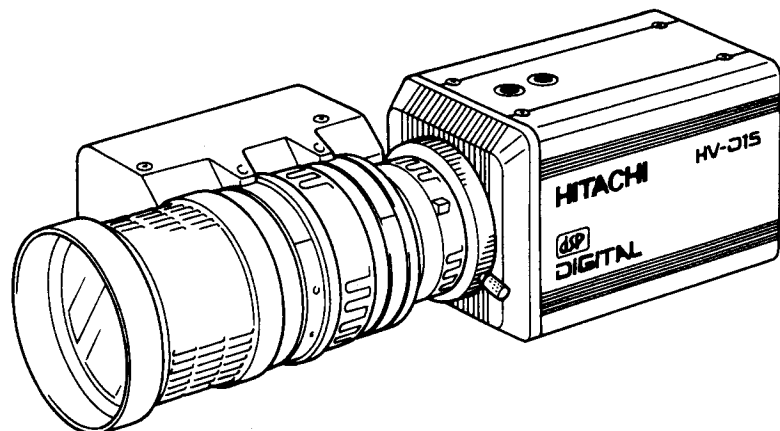


MODEL HV-D15

3-CCD Color Camera

OPERATION MANUAL



Please read this operation manual carefully for proper operation, and keep it for future reference.

Note: The model and serial numbers of your product are important for you to keep for your convenience and protection. These numbers appear on the nameplate located on the bottom of the product. Please record these numbers in the spaces provided below, and retain this manual for future reference.

Model No. _____ **Serial No.** _____

Table of contents

- IMPORTANT SAFETY INSTRUCTIONS A
- IMPORTANT NOTICE..... J
- Table of contents K
- Standard composition 1
- Overview 1
- Features 1
- Notes for users 2
 - Notes for safety 2
 - Operating considerations 2
 - Phenomena inherent to CCD imaging device 3
- Name and function each section 4
- Installation of lens 5
- Adjustment of lens back focus 6
- Camera mounting 6
- Typical system configurations 7
- Menu screen operation 10
 - Menu Structure 10
 - MAIN MENU 12
 - SUB MENU 1 14
 - SUB MENU 2 16
 - ALC 17
 - SPECIAL SET 18
 - LENS 19
 - IRIS GATE 20
 - WHITE GATE 20
 - LEVEL 20
 - MASKING 21
 - OUTPUT/SYNC 22
 - ID/TITLE 23
 - DTL 24
- Application file 25
- How to Attain Better images 27
 - Black Balance Adjustment 27
 - White Balance Adjustment 28
 - Real time Auto White 29
 - Auto Shading Correction 29
 - ALC (Auto level control) 29
 - Lock scan mode shutter speed setting 30
 - Long-Time Store Mode 31
- When used by connecting a remote control box R.C-C10 32
- Function Selection by internal Switch Setting 33
- Connectors 33
- Specifications 35
- Input/Output Signals 37
- Major accessories 38
- Dimensions 39

● How to Attain Better images	27
Black Balance Adjustment	27
White Balance Adjustment	28
Real time Auto White	29
Auto Shading Correction	29
ALC (Auto level control)	29
Lock scan mode shutter speed setting	30
Long-Time Store Mode	31
● When used by connecting a remote control box RC-C10	32
● Function Selection by internal Switch Setting	33
● Connectors	33
● Specifications	35
● Input/Output Signals	37
● Major accessories	38
● Dimensions	39

Standard composition

Check when unpacking.

Camera, HV-D15	1
Lens mount cap	1
Power plug, RM12BPG-3S (JMR0152*)	1
Remote plug, HR10A-7P-4P (01) (JMH2011*)	1
Operation Manual	1
Function labels for RC-C10 Remote Control Box	1

* Part code

Overview

The Hitachi HV-D15 is an advanced color camera utilizing three 1/2-inch 410,000 pixel CCDs and industry-leading digital technology that unitizes the circuits from processor to encoder into a single high performance chip. Extensive experience in broadcast and industrial color cameras is combined with independently developed digital processing technology to offer a broad repertoire of functions, together with picture quality and stability unattainable with conventional analog cameras. The result is a versatile camera ready to perform in a wide range of applications.

Features

- Unitized signal processor

The entire circuit from processor to encoder is organized into a single high density (0.5 μ m precision) LSI chip that conserves both space and power. Moreover, the 10 bit A/D converter and 13 bit signal processor provide high signal to noise ratio and wide dynamic range.

- High resolution

Precision matching of the 1/2-inch 410,000 pixel (470,000 PAL) CCDs with microlenses, plus digital double speed luminance signal processing achieve a horizontal resolution of 800 TV lines (luminance channel).

- Generous picture quality functions

Faithful color reproduction is enabled by the 6 vector independently variable masking. The auto knee and dynamic chroma functions provide high image reproducibility even with outdoor and other scenes with wide dynamic range.

Digital noise reduction further allows clear low noise pictures to be obtained even in the high gain mode.

- **Intelligent ALC (auto level control)**

The iris gate is comprised of a 7 segment light metering area with variable size and position, the automatic gain control (AGC) is computer chip driven, and the lens iris and auto electronic shutter are continuously controlled to enable responding to an extremely wide variation of lighting conditions. The ALC level can also be set.

- **Bidirectional data communication**

A personal computer can be directly connected (RS-232C) for remotely controlling the camera functions. The camera mode data are transferred back to the computer to enable detailed camera control. An ID number for each camera in the system can also be registered with the computer to thus allow a single personal computer to control multiple cameras.

Notes to users

Notes for safety

- Use this camera by 12V DC power supply.
- Use care that flammable things, water or metal do not enter the inside of the camera to avoid a possible failure or accident.
- Do not modify the camera or do not use the camera with the side cover removed. It may cause a failure or an accident.
- When rolls of thunder are heard near during shooting outside, stop using the camera. When using the camera in the rain, use care that the camera does not get wet with rain.
- If the camera should show any abnormality, be sure to turn off the camera and disconnect the power cord, then contact your nearest Hitachi Denshi service station.

Operating considerations

- **Supply voltage**
Check that the supply voltage is between 10.5V and 17V DC.
When the voltage drops, color may be changed and noise may be generated.
If the voltage exceeds 17V, the camera may be damaged.
- **Connector**
Prior to plugging or unplugging the connector, be sure to turn off the camera and hold the connector body itself.
- **Installing and storage**
Avoid installing or storing the camera in the following environments.
 - Environments exposed to direct sunlight, rain or snow
 - Environments where combustible or corrosive gas exists
 - Excessively warm or cold environment (Operating ambient temperature: -10 to 45°C)
 - Humid or dusty environment

- Place subjected to excessive vibration or shock
- Environment exposed to strong electric or magnetic field
- Do not aim the camera lens at the sun.
- Do not shoot strong light or a scene including strong light.
When such a scene is shot, vertical trailings will appear. However, this is not due to failure.
In case strong light enters the camera through the lens. Partial deterioration will result.

To obtain stable performance for long time

When the camera is used continuously for long time under high ambient temperature, the inside electrical parts become deteriorated, resulting in shortening its life.

To use the camera continuously for long time, the highest temperature must be below 40°C.

Cleaning

- Use a blower or a lens brush to remove dusts on the lens or the optical filter.
- Wipe dirt on the case off with dry soft cloth. If dirt is hardened, wipe them off with cloth moistened with neutral detergent liquid, wipe the cover with dry cloth.
- Do not use benzine, thinner, alcohol, liquid cleaner or spray-type cleaner.
- **Transportation**
To transport the camera, use the supplied carton or equivalent, and use care that the camera is not subjected to shock.

Phenomena Inherent to CCD imaging device

Following are the phenomena inherent to a CCD imaging device, and not defects

1) Smear and blooming

When strong light (lamp, fluorescent lamp, reflected light, etc.) is hot, pale bands are displayed vertically above and below the light.

