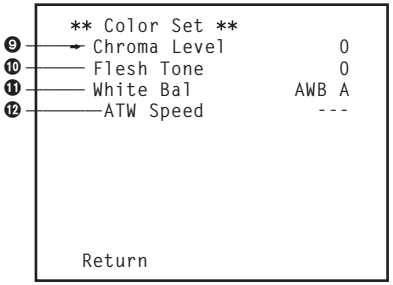
Menu item setting/changing (Halogen, Fluorescent, Outdoor Mode)

■Sub menu (Halogen, Fluorescent, Outdoor Mode)

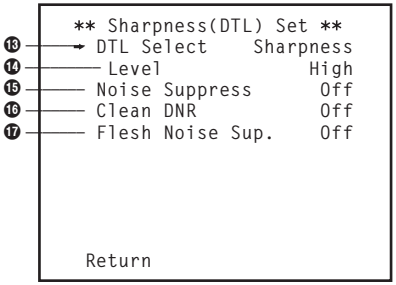
①Brightness Set Display



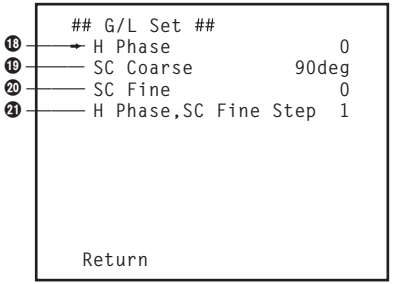
②Color Set Display



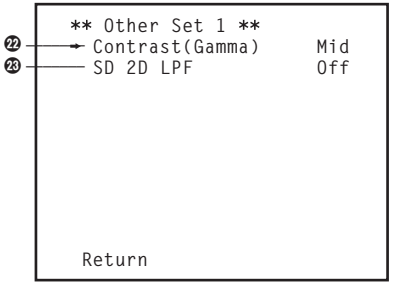
③Sharpness (DTL) Set Display

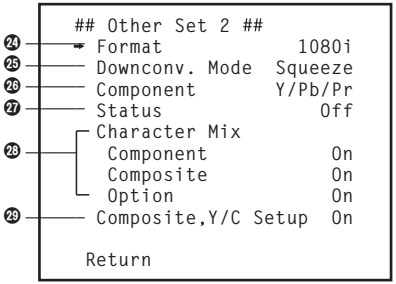


④G/L Set Display



⑤Other Set Display





- To return to the initial settings, refer to page 89.

Menu item setting/changing (Halogen, Fluorescent, Outdoor Mode)

■Description of the setting screen

① Brightness Set

❶ Video level adjustment
[Picture Level: –50 to +50]
Convergence level of AUTO IRIS, AUTO GAIN UP and AUTO ND (ELC) can be adjusted.

❷ Detecting ratio adjustment
[Light PEAK/AVG: P50 to A50]
The ratio of AUTO IRIS, AUTO GAIN UP and AUTO ND (ELC) detected peak (P) to average (A) can be adjusted within a predetermined range.

❸ Photometric measurement method setting
[Light Area: All, Center, Top Cut, BTM Cut, R/L Cut]
A photometric measurement method can be selected for AUTO IRIS, AUTO GAIN UP and AUTO ND (ELC).

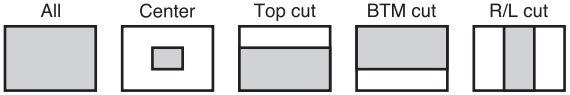
All: All the screen area is measured.

Center: The screen is measured mainly in the center area, about one-third of both the top and bottom and one-third of both the right and left portions of the screen are excluded from measurement.

Top Cut: About one-third of the top portion of the screen is excluded from measurement.

BTM Cut: About one-third of the bottom portion of the screen is excluded from measurement.

R/L Cut: About one-third of both the right and left portions of the screen are excluded from measurement.



❹ Electronic shutter mode setting
[Shutter Mode: Step, S/Scan, ELC]

Step: Electronic shutter operates at the speed selected by the Electronic Shutter Step/ Synchro Scan Setting.

S/Scan: Electronic shutter operates at the speed selected in Electronic Shutter Step/Synchro Scan Setting.

ELC: Electronic shutter is controlled to automatically adjust the luminance.

Menu item setting/changing (Halogen, Fluorescent, Outdoor Mode)

❺ Electronic shutter step/synchro scan setting [Step/Synchro: Off, 1/100 to 1/10000 (Step), 61.19 Hz to 1466 Hz (Synchro Scan)]

This setting is possible only when “Step” or “S/Scan” is selected in electronic shutter mode setting.

- When “Step” has been selected as the electronic shutter mode setting:

  Off: Electronic shutter is turned off.

  1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000: Electronic shutter operates at one of these speeds as selected.

- When “S/Scan” has been selected as the electronic shutter mode setting:

  Bar noise can be reduced by synchro-scan adjustment in shooting workstation scenes, for example.

Notes

- If the lens iris switch is at M (Manual), ELC may not function. Set the lens iris switch to A (Auto).
- Flickering may increase at ELC under fluorescent lights.

❻ Gain setting [Gain: Auto, –6 dB to 18 dB]

Auto: The light quantity is adjusted automatically.

–6 dB to –1 dB:
This setting makes it possible to shoot at the optimal gain setting under conditions where the light quantity is high. When it is used, images with minimal noise can be shot but the dynamic range is reduced.

0 dB: 0 dB should be selected in normal cases.

1 dB to 18 dB:
Use this range if sufficient video output cannot be obtained even when the lens iris is opened in shooting dark scenes.

❼ AGC maximum gain setting [AGC Max Gain: 6 dB, 12 dB, 18 dB]

This is used to set the maximum gain up when “Auto” has been selected as the gain setting.

❽ Black level setting [Pedestal: –150 to +150]

The black level (pedestal) of the luminance (Y) signal can be set.

Used in adjusting the black levels of two or more cameras.

Menu item setting/changing (Halogen, Fluorescent, Outdoor Mode)

② Color Set

❾ Chroma level adjustment
[Chroma Level: –3 to +3]

Chroma level can be decreased or increased to any of three levels each.
The RGB signal cannot be adjusted.

❿ Skin color adjustment [Flesh Tone: –3 to +3]
Skin color can be decreased or increased to any of three levels each.

⓫ White balance setting
[White Bal: ATW, AWB A, AWB B, 3200K, 5600K]

ATW: The white balance is automatically adjusted to the optimum position.
The white balance is tracked across an approximate color temperature range from 2000K to 10000K.

AWB A, AWB B:
Once the white balance is adjusted, it is no longer necessary to set the white balance again if you simply select AWB A or AWB B, provided that the camera is used under the same conditions.

3200K: The white balance is adjusted to 3200K illumination.

5600K: The white balance is adjusted to 5600K illumination.

⓬ ATW speed setting
[ATW Speed: Slow2, Slow1, Mid, Fast1, Fast2]

ATW Speed can be set.

Menu item setting/changing (Halogen, Fluorescent, Outdoor Mode)

③ Sharpness (DTL) Set

⓭ Detail select setting
[DTL Select: Sharpness, Super DTL]
If contour correction is not sufficient at the “Sharpness” position when detail level setting is set to “Low” or “High”, select the “Super DTL” position.

Note

- Neither “Sharpness” nor “Super DTL” is valid for contour correction if detail level setting is in the “Off” position.

⓮ Detail level setting [Level: Off, Low, High]
Detail level can be adjusted when detail select setting is at “Sharpness”. Super DTL level can be adjusted when it is at “Super DTL”.