In this case, change the angle of the camera so that such strong light does not enter the camera through the lens.

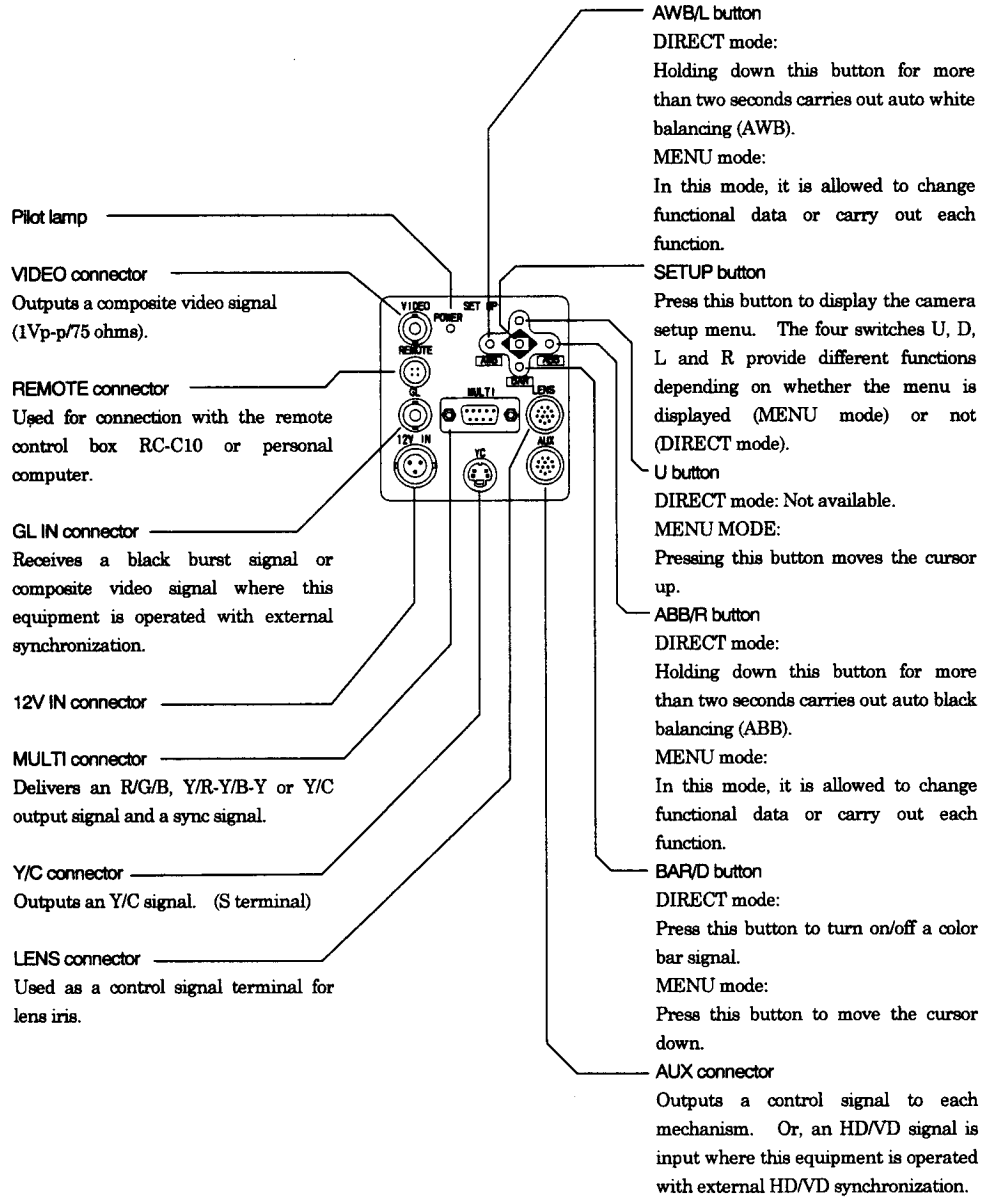
2) Fixed pattern noise

When the camera is operated in a high temperature, fixed pattern noise may appear on the entire screen.

3) Moire

When fine patterns are shot, moire may be displayed.

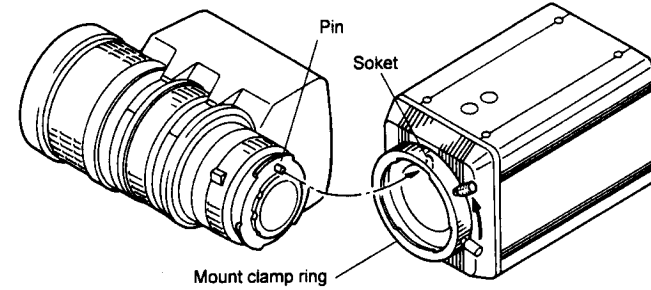
Names and Functions of Parts



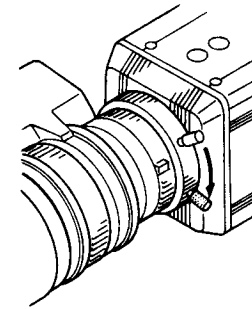
For details of each connector, refer to the description of connectors (p. 33).

Installation of lens

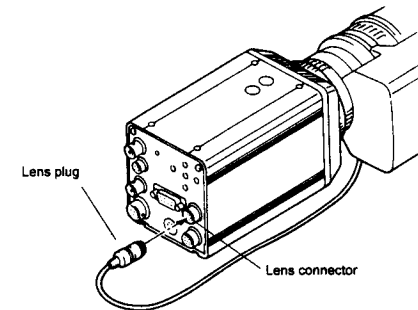
- Remove the mount clamp ring in the direction of arrow. Then, engage the pin of the lens with the recessed portion of the mount section, and insert the lens.



- Rotate the mount clamp ring in the direction of arrow, and fix the lens securely.



- Connect the lens connector to the LENS terminal.

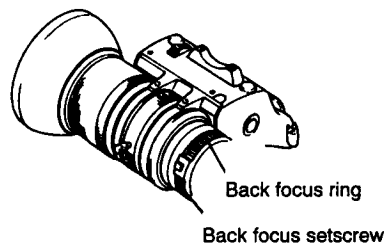


Note: Some lens cable may be too short to reach the camera lens connector. In this case, use the lens iris extension cable (see Page 38).

Adjustment of back focus

When a lens is not properly focused in the telephoto or the wide angle mode during zooming, adjust the lens according to the following steps.

1. Open the iris of the lens fully. Illuminate an object so that the proper video output level can be obtained with the iris of the lens fully open.
2. Loosen the screw fixing the back focus ring.
3. Turn the manual zoom lever to get the telephoto mode.
4. Shoot an object 3m or more away, then turn the manual zoom lever to focus the lens on the object.
5. Turn the manual zoom lever to get the wide angle mode.
6. Turn the back focus ring, then focus the camera on the same object as that in step 4. At this point, use care not to move the focus ring.
7. Repeat steps 3 to 6 until the lens is properly focused both in the telephoto and the wide angle modes.
8. Secure the screw fixing the back focus ring.



Camera mounting

The camera is provided with threaded screw holes at the top and bottom. These allow mounting to either a tripod or a mounting bracket.