⓯ Noise suppress level setting
[Noise Suppress: Off, Low, High]
Screen noise can be reduced when detail level setting is at “High” or “Low”.

⓰ Clean DNR setting
[Clean DNR: Off, Low, High]
The noise reduction effect to be provided by the clean DNR can be selected.

⓱ Flesh noise suppress level setting
[Flesh Noise Sup.: Off, Low, High]
Flesh noise is suppressed in two steps when the detail level setting is at “High” or “Low”.

Note

- The setting for the ③ Sharpness (DTL) Set item in the Halogen, Fluorescent or Outdoor mode will take effect for the video outputs regardless of the format.

Menu item setting/changing (Halogen, Fluorescent, Outdoor Mode)

④ **G/L Set**

⑱ **Horizontal phase adjustment**
[H Phase: –206 to +49]
Horizontal phase can be adjusted when a genlock signal is supplied.

⑲ **Subcarrier phase coarse adjustment**
[SC Coarse: 0deg, 45deg, 90deg, 135deg, 180deg, 225deg, 270deg, 315deg]
Coarse adjustment of subcarrier phase can be made when a genlock signal is supplied.
Valid for the composite and Y/C signals of the SD format.

⑳ **Subcarrier phase fine adjustment**
[SC Fine: –127 to +127]
Fine adjustment of subcarrier phase can be made when a genlock signal is supplied.
Valid for the composite and Y/C signals of the SD format.

㉑ **Horizontal phase and color phase fine adjustment**
[H Phase, SC Fine Step: 1 to 10]
The level of horizontal phase adjustment and color phase fine adjustment can be selected simultaneously.

⑤ **Other Set**

㉒ **Contrast adjustment**
[Contrast (Gamma): Low, Mid, High]
Contrast can be adjusted to any of three levels.

㉓ **SD (480i) 2D LPF [SD 2D LPF: Off, Low, High]**
This enables the cross color of the composite and Y/C signal output to be reduced by two levels.
The setting of this item has no effect on the HD (1080i or 720p) format, RGB, Y/Pb/Pr or SDI signals.

㉔ **Video output format setting**
[Format: 480i, 720p, 1080i]
This enables the video output format to be selected.
(Refer to “Changing the format settings” on page 86.)

Menu item setting/changing (Halogen, Fluorescent, Outdoor Mode)

㉕ Down-conversion mode selection
[Downconv. Mode: Squeeze, Sidecut]
Squeeze or Sidecut can be selected as the down-conversion mode for the SD (480i) format.

㉖ Component output setting
[Component: RGB, Y/Pb/Pr, Y/C]
This enables RGB, Y/Pb/Pr or Y/C to be selected as the component signals which are to be output from the I/F REMOTE connector.
Y/C cannot be selected when “1080i” or “720p” has been selected as the “Video output format (Format)” setting.
If “1080i” or “720p” has been selected using the video output format selection function while Y/C is selected, the component output will be changed to Y/Pb/Pr.
(Refer to “Changing the component setting” on page 87.)

㉗ AWB/ABB operation status display ON/OFF selection
[Status: Off, On]
(Factory setting: Off)
Using this item, the display of the operation status for AWB (auto white balance adjustment) or ABB (auto black balance adjustment) is set to ON or OFF.
When AWB or ABB is executed with this item set to “On”, the following is displayed.

AWB ACTIVE: This is displayed while AWB is being executed.
AWB OK: This is displayed for 3 seconds after AWB was completed successfully.
AWB NG: This is displayed for 3 seconds after AWB was not completed successfully. (AWB executed while ATW, 3200K, or 5600K is selected)
OUT RANGE RB: This is displayed for 3 seconds after AWB was not completed successfully. (A color that could not be adjusted is displayed with RB)
HIGH LIGHT NG: This is displayed for 3 seconds when adjustment is not possible because the light quantity is too high.
LOW LIGHT NG: This is displayed for 3 seconds when adjustment is not possible because the light quantity is too low.
ABB ACTIVE: This is displayed while ABB is being executed.
ABB OK: This is displayed for 3 seconds after ABB was completed successfully.
IRIS CONTROL NG: This is displayed for 3 seconds when the iris cannot be controlled by ABB.
OUT RANGE RGB: This is displayed for 3 seconds after ABB was not completed successfully. (A color that could not be adjusted is displayed with RGB)

Menu item setting/changing (Halogen, Fluorescent, Outdoor Mode)

㉘ Character output selection [Character Mix Component: Off, On / Composite: Off, On / Option: Off, On]

This is used to select how the camera menu, status and other characters are to be output (Off or On).

Component: How the characters to the component signals (RGB, Y/Pb/Pr) are output is selected.

Composite: Character output method for composite signals and Y/C signals is selected.

Option: How the characters to the optional card are output is selected.

Notes

- When the menu is started within 1 minute or so after the camera has been turned on, the characters are displayed in all the outputs.
- The selection of Option as the Character Mix setting takes effect when an optional card has been installed.

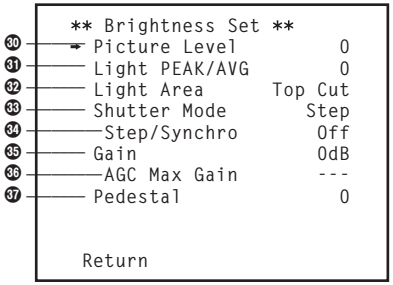
㉙ Composite, Y/C setup selection [Composite, Y/C Setup: Off, On]

The composite signals and the color bar setup level of Y/C signal output (Off: 0.0 IRE or On: 7.5 IRE) can be selected.

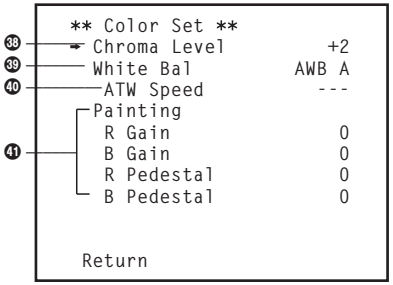
Menu item setting/changing (User Mode)

■Sub menu (User Mode)

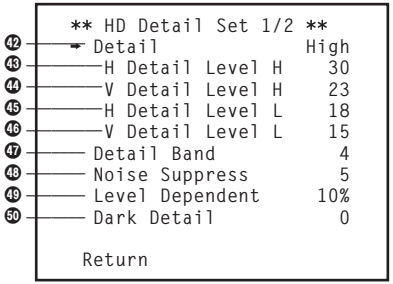
⑥Brightness Set Display

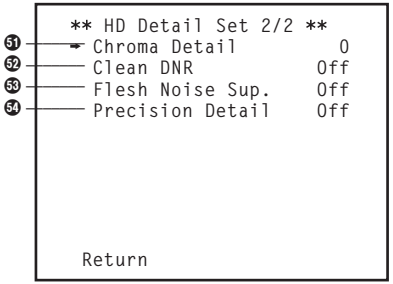


⑦Color Set Display



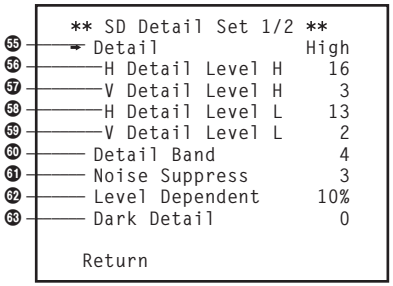
⑧HD Detail Set Display

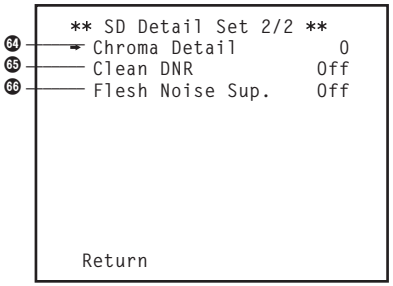




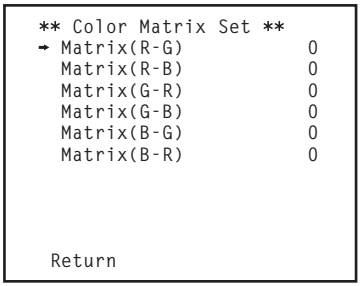
Menu item setting/changing (User Mode)