Screw type

U 1/4-20

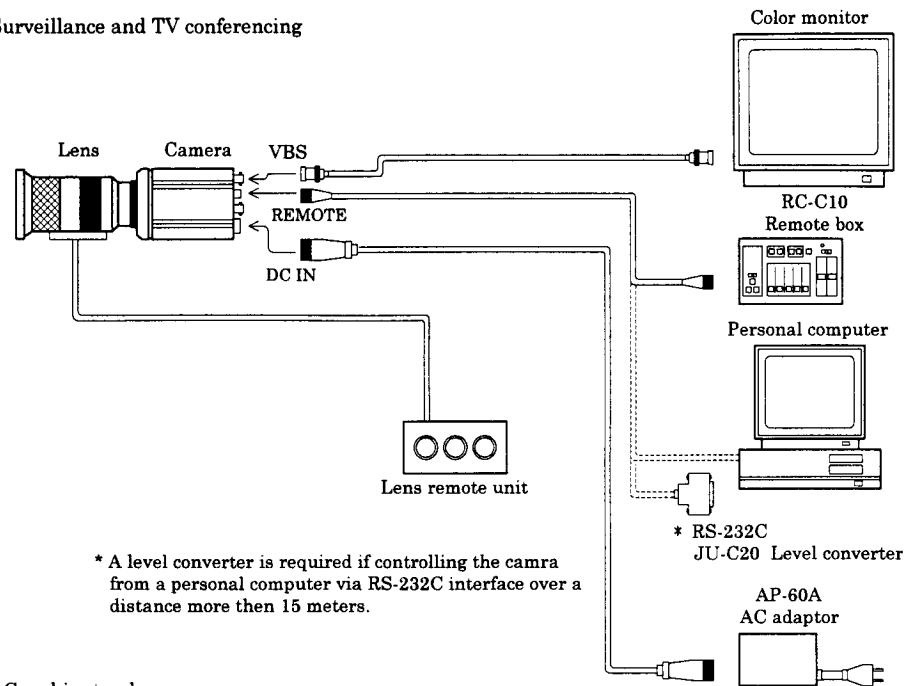
Length: 4.5 to 6 mm

Screws longer than 6 mm can cause internal damage, while less than 5 mm prevents secure fastening and risks dropping to cause damage and injury.

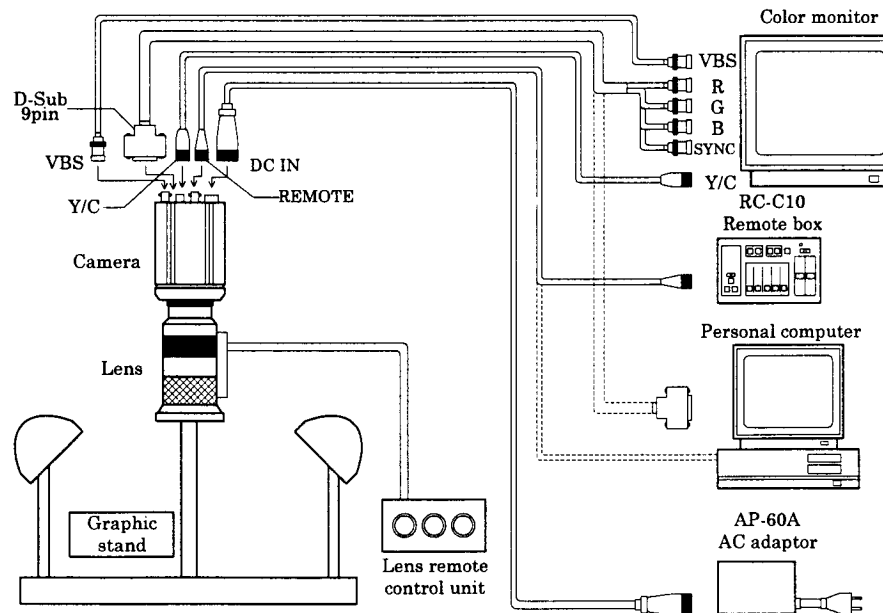


System examples

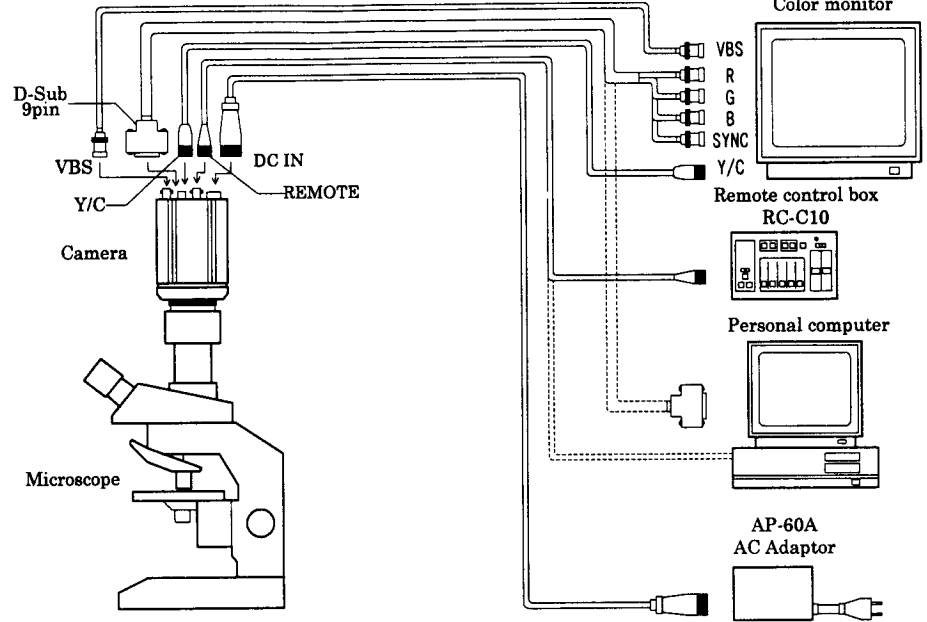
Surveillance and TV conferencing



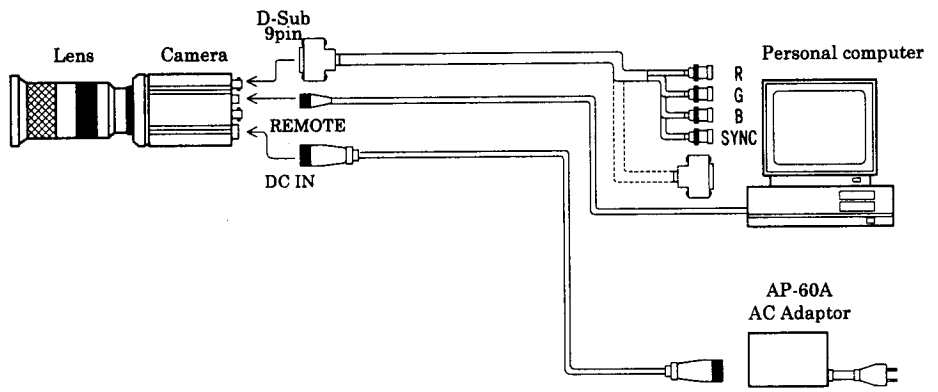
Graphic stand camera



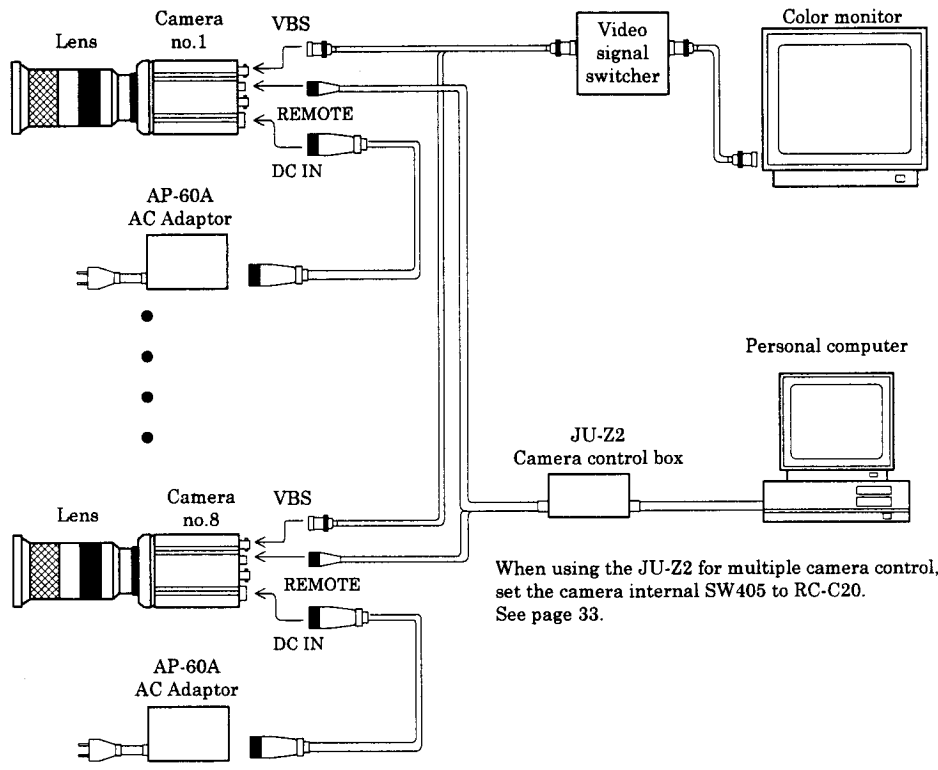
Microscope system



Computer image processing



Multi-camera computer control



When using the JU-Z2 for multiple camera control, set the camera internal SW405 to RC-C20. See page 33.

Menu Screen Operation

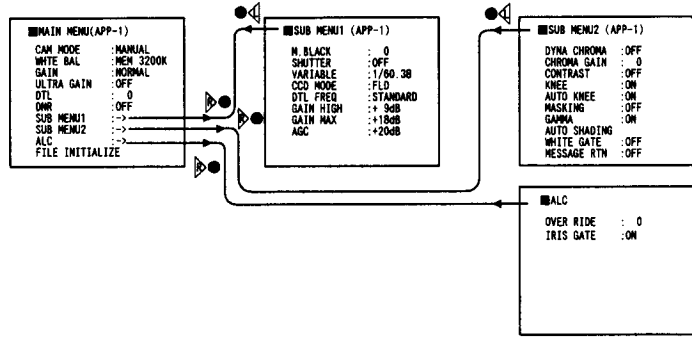
1. Menu Structure

For settings in the camera, the MAIN and SPECIAL menus are available.

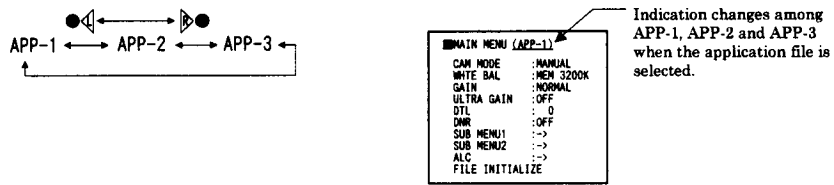
1-1 MAIN Menu Structure

Press the SETUP button, and the MAIN menu will appear as video output. Pressing the SETUP button again makes a return to the DIRECT mode. There are a main function setup menu and three sub-menus, which are arranged hierarchically as shown below. On the MAIN menu, bring the cursor to SUB MENU 1, SUB MENU 2 or ALC and press the R button, and the desired subsidiary menu will come up. To return to the MAIN menu from the SUB menu 1, SUB menu 2 or ALC, bring the cursor to the top line (title line of SUB MENU 1, SUB MENU 2 or ALC) and press the L button.

On each menu screen, bring the cursor to any desired item using the U or D button. For mode change/data setting, use the L or R button.



At the first line of the main menu, press the R and L buttons to select the application file. The indication changes to show the selected file.

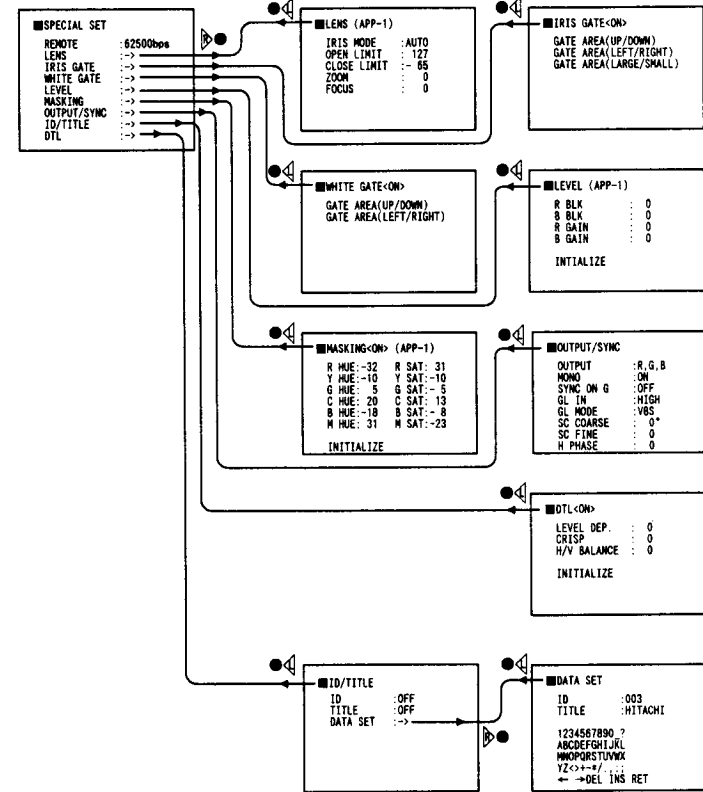


Refer to Page 25 for a detailed description of the application file.

1-2 SPECIAL Menu Structure

To select the SPECIAL SET mode, press the SETUP button for 2 seconds while holding down the U button. Thus, the SPECIAL SET menu can be displayed. To return to the DIRECT mode, press the SETUP button again. The SPECIAL SET menu indicates a list of items, and each special items subsidiary menus are available. These menus are arranged hierarchically as shown below. On the SPECIAL SET menu, most items have '>' mark at the right side. For these items, press the R button, and the relevant item setup menu will come up. To return to the SPECIAL SET menu, bring the cursor to the top line (title line of each subsidiary menu) and press the L button.

On each menu screen, bring the cursor to any desired item using the U or D button. For mode change/data setting, use the L or R button.



2. MAIN MENU

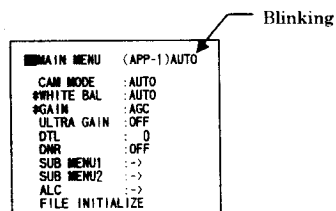
1) CAM MODE : Camera mode

· **MANUAL** : In this mode, you can set up most functions. Use the MANUAL mode for detail settings.

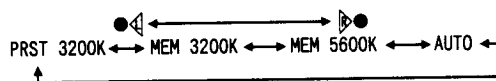
· **AUTO** : The video level and white balance are adjusted automatically. Without having to make detail settings, you can display images under standard conditions.

On the Main menu, some function items have the asterisk (*) mark. In the AUTO mode, the default settings shown below are given and the cursor skips over these items. When the AUTO mode is selected, 'AUTO' blinks at the upper right corner of each screen.