⑨ SD Detail Set Display

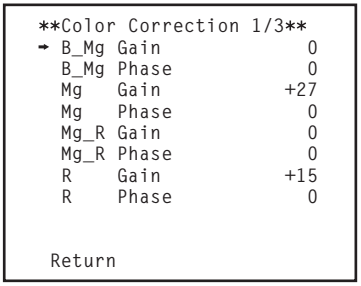


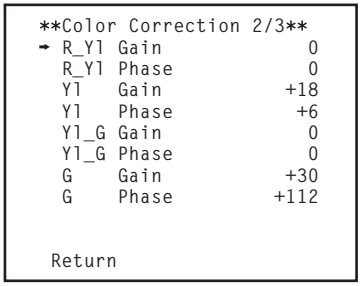


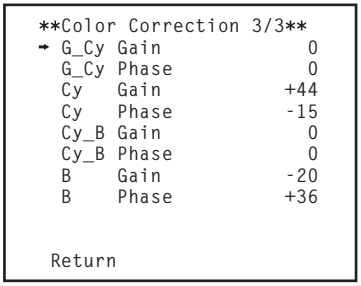
⑩ Color Matrix Set Display



⑪ Color Correction Set Display

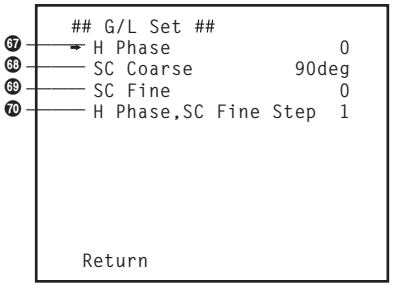




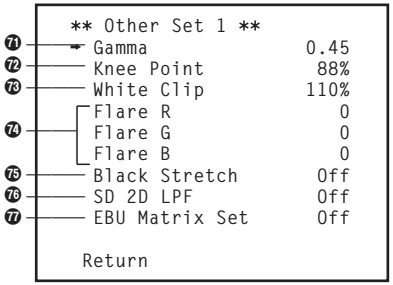


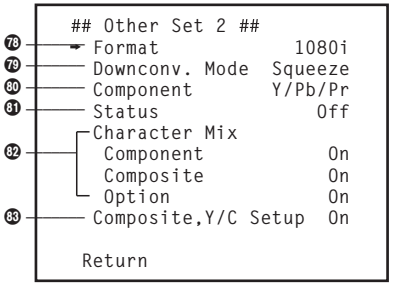
Menu item setting/changing (User Mode)

⑫ G/L Set Display



⑬ Other Set Display





- To return to the initial settings, refer to page 89.

Menu item setting/changing (User Mode)

■Description of the setting screen

⑥ Brightness Set

㉚ Video level adjustment
[Picture Level: –50 to +50]

Convergence level of AUTO IRIS, AUTO GAIN UP and ELC can be adjusted.

㉛ Detecting ratio adjustment
[Light PEAK/AVG: P50 to A50]

The ratio of AUTO IRIS, AUTO GAIN UP and ELC detected peak (P) to average (A) can be adjusted within a predetermined range.

㉜ Photometric measurement method setting
[Light Area: All, Center, Top Cut, BTM Cut, R/L Cut]

A photometric measurement method can be selected for AUTO IRIS, AUTO GAIN UP and ELC.

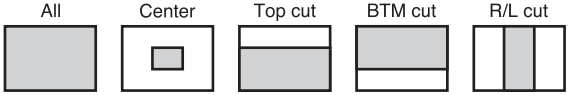
All: All the screen area is measured.

Center: The screen is measured mainly in the center area, about one-third of both the top and bottom and one-third of both the right and left portions of the screen are excluded from measurement.

Top Cut: About one-third of the top portion of the screen is excluded from measurement.

BTM Cut: About one-third of the bottom portion of the screen is excluded from measurement.

R/L Cut: About one-third of both the right and left portions of the screen are excluded from measurement.



㉝ Electronic shutter mode setting
[Shutter Mode: Step, S/Scan, ELC]

Step: Electronic shutter operates at the speed selected by the Electronic Shutter Step/ Synchro Scan Setting.

S/Scan: Electronic shutter operates at the speed selected in Electronic Shutter Step/Synchro Scan Setting.

ELC: Electronic shutter is controlled to automatically adjust the luminance.

Menu item setting/changing (User Mode)

㉞ Electronic shutter step/synchro scan setting [Step/Synchro: Off, 1/100 to 1/10000 (Step), 61.19 Hz to 1466 Hz (Synchro Scan)]

This setting is possible only when “Step” or “S/Scan” is selected in electronic shutter mode setting.

- When “Step” has been selected as the electronic shutter mode setting:

  Off: Electronic shutter is turned off.

  1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000: Electronic shutter operates at one of these speeds as selected.

- When “S/Scan” has been selected as the electronic shutter mode setting:

  Bar noise can be reduced by synchro-scan adjustment in shooting workstation scenes, for example.

Notes

- If the lens iris switch is at M (Manual), ELC may not function. Set the lens iris switch to A (Auto).
- Flickering may increase at ELC under fluorescent lights.

㉟ Gain setting [Gain: Auto, –6 dB to 18 dB]

Auto: The light quantity is adjusted automatically.

–6 dB to –1 dB:
This setting makes it possible to shoot at the optimal gain setting under conditions where the light quantity is high. When it is used, images with minimal noise can be shot but the dynamic range is reduced.

0 dB: 0 dB should be selected in normal cases.

1 dB to 18 dB:
Use this range if sufficient video output cannot be obtained even when the lens iris is opened in shooting dark scenes.

㊱ AGC maximum gain setting [AGC Max Gain: 6 dB, 12 dB, 18 dB]

This is used to set the maximum gain up when “Auto” has been selected as the gain setting.

㊲ Black level setting [Pedestal: –150 to +150]

The black level (pedestal) of the luminance (Y) signal can be set.

Used in adjusting the black levels of two or more cameras.

Menu item setting/changing (User Mode)

⑦ Color Set

㊳ Chroma level adjustment
[Chroma Level: –3 to +3]

Chroma Level can be decreased or increased to any of three levels each.
The RGB signal cannot be adjusted.

㊴ White balance setting
[White Bal: ATW, AWB A, AWB B, 3200K, 5600K]

ATW: The white balance is automatically adjusted to the optimum position.
The white balance is tracked across an approximate color temperature range from 2000K to 10000K.

AWB A, AWB B:
Once the white balance is adjusted, it is no longer necessary to set the white balance again if you simply select AWB A or AWB B, provided that the camera is used under the same conditions.
Fine color adjustment can be made after AWB setting by R gain and B gain for the painting setting.

3200K: The white balance is adjusted to 3200K illumination.

5600K: The white balance is adjusted to 5600K illumination.