Menu	Function and Mode
MAIN MENU	WHITE BAL : AUTO
	GAIN : AGC
SUB MENU 1	SHUTTER : AES
	VARIABLE : Not settable
	CCD MODE : FLD
	GAIN HIGH : Not settable
	GAIN MAX : Not settable
SUB MENU 2	KNEE : ON
	AUTO KNEE : ON
	GAMMA : ON
LEVEL	R BLK : Not settable
	B BLK : Not settable
	R GAIN : Not settable
	B GAIN : Not settable



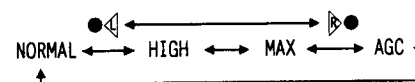
2) WHITE BAL : White balance mode



- **PRST 3200K** : The white balance condition is optimized at a color temperature of 3200K.
- **MEM 3200K** : White balance is automatically adjusted by the direct mode AWB button. Use in the color temperature range from halogen to fluorescent lighting.
- **MEM 5600K** : White balance is automatically adjusted by the direct mode AWB button. Use in the high color temperature range from xenon to mercury lighting.
- **AUTO** : The white balance condition is set through realtime auto white balancing (automatic tracking).

Note: If selecting MEM3200K and MEM5600K, set to the direct mode (extinguish the menu) and press the AWB button for auto white balance adjustment.
Cannot be set in the Auto CAM MODE.

3) GAIN : Gain mode

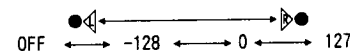


- **NORMAL** : The gain level is set to 0 dB.
- **HIGH** : The gain level is set to a value specified at GAIN HIGH on the SUB menu 2.
- **MAX** : The gain level is set to a value specified at GAIN MAX on the SUB menu 2.
- **AGC** : An increase in gain is controlled automatically. The upper limit of gain to be increased corresponds to a value specified at AGC on the SUB menu 2.
Cannot be set in the Auto CAM MODE.

4) ULTRA GAIN : ULTRA GAIN ON/OFF

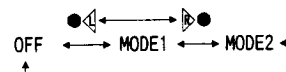
When set to ON, sensitivity is increased, but there is loss of horizontal resolution.

5) DTL : DTL level setup



The DTL level can be set to OFF or in a range of -128 to 127. The degree of contour correction increases in the positive value setting, and it decreases in the negative value setting. For zero (0) setting, hold down both the L and R buttons for approx. two seconds. However, if setting is OFF, 0 is not set over if the buttons are pressed.

6) DNR : Digital noise reduction mode



OFF, MODE 1 or MODE 2 is selectable. In MODE 2, noise becomes lower than that in MODE 1 but a feel of image resolution becomes lower slightly.

7) SUB MENU 1 : The SUB menu 1 is brought up.

8) SUB MENU 2 : The SUB menu 2 is brought up.

9) ALC : The ALC is brought up.

10) FILE INITIALIZE : Returns main menu items of application file to factory settings.

Simultaneously press the L and R buttons for about 2 seconds to initialize the selected application file. The Special menu items are not initialized.

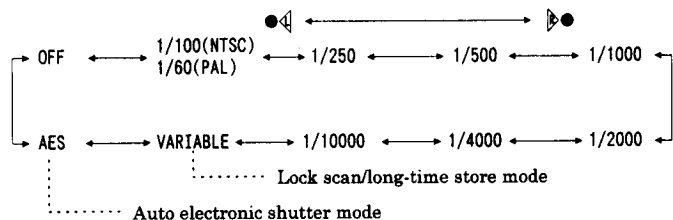
3. SUB MENU 1

1) M BLACK : Master black level setting

The master black level can be set in a range of -128 to 127. Pressing the R button increases a set value to make the black level higher, and pressing the L button decreases a set value to make the black level lower. For zero (0) setting, hold down both the L and R buttons for approx. two seconds.

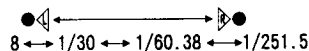
2) SHUTTER : Electronic shutter mode

The electronic shutter setting is changed over as shown below. When VARIABLE is selected, a shutter speed specified at VARIABLE is used in operation. Cannot be set in the Auto CAM MODE.



(Note) In the AES mode, FLD operation is performed even if 'CCD MODE:FRM' is specified.

3) VARIABLE : Variable electronic shutter speed setting



• 8~1/30 (1/25 : PAL) : Long-time store mode

The camera delivers intermittent video signal output. So, to view continuous images, it is required to use the video memory. A clear image can be attained even if the subject is illuminated with a faint light source. As the store time increases, the degree of after-image becomes higher.

(Note) With an increase in store time, the degree of characteristic pattern noise, white scratch, etc. of the CCD image sensor will become higher.

• 1/60.38 (1/50.31: PAL)~1/251.5 (1/253.8: PAL) : Lock scan mode

When an image of a subject display screen having a different scan frequency is taken, a bright or dark horizontal bar appears to roll up or down the screen.

Adjust the shutter speed so that this horizontal bar rolling will be minimized. Thus, a flicker-less image of the subject display screen can be taken.

(Note) If the subject display screen has a scan frequency of less than 60 Hz (50 Hz in PAL), it is not possible to taking its picture without flickering.

Cannot be set in the Auto CAM MODE.

4) CCD MODE : CCD store mode changeover

- FLD : The field store mode operation is performed (for ordinary purpose of application).
- FRM : Frame store mode operation is performed. The vertical resolution can be increased but the degree of after-image becomes slightly higher. It is therefore recommended to use the FRM function when taking a still image.

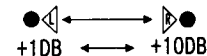
(Note) If the SHUTTER mode is set to AES, the camera carries out FLD operation through 'FRM' remains indicated. Cannot be set in the Auto CAM MODE.

5) DTL FREQ : DTL amplifying frequency changeover.



- LOW : The lower band frequency is amplified.
- STANDARD : The standard amplification is performed.
- HIGH : The high band frequency is amplified. Finer contour correction is carried out.

6) GAIN HIGH : Gain setting in GAIN HIGH mode (At the time of AGC:OFF mode)



The gain level can be set in a range of +1 to +10 dB.

Cannot be set in the Auto CAM MODE.

7) GAIN MAX : Gain setting in GAIN MAX mode (At the time of AGC:OFF mode)

The gain level can be set in a range of +11 to +20 dB.

Cannot be set in the Auto CAM MODE.

8) AGC : Upper gain limit setting in AGC mode (At the time of AGC:ON mode)

The upper limit of gain increase in AGC operation can be set in a range of +6 to +20 dB.

4. SUB MENU 2

1) DYNA CHROMA : Dynamic chroma ON/OFF

When this function is turned on, a bright part of the subject is colored properly.

Dynamic chroma is automatically set only when KNEE is ON.

2) CHROMA GAIN : Level setting in chroma signal

The chroma signal level can be set in the range of -128 to +127. Respectively press the R button to increase and the L button to decrease the chroma signal level. Set the level to 0 by simultaneously pressing both L and R buttons for about 2 seconds.

3) CONTRAST : Contrast OFF/NORMAL/HIGH

When this function is turned to NORMAL/HIGH, contrast of a dark part of image is enhanced.

HIGH enhances the contrast more than NORMAL.

4) KNEE : KNEE ON/OFF

Set to ON for natural gradation in luminous scene components.

Cannot be set when CAM MODE is ON.

5) AUTO KNEE : AUTO KNEE ON/OFF

Set to ON to automatically optimize the knee effect according to scene brightness. Setting is effective only when KNEE is ON. Cannot be set when CAM MODE is ON.

6) MASKING : Masking condition

When this function is turned on, color tone of the entire subject is changed.

Standard setting is on.

7) AUTO SHADING : Automatic shading correction is carried out.

Pressing the R button performs automatic shading correction. For details, refer to 'How to Attain Better Images' (p. 27).

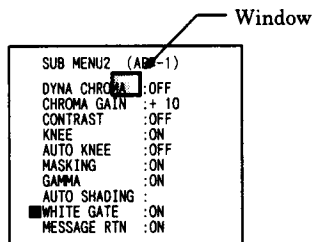
8) WHITE GATE : White gate ON/OFF

ON : In realtime auto white balance operation or execution of memory auto white balance, a video signal appearing in the window on screen is detected for white balancing.