㊵ ATW speed setting
[ATW Speed: Slow2, Slow1, Mid, Fast1, Fast2]

ATW Speed can be set.

㊶ Painting setting
[Painting, R Gain, B Gain, R Pedestal, B Pedestal: –150 to +150]

R Gain, B Gain: Fine adjustment of the white balance can be made after AWB setting when AWB A or AWB B is selected in white balance setting.
The set value returns to ±0 after AWB setting.

R Pedestal, B Pedestal:
Fine adjustment of the black balance can be made after ABB setting.
The set value returns to ±0 after ABB setting.

Menu item setting/changing (User Mode)

⑧ HD (1080i, 720p) Detail Set

㊷ Detail level setting [Detail: Off, Low, High]
Contour correction quantity can be selected.
Detail settings made using the horizontal/vertical detail level high/low setting.

㊸ Horizontal detail level high setting
[H Detail Level H: L+1 to +63]
㊹ Vertical detail level high setting
[V Detail Level H: L+1 to +31]
㊺ Horizontal detail level low setting
[H Detail Level L: 0 to H–1]
㊻ Vertical detail level low setting
[V Detail Level L: 0 to H–1]
Detail level can be set in horizontal (H) and vertical (V) directions with the detail level setting at “High” or “Low”. Whichever the direction, H or V, the set level at “High” must be at least one position higher than that at “Low”.

㊼ Detail band setting [Detail Band: 1 to 5]
A contour correction band can be set with the detail level setting at “High” or “Low”.
The higher setting, the finer will be the detail.

㊽ Noise suppress level setting
[Noise Suppress: 1 to 10]
Screen noise can be reduced with the detail level setting at “High” or “Low”.
If the noise suppress level is set too high, a fine object will be reproduced less sharply.

㊾ Level dependent level setting
[Level Dependent: 0 % to 25 %]
Screen noise due to the detail of dark parts of an object can be reduced.
If level dependent level is set too high, however, hair, for example, will be reproduced less sharply.

㊿ Dark detail level setting
[Dark Detail: 0 to 5]
The contours of the darker portions of an object can be emphasized.
This setting is possible only when the level dependent level setting is set to “0 %”.

51 Chroma detail level setting
[Chroma Detail: 0 to 15]
The contours of high-hue portions of an object can be emphasized.

52 Clean DNR setting
[Clean DNR: Off, Low, High]
The noise reduction effect to be provided by the clean DNR can be selected.

53 Flesh noise suppress level setting
[Flesh Noise Sup.: Off, Low, High]
Flesh noise is suppressed in two steps when the detail level setting is at “High” or “Low”.

54 Precision detail level setting
[Precision Detail: Off, Low, High]
This setting is to narrow detail width and suppress detail glare.

Note

- ⑧ HD (1080i, 720p) detail settings are valid for the HD (1080i, 720p) format, but will also be valid for the SD (480i) format in some cases.

Menu item setting/changing (User Mode)

⑨ SD (480i) Detail Set

㊺ Detail level setting [Detail: Off, Low, High]
Contour correction quantity can be selected.
Detail settings made using the horizontal/vertical detail level high/low setting.

㊻ Horizontal detail level high setting
[H Detail Level H: L+1 to +63]
㊼ Vertical detail level high setting
[V Detail Level H: L+1 to +31]
㊽ Horizontal detail level low setting
[H Detail Level L: 0 to H–1]
㊾ Vertical detail level low setting
[V Detail Level L: 0 to H–1]
Detail level can be set in horizontal (H) and vertical (V) directions with the detail level setting at “High” or “Low”. Whichever the direction, H or V, the set level at “High” must be at least one position higher than that at “Low”.

㊿ Detail band setting [Detail Band: 1 to 5]
A contour correction band can be set with the detail level setting at “High” or “Low”.
The higher setting, the finer will be the detail.

(61) Noise suppress level setting
[Noise Suppress: 1 to 10]
Screen noise can be reduced with the detail level setting at “High” or “Low”.
If the noise suppress level is set too high, a fine object will be reproduced less sharply.

(62) Level dependent level setting
[Level Dependent: 0 % to 25 %]
Screen noise due to the detail of dark parts of an object can be reduced.
If level dependent level is set too high, however, hair, for example, will be reproduced less sharply.

Menu item setting/changing (User Mode)

㊸ Dark detail level setting
[Dark Detail: 0 to 5]
The contours of the darker portions of an object can be emphasized.
This setting is possible only when the level dependent level setting is set to “0 %”.

㊹ Chroma detail level setting
[Chroma Detail: 0 to 15]
The contours of high-hue portions of an object can be emphasized.

㊺ Clean DNR setting
[Clean DNR: Off, Low, High]
The noise reduction effect to be provided by the clean DNR can be selected.

㊻ Flesh noise suppress level setting
[Flesh Noise Sup.: Off, Low, High]
Flesh noise is suppressed in two steps when the detail level setting is at “High” or “Low”.

Note

- The setting for the ⑨ SD (480i) Detail Set item takes effect for the SD (480i) format.

⑩ Color Matrix Set

Linear Matrix R-G
[Matrix(R-G): –31 to +31]
This is used to adjust the color in the R-G axis direction.

Linear Matrix R-B
[Matrix(R-B): –31 to +31]
This is used to adjust the color in the R-B axis direction.

Linear Matrix G-R
[Matrix(G-R): –31 to +31]
This is used to adjust the color in the G-R axis direction.

Linear Matrix G-B
[Matrix(G-B): –31 to +31]
This is used to adjust the color in the G-B axis direction.

Linear Matrix B-G
[Matrix(B-G): –31 to +31]
This is used to adjust the color in the B-G axis direction.

Linear Matrix B-R
[Matrix(B-R): –31 to +31]
This is used to adjust the color in the B-R axis direction.

Menu item setting/changing (User Mode)

⑪ Color Correction Set

B_Mg Gain [–127 to +127]
Increases or decreases the intermediate color between blue and magenta.
B_Mg Phase [–127 to +127]
Varies the hue of the intermediate color between blue and magenta.
Mg Gain [–127 to +127]
Increases or decreases the magenta.
Mg Phase [–127 to +127]
Varies the hue of the magenta.
Mg_R Gain [–127 to +127]
Increases or decreases the intermediate color between magenta and red.
Mg_R Phase [–127 to +127]
Varies the hue of the intermediate color between magenta and red.
R Gain [–127 to +127]
Increases or decreases the red.
R Phase [–127 to +127]
Varies the hue of the red.
R_Yl Gain [–127 to +127]
Increases or decreases the intermediate color between red and yellow.
R_Yl Phase [–127 to +127]
Varies the hue of the intermediate color between red and yellow.
Yl Gain [–127 to +127]
Increases or decreases the yellow.
Yl Phase [–127 to +127]
Varies the hue of the yellow.
Yl_G Gain [–127 to +127]
Increases or decreases the intermediate color between yellow and green.
Yl_G Phase [–127 to +127]
Varies the hue of the intermediate color between yellow and green.
G Gain [–127 to +127]
Increases or decreases the green.
G Phase [–127 to +127]
Varies the hue of the green.
G_Cy Gain [–127 to +127]
Increases or decreases the intermediate color between green and cyan.
G_Cy Phase [–127 to +127]
Varies the hue of the intermediate color between green and cyan.
Cy Gain [–127 to +127]
Increases or decreases the cyan.
Cy Phase [–127 to +127]
Varies the hue of the cyan.
Cy_B Gain [–127 to +127]
Increases or decreases the intermediate color between cyan and blue.
Cy_B Phase [–127 to +127]
Varies the hue of the intermediate color between cyan and blue.
B Gain [–127 to +127]
Increases or decreases the blue.
B Phase [–127 to +127]
Varies the hue of the blue.