In the MENU mode, the window is presented over the video signal. For the setting procedure, refer to 'WHITE GATE Menu of SPECIAL SET Menu' (p. 18).

Even under WHITE GATE:ON condition, the window disappears when the cursor is moved to another item. In the DIRECT mode, the window does not appear but white balance control is conducted by the white gate function.

OFF : A video signal of the entire image is detected for carrying out white balance control. The window does not appear.



9) GAMMA : Gamma ON/OFF

Selects gamma on/off. Cannot be set when CAM MODE is ON.

10) MESSAGE RTN : Message display ON/OFF

- ON : A message indicating the result of AWB/ABB execution in the DIRECT mode is displayed.
- OFF : A message indicating the result of AWB/ABB execution in the DIRECT mode is not displayed.

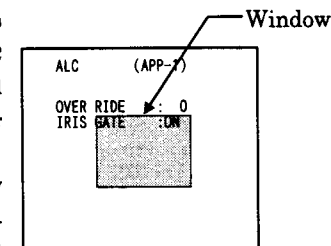
5. ALC

1) OVER RIDE : Auto iris level setting

The auto iris level can be set in a range of -128 to +127. Pressing the R button increases a value of auto iris level to open the lens iris more. Pressing the L button decreases it to close the lens iris more. For zero (0) setting, hold down both the L and R button for approx. two seconds.

2) IRIS GATE : Iris gate ON/OFF

- ON : A video signal appearing in the window on screen is detected for AGC and lens/auto electronic shutter ALC control. In the MENU mode, the window is presented over the video signal. For the setting procedure, refer to 'IRIS GATE Menu' of 'SPECIAL SET Menu' (p. 18). Even under IRIS GATE:ON condition, the window disappears when the cursor is moved to another item. In the DIRECT mode, the window does not appear but ALC control is conducted by the iris gate function.



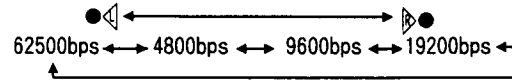
- OFF : A video signal of the entire image is detected for carrying out ALC control. The window does not appear.

6. SPECIAL SET

1) REMOTE : Remote control baud rate setting

For baud rate setting, use the L and R buttons.

(Note) When setting a baud rate, do not connect the communication cable with the REMOTE terminal.



• 62500bps : Select this baud rate when using the RC-C10 remote control box. In this case, be sure to also set the RC-C10 baud rate to 65200 bps. Refer to the RC-C10 operating instructions.

• 19200bps, 9600bps, 4800bps : Select any one of these baud rates when controlling the camera from a personal computer through RS-232C interfacing. For details, refer to 'Function Selection by Internal Switch Setting'. Contact us for details of the control procedure using a personal computer. Technical documents including protocol data will be supplied.

2) LENS : The LENS menu screen comes up.

3) IRIS GATE : The IRIS GATE menu screen comes up.

4) WHITE GATE : The WHITE GATE menu appears.

5) LEVEL : The LEVEL menu appears.

6) MASKING : The MASKING menu appears.

7) OUTPUT/SYNC : The OUTPUT/SYNC menu is presented.

8) ID/TITLE : The ID/TITLE menu is displayed.

9) DTL : The DTL menu appears.

7. LENS

This menu screen allows you to make lens settings.

1) IRIS MODE : Lens iris mode.

• AUTO : Set up AUTO for using the auto iris function.

• MANUAL : Select MANUAL for manual iris adjustment or microscope observation (when not using the auto iris function).

(Note) For combinational operation of AGC and AES, be sure to perform the above setting according to the lens/microscope to be used in combination.

2) OPEN LIMIT : Open limit setting

This function item is available to let the camera recognize that the lens is opened.

While observing aperture, make adjustment to a level where the iris is just opened.

The allowable setting range is 0 (in closing direction) to 127 (in opening direction).

If the lens employed causes deterioration in picture quality when the iris is almost fully opened, adjust OPEN LIMIT so that the iris will not be opened fully.

(Notes) 1. Before attempting the above setting, be sure to set up AGC:OFF, GAIN:NORM and SHUTTER:OFF. After completion of the above setting, restore these items to the desired states again.

2. If the OPEN LIMIT function item is not set properly, the interlinked operation with AGC may not be performed normally.

3) CLOSE LIMIT : Close limit setting

While observing aperture, make adjustment to a level where the maximum closing value (minimum diameter of opening) is provided. The allowable setting range is -128 (in closing direction) to -1 (in opening direction).

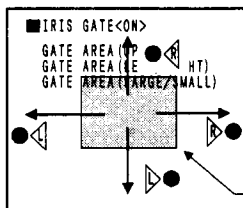
(Notes) 1. Before attempting the above setting, be sure to set up AGC:OFF, GAIN:NORM and SHUTTER:OFF. After completion of the above setting, restore these items to the desired states again.

2. If the CLOSE LIMIT function item is not set properly, the hunting of iris may take place or the interlinked operation with AES may not be performed normally.

8. IRIS GATE

This menu screen allows you to make iris gate (window) settings.

- 1) GATE AREA <UP/DOWN> : The window can be shifted up/down.
To shift the window up, press the R button. To shift it down, press the L button.
- 2) GATE AREA<LEFT/RIGHT> : The window can be shifted left/right.
To shift the window rightward, press the R button. To shift it leftward, press the L button.
- 3) GATE AREA<LARGE/SMALL> : The size of the window can be adjusted.
Using the L or R button, you can select one of four window sizes.



.....
Press R button to increase size.
Press L button to decrease size.

9. WHITE GATE

This menu screen allows you to make white gate (window) settings. The setting procedure is the same as that for the IRIS GATE function item.

- 1) GATE AREA<UP/DOWN> : The window can be shifted up/down.
To shift the window up, press the R button. To shift it down, press the L button.
- 2) GATE AREA<LEFT/RIGHT> : The window can be shifted left/right.
To shift the window rightward, press the R button. To shift it leftward, press the L button.

10. LEVEL

This menu screen allows you to set up a black level and gain of R/B video signal.

- 1) R BLK : R black level setting
The allowable setting range is -128 to 127.
Pressing the R button increases a numeric value to make the R video signal black level higher.
Pressing the L button decreases a numeric value to lower the R video signal black level. For 0 (zero) setting, hold down both the L and R buttons for approx. two seconds.
- 2) B BLK : B black level setting
The allowable setting range is -128 to 127.
Pressing the R button increases a numeric value to make the B video signal black level higher.
Pressing the L button decreases a numeric value to lower the B video signal black level. For 0 (zero) setting, hold down both the L and R buttons for approx. two seconds.

- 3) R GAIN : R gain level setting

The allowable setting range is -128 to 127.

Pressing the R button increases a numeric value to make the R video signal gain higher. Pressing the L button decreases a numeric value to lower the R video signal gain. For 0 (zero) setting, hold down both the L and R buttons for approx. two seconds.

- 4) B GAIN : B gain level setting

The allowable setting range is -128 to 127.

Pressing the R button increases a numeric value to make the B video signal gain higher. Pressing the L button decreases a numeric value to lower the B video signal gain. For 0 (zero) setting, hold down both the L and R buttons for approx. two seconds.

(Note) CAM MODE : In case of AUTO, numeric values of R BLK, B BLK, R GAIN and B GAIN become ineffective.

WHITE BAL : In case of AUTO, numeric values of R GAIN and B GAIN become ineffective.

- 5) INITIALIZE

Red and blue gain settings are initialized for each application. Simultaneously press the L and R buttons for about 2 seconds to return the selected files to the factory settings. See Page 25 for the factory settings of each application file.

11. MASKING

Menu for setting the masking.