Menu item setting/changing (User Mode)

⑫ G/L Set

⑰ Horizontal phase adjustment
[H Phase: –206 to +49]

Horizontal phase can be adjusted when a genlock signal is supplied.

⑱ Subcarrier phase coarse adjustment
[SC Coarse: 0deg, 45deg, 90deg, 135deg, 180deg, 225deg, 270deg, 315deg]

Coarse adjustment of subcarrier phase can be made when a genlock signal is supplied.
Valid for the composite and Y/C signals of the SD format.

⑲ Subcarrier phase fine adjustment
[SC Fine: –127 to +127]

Fine adjustment of subcarrier phase can be made when a genlock signal is supplied.
Valid for the composite and Y/C signals of the SD format.

⑳ Horizontal phase and color phase fine adjustment
[H Phase, SC Fine Step: 1 to 10]

The level of horizontal phase adjustment and color phase fine adjustment can be selected simultaneously.

⑬ Other Set

㉑ Gamma level setting [Gamma: 0.35 to 0.55]
Gamma correction level can be set.

㉒ Knee level setting
[Knee Point: 88 % to 98 %, Dynamic]

88 % to 98 %: The level of video signals subject to knee (knee point) can be set.

Dynamic: Knee level is automatically adjusted according to the light quantity.

㉓ White clip level setting
[White Clip: 95 % to 110 %]

The peak level of video signals to be white-clipped can be set.

Note

- When the white clip level setting is set to 100 % or more in RGB or Y/Pb/Pr signals, the white clip level is fixed to 100 %.

Menu item setting/changing (User Mode)

⑭ Flare correction level setting [Flare R/G/B: 0 to 100]
Flare correction level can be adjusted.

⑮ Black stretch setting [Black Stretch: Off, On]
Black stretch to correct the suppression of black portions at low luminance can be set to OFF or ON.

⑯ SD (480i) 2D LPF [SD 2D LPF: Off, Low, High]
This enables the cross color of the composite and Y/C signal output to be reduced by two levels.
The setting of this item has no effect on the HD (1080i or 720p) format, RGB, Y/Pb/Pr or SDI signals.

⑰ EBU matrix setting [EBU Matrix Set: Off, On]
Off: This reverts settings of the color matrix, color correction and chroma level adjustment back to respective levels prior to the EBU matrix setting.
On: This enables the EBU matrix setting to be selected for the color matrix, chroma level adjustment and color correction items.
(Refer to “Setting the EBU matrix” on page 88.)

⑱ Video output format setting [Format: 480i, 720p, 1080i]
This enables the video output format to be selected.
(Refer to “Changing the format settings” on page 86.)

⑲ Down-conversion mode selection [Downconv. Mode: Squeeze, Sidecut]
Squeeze or Sidecut can be selected as the down-conversion mode for the SD (480i) format.

Menu item setting/changing (User Mode)

⑧⓪ Component output setting
[Component: RGB, Y/Pb/Pr, Y/C]

This enables RGB, Y/Pb/Pr or Y/C to be selected as the component signals which are to be output from the I/F REMOTE connector.
Y/C cannot be selected when “1080i” or “720p” has been selected as the “Video output format (Format)” setting.
If “1080i” or “720p” has been selected using the video output format selection function while Y/C is selected, the component output will be changed to Y/Pb/Pr.
(Refer to “Changing the component setting” on page 87.)

⑧① AWB/ABB operation status display ON/OFF selection
[Status: Off, On]

(Factory setting: Off)
Using this item, the display of the operation status for AWB (auto white balance adjustment) or ABB (auto black balance adjustment) is set to ON or OFF.
When AWB or ABB is executed with this item set to “On”, the following is displayed.

AWB ACTIVE: This is displayed while AWB is being executed.
AWB OK: This is displayed for 3 seconds after AWB was completed successfully.
AWB NG: This is displayed for 3 seconds after AWB was not completed successfully. (AWB executed while ATW, 3200K, or 5600K is selected)
OUT RANGE RB: This is displayed for 3 seconds after AWB was not completed successfully. (A color that could not be adjusted is displayed with RB)
HIGH LIGHT NG: This is displayed for 3 seconds when adjustment is not possible because the light quantity is too high.
LOW LIGHT NG: This is displayed for 3 seconds when adjustment is not possible because the light quantity is too low.
ABB ACTIVE: This is displayed while ABB is being executed.
ABB OK: This is displayed for 3 seconds after ABB was completed successfully.
IRIS CONTROL NG: This is displayed for 3 seconds when the iris cannot be controlled by ABB.
OUT RANGE RGB: This is displayed for 3 seconds after ABB was not completed successfully. (A color that could not be adjusted is displayed with RGB)

Menu item setting/changing (User Mode)

㉜ Character output selection [Character Mix Component: Off, On / Composite: Off, On / Option: Off, On]

This is used to select how the camera menu, status and other characters are to be output (Off or On).

Component: How the characters to the component signals (RGB, Y/Pb/Pr) are output is selected.

Composite: Character output method for composite signals and Y/C signals is selected.

Option: How the characters to the optional card are output is selected.

Notes

- When the menu is started within 1 minute or so after the camera has been turned on, the characters are displayed in all the outputs.
- The selection of Option as the Character Mix setting takes effect when an optional card has been installed.

㉝ Composite, Y/C setup selection [Composite, Y/C Setup: Off, On]

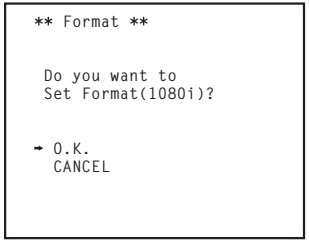
The composite signals and the color bar setup level of Y/C signal output (Off: 0.0 IRE or On: 7.5 IRE) can be selected.

Changing the settings

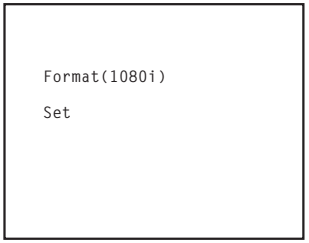
■Changing the format settings

A confirmation screen appears when the format setting is to be changed on the Other Set screen.

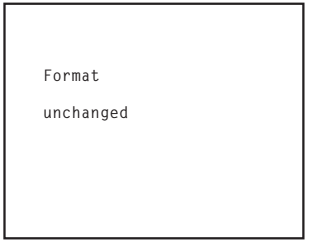
1. When the Format setting is changed on the Other Set screen and the ENTER/AWB switch is pressed, the “Format” sub menu screen such as the one shown below is displayed for about 10 seconds.



2. If O.K. is selected and the ENTER/AWB switch is pressed within about 10 seconds after the “Format” sub menu screen appeared, the setting is changed, a screen such as the one shown below is displayed, and operation returns to the main menu.



3. If CANCEL is selected and the ENTER/AWB switch is pressed after the “Format” sub menu screen appeared or if O.K. is selected and the ENTER/AWB switch is not pressed within about 10 seconds after the “Format” sub menu screen appeared, a screen such as the one shown below is displayed, operation returns to the main menu without changing the setting.

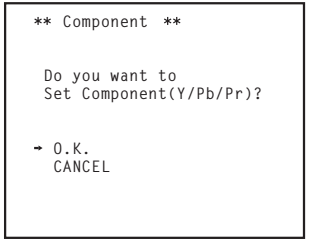


Changing the settings

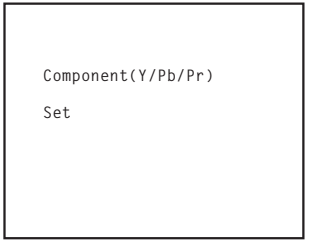
■Changing the component setting

A confirmation screen appears when the component setting is to be changed on the Other Set screen.

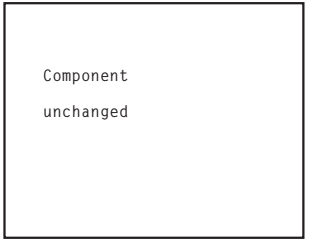
1. When the Component setting is changed on the Other Set screen and the ENTER/AWB switch is pressed, the “Component” sub menu screen such as the one shown below is displayed for about 10 seconds.



2. If O.K. is selected and the ENTER/AWB switch is pressed within about 10 seconds after the “Component” sub menu screen appeared, the setting is changed, a screen such as the one shown below is displayed, and operation returns to the main menu.



3. If CANCEL is selected and the ENTER/AWB switch is pressed after the “Component” sub menu screen appeared or if O.K. is selected and the ENTER/AWB switch is not pressed within about 10 seconds after the “Component” sub menu screen appeared, a screen such as the one shown below is displayed, operation returns to the main menu without changing the setting.

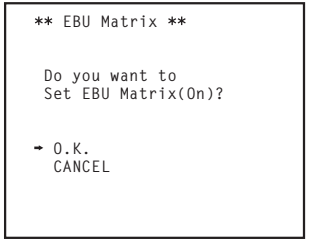


Changing the settings

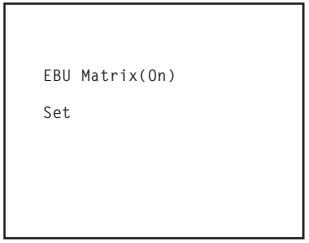
■Setting the EBU matrix

A confirmation screen appears when the EBU matrix is to be set on the Other Set screen.

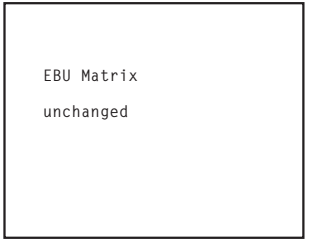
1. When the EBU matrix setting is changed on the Other Set screen and the ENTER/AWB switch is pressed, the “EBU Matrix” sub menu screen such as the one shown below is displayed for about 10 seconds.



2. If O.K. is selected and the ENTER/AWB switch is pressed within about 10 seconds after the “EBU Matrix” sub menu screen appeared, the EBU matrix is set, a screen such as the one shown below is displayed, and operation returns to the main menu.



3. If CANCEL is selected and the ENTER/AWB switch is pressed after the “EBU Matrix” sub menu screen appeared or if O.K. is selected and the ENTER/AWB switch is not pressed within about 10 seconds after the “EBU Matrix” sub menu screen appeared, a screen such as the one shown below is displayed, operation returns to the main menu without setting the EBU matrix.

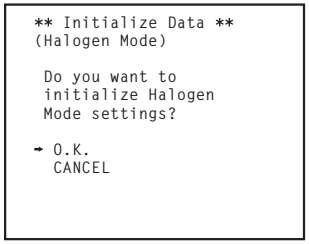


Setting to initial set (Factory presets)

■Setting to initial set

In case of the wrong setting in any use mode, take the following steps to return to the initial settings.
When initialization is performed, all of the camera menu's setting values except for Format and Component will return to factory presets.

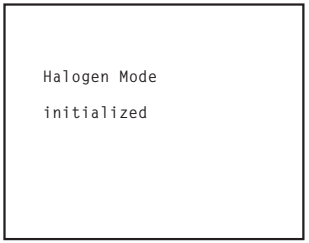
1. Select "Initialize Data" on the main menu screen of each Use Mode.
   Press the ENTER/AWB switch, then "Initialize Data" screen below is displayed for about 10 seconds.



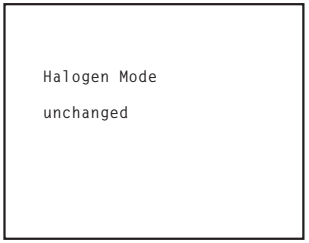
Note

- When initialization is performed, all values set prior to initialization will be cleared, and they cannot be restored.

2. Select O.K. and press the ENTER/AWB switch within about 10 seconds to return to the initial settings, the existing settings are initialized, the screen below is displayed, and the camera returns to main menu.



3. If the CANCEL is selected and ENTER/AWB switch is pressed, or if the O.K. is selected and the ENTER/AWB switch is not pressed, within about 10 seconds, the screen below is displayed, and the camera returns to main menu, and the existing settings are not initialized.



Setting to initial set (Factory presets)

■Initial settings of the setting items (Factory preset values)

● Halogen, Fluorescent, Outdoor Mode

	Item	Halogen	Fluorescent	Outdoor
Brightness Set	Picture Level	0	0	0
	Light PEAK/AVG	0	0	0
	Light Area	Top Cut	Top Cut	Top Cut
	Shutter Mode	Step	Step	ELC
	Step/Synchro	Off	Off	---
	Gain	0dB	0dB	Auto
	AGC Max Gain	---	---	18dB
	Pedestal	0	0	–40
Color Set	Chroma Level	0	0	0
	Flesh Tone	0	0	0
	White Bal	AWB A	AWB A	ATW
	ATW Speed	---	---	Mid
Sharpness(DTL) Set	DTL Select	Sharpness	Sharpness	Sharpness
	Level	High	High	High
	Noise Suppress	Off	Off	Off
	Clean DNR	Off	Off	Off
	Flesh Noise Sup.	Off	Off	Off
G/L Set* (*Items common to all scenes)	H Phase	0	0	0
	SC Coarse	90deg	90deg	90deg
	SC Fine	0	0	0
	H Phase,SC Fine Step	1	1	1
Other Set 1	Contrast(Gamma)	Mid	Mid	Mid
	SD 2D LPF	Off	Off	Off
Other Set 2* (*Items common to all scenes)	Format	1080i	1080i	1080i
	Downconv. Mode	Squeeze	Squeeze	Squeeze
	Component	Y/Pb/Pr	Y/Pb/Pr	Y/Pb/Pr
	Status	Off	Off	Off
	Character Mix			
	Component	On	On	On
	Composite	On	On	On
	Option	On	On	On
	Composite,Y/C Setup	On	On	On

Setting to initial set (Factory presets)

● User Mode

	Item	User
Brightness Set	Picture Level	0
	Light PEAK/AVG	0
	Light Area	Top Cut
	Shutter Mode	Step
	Step/Synchro	Off
	Gain	0dB
	AGC Max Gain	---
	Pedestal	0
Color Set	Chroma Level	+2
	White Bal	AWB A
	ATW Speed	---
	Painting	
	R Gain	0
	B Gain	0
	R Pedestal	0
	B Pedestal	0
HD Detail Set 1/2	Detail	High
	H Detail Level H	30
	V Detail Level H	23
	H Detail Level L	18
	V Detail Level L	15
	Detail Band	4
	Noise Suppress	5
	Level Dependent	10%
	Dark Detail	0
HD Detail Set 2/2	Chroma Detail	0
	Clean DNR	Off
	Flesh Noise Sup.	Off
	Precision Detail	Off