- 1) R HUE: Change red color phase
- 2) Y HUE: Change yellow color phase
- 3) G HUE: Change green color phase
- 4) C HUE: Change cyan color phase
- 5) B HUE: Change blue color phase
- 6) M HUE: Change magenta color phase

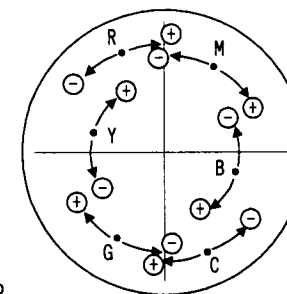
The above items can be set in the range of -32 to +31.

Respectively press the R button to increase and the L button to decrease the vector color hue as indicated in the figure. Each

item can be set to 0 by simultaneously pressing the L and R buttons for about 2 seconds.

- 7) R SAT: Increase red color level
- 8) Y SAT: Increase yellow color level
- 9) G SAT: Increase green color level
- 10) C SAT: Increase cyan color level
- 11) B SAT: Increase blue color level
- 12) M SAT: Increase magenta color level

The above items can be set in the range of -32 to +31. Respectively press the R button to increase and the L button to decrease the color level. Each item can be set to 0 by simultaneously pressing the L and R buttons for about 2 seconds.

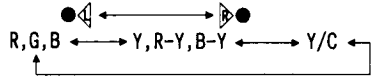


- 13) INITIALIZE: Mask settings are initialized to factory values for each application file. Simultaneously press the L and R buttons for about 2 seconds to return the selected files to the factory settings. See Page 25 for the factory settings of each application file.

12. OUTPUT/SYNC

On this menu screen, you can make signal changeover for output to the D-SUB connector and phase adjustment for external synchronization.

1) OUTPUT : Output mode changeover



- R, G, B : The R, G and B video signals are output to the D-SUB connector.
- Y, R-Y, B-Y : The Y, R-Y and B-Y component signals are output to the D-SUB connector.
- Y/C : The Y/C signal is output to the D-SUB connector. It can be delivered simultaneously with the Y/C signal output from the Y/C connector (S terminal).

2) MONO : Monochrome (black and white) ON/OFF for the video output signal from the VIDEO connector

Set to ON for monochrome. Setting ineffective during color bar.

3) SYNC ON G : G video signal synchronization ON/OFF (In the R/G/B mode only)

ON: SYNC is added to the G video signal.

(Note) The setting becomes ineffective in the Y, R-Y, B-Y or Y/C mode.

4) GL IN : Impedance changeover of input to the GL IN connector.

- HIGH : The high impedance level is provided.
- 75Ω : An impedance of 75 ohms is provided.

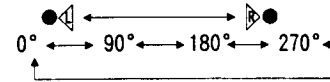
(Note) When power to the camera is turned off, the high impedance level is provided. So, do not use this function in a system where power is turned off for the camera unit only.

5) GL MODE :

- VBS : The VBS signal or BBS (black burst) signal is input as an external synchronizing signal.
- HD/VD : The HD/VD signal is input as an external synchronizing signal.

(Note) During external sync with HD and VD signals, be sure to use either RGB or Y, B-Y, R-Y output signals. Although VBS and Y/C output signals are also produced, these cannot be used as normal output signals.

6) SC.COARSE : Coarse adjustment of subcarrier phase



Using the L or R button, select one of the following phases; 0°, 90°, 180° and 270°.

7) SC.FINE : Fine adjustment of subcarrier phase

The allowable setting range is -128 to 127.

There is no direct relationship between a numeric value and a degree of phase. If the relevant range is exceeded, the SC COARSE setting is updated automatically to permit continuous adjustment.

8) H.PHASE : Adjustment of horizontal synchronization phase

The allowable setting range is -128 to 127.

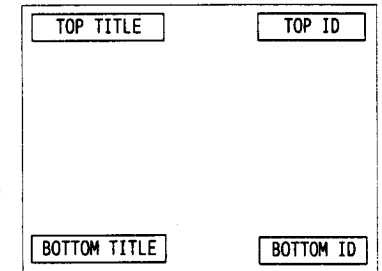
13. ID/TITLE

1) ID : ID display position setting

Once an ID is assigned, it becomes possible to control a particular camera unit remotely from a personal computer according to its ID. That is, multiple camera units can be remote-controlled individually from one personal computer.

At this function item, specify whether the ID is displayed on screen or not. In case that the ID is displayed on screen, specify its display position also.

- OFF : Not displayed.
- TOP : Displayed at the upper right corner of screen.
- BOTTOM : Displayed at the lower right corner of screen.



ID/TITLE Display Position

2) At this function item, specify whether the TITLE is displayed on screen or not. In case that the TITLE is displayed on screen, specify its display position also.

- OFF : Not displayed.
- TOP : Displayed at the upper left corner of screen.
- BOTTOM : Displayed at the lower left corner of screen.

3) DATA SET : The DATA SET screen comes up.

ID : Enter an ID code consisting of three characters.

Alphanumeric upper-case characters and a space character are permitted.

TITLE : Enter a TITLE consisting of up to 12 characters. □

Alphanumeric upper-case characters, special symbols and a space character are permitted.

(Note) The symbol "□" in the data represents a space character. On the actual screen, a space character is given as a blank in an ID code or TITLE.

<ID/TITLE Setup Procedure>

- ① With the cursor located at DATA SET, press the D button. The cursor moves to the ID data set position an the first character flashes.
- ② Using the L, R, U and D buttons, select an input character.
- ③ Press the SET UP button, and the selected character will be entered. (The cursor will then move to the next character position.)
- ④ In the same manner, repeat the above steps ② and ③ to enter an ID code and TITLE.
- ⑤ On completion of character input, bring the cursor to RET using the L, R, U or D button. Then, press the SET UP button.
The cursor is returned to DATA SET.
- ⑥ To quit the SPECIAL SET mode, press the SET UP button.

← : Flashing shifts one character toward the left.

→ : Flashing shifts one character toward the right.

DEL : Flashing character is deleted, and the subsequent character string is shifted left.

INS : A space is inserted at the flashing character position, and the subsequent character string is shifted right.

RET : The cursor is returned to DATA SET.

Note : Disconnect Remote connector when setting by 4800 bps, 9600bps or 19200 bps.

14. DTL

Menu for setting detail parameters

1) LEVEL DEP : Dependent level setting

Detail amount, and noise, can be reduced in scene dark components.

Setting range is -128 to +127. Press the R button to increase the value, reduce the detail amount and expand the video signal level range. Press L button to decrease the value and reduce the range. Set to 0 by simultaneously pressing the L and R buttons for about 2 seconds.

2) CRISP : Crispness level setting

Reduces the noise, but large setting loses sharpness in detailed scene components. Setting range is -128 to +127. Press the R button to increase the value and the detail noise. Press the L button to decrease the value and reduce detail noise. Set to 0 by simultaneously pressing the L and R buttons for about 2 seconds.

3) H/V BALANCE : Balance setting for horizontal and vertical detail amount

Setting range is -128 to +127. Press the R button to increase the value and reduce the H DTL amount. Press the L button to decrease the value and reduce the V DTL amount. Set to 0 by simultaneously pressing the L and R buttons for about 2 seconds.

4) INITIALIZE : Return each item to factory settings by simultaneously pressing the L and R buttons for about 2 seconds.

Application Files (APP-1,APP-2,APP-3)

Camera setting data can be stored in three application files. These enable optimizing the camera for specific scene and lighting conditions, then storing the setting data in memory for quick recall at the appropriate time. The application files have been set at the factory as follows.

APP-1: Standard type camera settings

APP-2: General purpose surveillance and TV conferencing

APP-3: Microscope settings. Particularly the masking is suitable for good color reproduction with a light source of about 5000 K combined with a 9200 K color monitor.