	Item	User
SD Detail Set 1/2	Detail	High
	H Detail Level H	16
	V Detail Level H	3
	H Detail Level L	13
	V Detail Level L	2
	Detail Band	4
	Noise Suppress	3
	Level Dependent	10%
	Dark Detail	0
SD Detail Set 2/2	Chroma Detail	0
	Clean DNR	Off
	Flesh Noise Sup.	Off
Color Matrix Set	Matrix(R-G)	0
	Matrix(R-B)	0
	Matrix(G-R)	0
	Matrix(G-B)	0
	Matrix(B-G)	0
	Matrix(B-R)	0
Color Correction 1/3	B_Mg Gain	0
	B_Mg Phase	0
	Mg Gain	+27
	Mg Phase	0
	Mg_R Gain	0
	Mg_R Phase	0
	R Gain	+15
	R Phase	0

Setting to initial set (Factory presets)

	Item	User
Color Correction 2/3	R_YI Gain	0
	R_YI Phase	0
	YI Gain	+18
	YI Phase	+6
	YI_G Gain	0
	YI_G Phase	0
	G Gain	+30
	G Phase	+112
Color Correction 3/3	G_Cy Gain	0
	G_Cy Phase	0
	Cy Gain	+44
	Cy Phase	–15
	Cy_B Gain	0
	Cy_B Phase	0
	B Gain	–20
	B Phase	+36
G/L Set* (*Items common to all scenes)	H Phase	0
	SC Coarse	90deg
	SC Fine	0
	H Phase,SC Fine Step	1
Other Set 1	Gamma	0.45
	Knee Point	88%
	White Clip	110%
	Flare R	0
	Flare G	0
	Flare B	0
	Black Stretch	Off
	SD 2D LPF	Off
	EBU Matrix Set	Off

	Item	User
Other Set 2* (*Items common to all scenes)	Format	1080i
	Downconv. Mode	Squeeze
	Component	Y/Pb/Pr
	Status	Off
	Character Mix	
	Component	On
	Composite	On
	Option	On
	Composite,Y/C Setup	On

Troubleshooting

• Operation

Symptom	Cause and remedial action	Reference pages
No power	• **When the pan-tilt head is not being used** → Are the DC cable provided with the unit and the designated AC adapter connected? → Has the POWER switch of the AC adapter been set to the ON position?	P.18, P.24 to 26
	• **When the pan-tilt head and controller are being used** → Has all the equipment been connected properly? → Has the power of the pan-tilt head and controller been turned on? → Refer to the Operating Instructions of the pan-tilt head or the controller.	P.27 to 38
Cannot operate using the controller	• **Has the unit's power been turned on?** → If the unit's power indicator LED is off, it means that no power is being supplied to the unit.	P.18
	• **Is the unit connected to the pan-tilt head and controller properly?** → Has the power of the pan-tilt head and controller been turned on? → Refer to the Operating Instructions of the pan-tilt head or the controller.	P.17, P.24 to 26
	• **Has the unit or the system connected to the unit been selected correctly using the CONTROL button on the controller?** → Refer to the Operating Instructions of the controller.	P.39 to 48

Troubleshooting

Symptom	Cause and remedial action	Reference pages
Cannot operate using the controller	• **It may be necessary to upgrade the version of the controller so that the controller will support the unit.** → Consult with your dealer.	—
	• **When the AW-RP400 pan-tilt control panel and the AW-CB400 remote operation panel are used in combination, a setting that prohibits the operation of one of these units may have been selected.** → Refer to the Operating Instructions of the controller.	—
Cannot operate the lens	• **Check that the unit and lens have been connected properly.** • **Check that the iris selector switch on the lens is set to AUTO.**	P.19, P.52
	• **Is the designated lens being used?**	P.19
Cannot display the menus	• **Has OFF been set for the character output selection of the output connected to the monitor?** → Check the character output selection. Even if OFF is selected, characters are displayed in all outputs for up to one minute after operation has been started.	P.69, P.85
	• **When the pan-tilt head and controller are being used** → Is the unit connected to the pan-tilt head and controller properly? → Refer to the Operating Instructions of the pan-tilt head or the controller.	P.17, P.24 to 26

Troubleshooting

• Video

Symptom	Cause and remedial action	Reference pages
The camera's images are not displayed or they are disturbed	• **Is the unit connected to the pan-tilt head and controller properly?** → Refer to the Operating Instructions of the pan-tilt head or the controller.	P.27 to 38
	• **Has the power of the connected equipment been turned on?** → Refer to the Operating Instructions of the pan-tilt head or the controller.	—
	• **In the case of a system configuration (using a switcher or other unit) with which the images are also switched when the camera to be operated is selected, has the unit — rather than another camera — been selected?**	—
	• **Has the video output been selected properly?** → Check the video output format, component output selection, and other settings.	P.67 to 68 P.83 to 84
	• **Is the camera being used in conditions under which its use is prohibited?** → Check the precautions for installation and the camera's specifications.	P.12, P.99
	• **When the genlock function is being used** → Check that the genlock sync signals are being input properly. → Check that the horizontal phase and color phase have been set correctly.	P.26, P.57 to 59

Troubleshooting

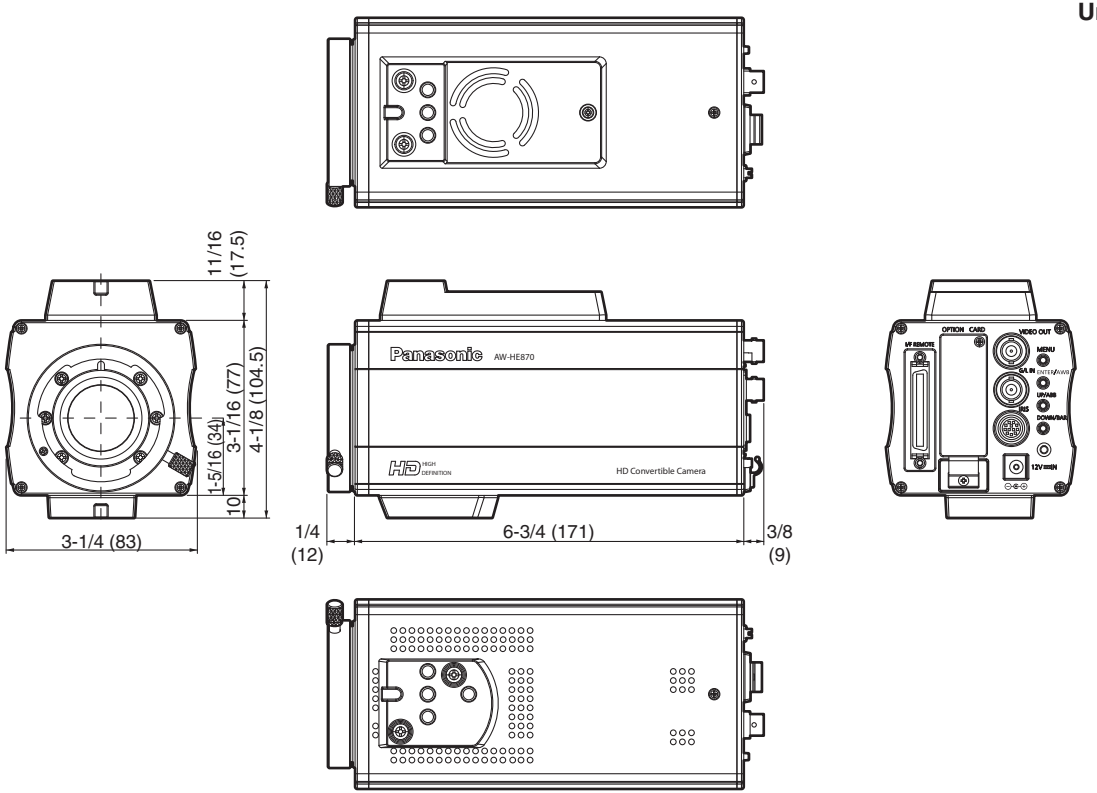
Symptom	Cause and remedial action	Reference pages
Something is wrong with the coloring of the pictures	• **Have the white balance and black balance been adjusted?** → Adjust the white balance and black balance. → The automatic tracking white balance setting (ATW) function may also be selected.	P.53 to 55
	• **Have the color matrix settings or color correction settings been changed?** → Review the color matrix settings or color correction settings.	P.80 to 81, P.89
	• **When the genlock function is being used by the composite video signal output** → Check that the horizontal phase and color phase have been set correctly.	P.26, P.57 to 59
The pictures are too light or too dark	• **When the controller is being used** → Either set the iris to auto or set it to manual and adjust the iris manually.	P.39 to 48
	• **Check the connections and terminations of the video cables.**	—
	• **Signal attenuation may cause the images to become dark if the video cables are too long. Connect a commercially available cable compensator.**	—
	• **Check that the unit and lens have been connected properly.** • **Check that the iris selector switch on the lens is set to AUTO.**	P.19, P.52
	• **Is the designated lens being used?**	P.19

Troubleshooting

Symptom	Cause and remedial action	Reference pages
Multiple color bands (color bars) are displayed	• **Switch to the camera picture.**	P.16, P.39 to 48
The controller's H/F and OPTION indicators flash **The OPERATE LED on the CB400 flashes**	• **Restart the unit, and check that "Fan Error" is displayed.** → The cooling fan inside the unit has reached the end of its service life or it has failed. If the camera would be kept using with displaying "Fan Error", it may cause malfunctioning. Ask your dealer to replace it.	P.9, P.39 to 48
"Fan Error" is displayed when operation is started	• **The cooling fan inside the unit has reached the end of its service life or it has failed.** **If the camera would be kept using with displaying "Fan Error", it may cause malfunctioning. Ask your dealer to replace it.** **"Fan Error" is displayed in all video outputs regardless of the AWB/ABB operation status display setting or character output selection. To clear the "Fan Error" display, display the menu screen and close the screen.**	P.9
The AWC or ABC button lights when the controller's AWC or ABC button is pressed	• **The AWB or ABB adjustment was not completed successfully.** **Review the shooting conditions, and try again.** → The reason why the adjustment was not completed successfully can be checked when the AWB/ABB operation status display (Status) is set to ON.	P.53, P.54 P.55, P.68

Appearance

Unit: inch (mm)



Specifications

Source voltage: DC 12 V
Power consumption: 18.5 W

indicates safety information.

Optical system: Dichroic prism optical system, F1.4

Pickup device: 2/3″ Interline wide CCD

Synchronization system: Internal synchronization, External synchronization: BB (BNC × 1, Dsub 50P × 1)

Video output:

<HD format>		
Y/Pb/Pr	Y: 1.0 Vp-p/75 Ω Pb/Pr: 0.7 Vp-p/75 Ω (Dsub 50P × 1)	Switched by menu
RGB	1.0 Vp-p/75 Ω (Dsub 50P × 1)	
<SD format>		
VIDEO OUT	1.0 Vp-p/75 Ω (BNC × 1, Dsub 50P × 1)	Continuous output
Y/C	Y: 1.0 Vp-p/75 Ω C: 0.286 Vp-p/75 Ω (burst) (Dsub 50P × 1)	
Y/Pb/Pr	Y: 1.0 Vp-p/75 Ω Pb/Pr: 0.7 Vp-p/75 Ω (Dsub 50P × 1)	Switched by menu
RGB	1.0 Vp-p/75 Ω (Dsub 50P × 1)	
Y/C	Y: 1.0 Vp-p/75 Ω C: 0.286 Vp-p/75 Ω (burst) (Dsub 50P × 1)	

Standard illumination, color temperature:
2,000 lx (F10, 3200K)

Registration: 0.05 % (Entire screen, excluding effects of lens)

Geometric distortion: 0 % (Entire screen, excluding effects of lens)

Contour correction: Horizontal, vertical (2H)

Specifications

White balance:	AWB A, AWB B (R/B painting), ATW, 3200K/5600K preset
Black balance:	Auto (R/B painting)
Chroma amount variability:	7 levels variability
Encoding system:	Y, R-Y, B-Y
Gain selection:	–6 to 18 dB in step, AGC
Electronic shutter speed:	1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, ELC, Synchro scan (61.19 Hz to 1466 Hz)
Color bars:	SMPTE
Video output format setting:	480i, 720p, 1080i
Lens mount:	2/3″ bayonet mount
Lens diaphragm:	Auto, Manual (manual available only when using the remote control)
Selectors:	MENU ENTER/AWB (AWB: when menu screen is not displayed) UP/ABB (ABB: when menu screen is not displayed) DOWN/BAR (BAR: when menu screen is not displayed)
Input/Output connectors:	VIDEO OUT: BNC connector G/L IN: BNC connector IRIS: 12P round connector DC 12 V IN: DC connector I/F REMOTE: 50P Dsub connector
Indicator:	Green LED lights: POWER ON

Specifications

Allowable temperature ranges:	For storage:	–4 °F to 140 °F (–20 °C to +60 °C)
	For guaranteeing performance:	41 °F to 95 °F (+5 °C to +35 °C)
	For guaranteeing operation:	14 °F to 113 °F (–10 °C to +45 °C) [The unit must be warmed up for at least 30 minutes if the temperature is 32 °F (0 °C) or below.]
Ambient operating humidity:	For storage:	20 % to 90 %
	For guaranteeing operation:	20 % to 90 %
Dimensions (W × H × D):	3-1/4″ × 4-1/8″ × 7-9/16″ (83 × 104.5 × 192 mm) [excluding protrusions]	
Weight:	Approx. 2.65 lbs. (1.2 kg)	

Weight and dimensions indicated are approximate.
Specifications are subject to change without notice.

Memo

Memo

Panasonic®

PANASONIC BROADCAST & TELEVISION SYSTEMS COMPANY
UNIT COMPANY OF PANASONIC CORPORATION OF NORTH AMERICA

Headquarters:
3 Panasonic Way 4E-7, Secaucus, NJ 07094 (201) 348-5300

EASTERN ZONE:
3 Panasonic Way 4E-7, Secaucus, NJ 07094 (201) 348-7196

WESTERN ZONE:
3330 Cahuenga Blvd. West, Los Angeles, CA 90068 (323) 438-3608

Government office:
(201) 348-7587

Broadcast PARTS INFORMATION & ORDERING:
9:00 a.m. – 5:00 p.m. (PST) (800) 334-4881/24 Hr. Fax (800) 334-4880
Emergency after hour parts orders (800) 334-4881

TECHNICAL SUPPORT:
Emergency 24 Hour Service (800) 222-0741

Panasonic Canada Inc.
5770 Ambler Drive, Mississauga, Ontario L4W 2T3 (905) 624-5010

Corporativo Panasonic de México
Moras No. 313, Col. Tlacoquemecatl del Valle, Del. Benito Juárez, México, Distrito Federal, C.P. 03200. 01 (55) 54 88 10 00

Panasonic Puerto Rico, Inc.
AVE 65de Inf, Km 9.5 Carolina, PR 00985 (787) 750-4300

Printed in Japan