Select the file according to the application. If the settings are changed for finer control, the setting data can be stored is each file.

1. Items saved to application files

The following items can b saved to each file. The factory data are shown.

Menu item	Application file		
	APP-1	APP-2	APP-3
MAIN MENU			
WHITE BAL	MEM 3200K	MEM 3200K	MEM 3200K
GAIN	NORMAL	NORMAL	NORMAL
DTL	0	25	0
DNR	OFF	OFF	OFF
SUB MENU 1			
M.BLACK	0	0	0
SHUTTER	OFF	OFF	AES
DTL FREQ	STANDARD	STANDARD	HIGH
SUB MENU 2			
DYNA CHROMA	OFF	ON	OFF
CHROMA GAIN	0	25	0
AUTO KNEE	ON	ON	ON
MASKING	ON	ON	ON
LENS			
IRIS MODE	AUTO	AUTO	MANUAL

Menu item	Application file		
	APP-1	APP-2	APP-3
LEVEL			
R GAIN	0	0	0
B GAIN	0	0	0
MASKING			
R HUE	2	2	-9
Y HUE	0	0	-4
G HUE	0	0	0
C HUE	0	0	0
B HUE	2	2	10
M HUE	9	9	-16
R SAT	11	11	5
Y SAT	0	0	3
G SAT	2	2	0
C SAT	7	7	0
B SAT	12	12	-13
M SAT	-2	-2	3

2. Common file settings

The settings of these items apply to all files. They cannot be set differently for each file. The table indicates the factory settings.

Menu item	Setting data
MAIN MENU	
CAM MODE	MANUAL
ULTRA GAIN	OFF
SUB MENU 1	
VARIABLE	NTSC:1/60.38
	PAL :1/50.31
CCD MODE	FLD
GAIN HIGH	+9dB
GAIN MAX	+18dB
AGC	+20dB
SUB MENU 2	
CONTRAST	OFF
KNEE	ON
GAMMA	ON
AUTO SHADING	Adjustment data
WHITE GATE	OFF
MESSAGE RTN	ON
ALC	
OVER RIDE	0
IRIS GATE	OFF

Menu item	Setting data
SEPECIAL SET	
REMOTE	62500bps
LENS	
OPEN LIMIT	127
CLOSE LIMIT	Factory adjustment
ZOOM	0
FOCUS	0
IRIS GATE	
UP/DOWN	CENTER
LEFT/RIGHT	CENTER
LARGE/SMALL	MIN SMALL
WHITE GATE	
UP/DOWN	CENTER
LEFT/RIGHT	CENTER
LEVEL	
R BLK	0
B BLK	0

Menu item	Setting data
OUTPUT/SYNC	
OUTPUT	R,G,B
MONO	OFF
SYNC ON G	OFF
GL IN	75 Ω
GL MODE	VBS
SC COARSE	0°
SC FINE	0
H PHASE	0
DTL	
LEVEL DEP.	0
CRISP	0
H/V BALANCE	0
ID/TITLE	
ID	OFF
TITLE	OFF
ID DATA	(Blank)
TITLE DATA	(Blank)

Black Balance Adjustment

Adjust black balance to provide proper color tone at a dark part of video image. Under normal condition, it is not required to make black balance adjustment at power-on. In the following cases, be sure to carry out black balance adjustment.

- When using the camera first after purchasing it.
- When using the camera after it has been unused for a long time.
- When the camera operating environment is changed (e.g., when the ambient temperature varies significantly).

1. In the DIRECT mode, press the ABB button for 2 seconds. Then, the indication AUTO BLACK: ok appears (with MESSAGE RTN:ON), and black balance is adjusted automatically.

- (Notes)
- 1) Where the lens having the auto iris function is used, the iris is closed automatically during adjustment. In case that IRIS MODE;MANUAL is selected or the lens iris is adjusted manually, the iris remains closed even after adjustment. So, for taking images, open the iris.
 - 2) In combinational use with the manual iris lens or microscope, a full-black screen image is provided from the CCD image sensor during adjustment. When picturing after adjustment, a white screen image appears momentarily. This phenomenon is not a symptom of trouble, however.
 - 3) In case that the manual iris lens is used, do not attempt auto black balance adjustment while taking an image of subject having extremely high luminance such as the sun. This may deteriorate black balance accuracy.

2. If black balance adjustment cannot be made, any one of the following messages will appear. Take a proper procedure according to the error message, and then try black balance adjustment again.

Error message	Procedure
AUTO BLACK : NG CHANGE TO CAM TRY AGAIN	• Turn off the color bar.
AUTO BLACK : NG IRIS NOT CLOSE TRY AGAIN	• Close the lens iris. • Avoid taking an image of subject having high luminance such as the sun, or decrease illumination on the microscope.
AUTO BLACK : NG ???	• Carry out ABB again. If this message appears in repeated attempts, it is necessary to inspect the inside of the camera. In this case, notify your local Hitachi Denshi sales agent or Hitachi Denshi service office

White Balance Adjustment

Carry out white balance adjustment when the illumination condition (color temperature) is changed.

1. In the MENU mode, set up WHITE BAL: MEM 3200K or MEM 5600K.
2. Turn off the MENU screen to select the DIRECT mode.
3. Provide a proper aperture value of lens using the auto iris function or manually.
4. Put an white object in the subject image, and zoom it up.
5. Press the AWB button for 2 seconds, and the indication AUTO WHITE:OK will then appear (with MESSAGE RTN:ON). Thus, white balance adjustment is performed.
6. If white balance adjustment cannot be made, any of the following messages will appear. Take a proper procedure according to the error message, and then try white balance adjustment again.

Error message	Procedure
AUTO WHITE : NG CHANGE TO CAM TRY AGAIN	<ul style="list-style-type: none"> • Turn off the color bar.
AUTO WHITE : NG CHANGE TO MEMORY MODE TRY AGAIN	<ul style="list-style-type: none"> • Set up WHITE BAL:MEM 3200K or MEM 5600K.
AUTO WHITE : NG LOW LIGHT TRY AGAIN	<ul style="list-style-type: none"> • White balance cannot be made due to insufficient illumination. • Increase the intensity of illumination, turn lens iris toward open direction, or increase the gain to provide a proper video level. • Press the AWB switch again.
AUTO WHITE : NG HIGH LIGHT TRY AGAIN	<ul style="list-style-type: none"> • White balance cannot be made due to excess illumination. • Increase the intensity of illumination, turn lens iris toward closed direction, or increase the gain to provide a proper video level. • Press the AWB switch again.
AUTO WHITE : NG C.TEMP HIGH TRY AGAIN	<ul style="list-style-type: none"> • The color temperature is too high, making it impossible to reach the optimum value in adjustment. (If there is no problem in practical application, use the camera under the current condition.) • Add a filter to the lens or illumination to decrease the color temperature.
AUTO WHITE : NG C.TEMP LOW TRY AGAIN	<ul style="list-style-type: none"> • The color temperature is too low, making it impossible to reach the optimum value. (If there is no problem in practical application, use the camera under the current condition.) • Add a filter to the lens or illumination to increase the color temperature.
AUTO WHITE : NG C. TEMP HIGH CHANGE TO MEM 5600K TRY AGAIN	<ul style="list-style-type: none"> • Color temperature too high for optimum adjustment. • Set WHITE BAL to MEM 5600 K mode.
AUTO WHITE : NG C. TEMP LOW CHANGE TO MEM 3200K TRY AGAIN	<ul style="list-style-type: none"> • Color temperature too low for optimum adjustment. • Set WHITE BAL to MEM 3200 K mode.

Realtime Auto White

The camera detects a white part in the image by itself, and its internal microcomputer automatically adjusts white balance in realtime. Use this function in case that the color temperature varies with time (e.g., from morning to day to night).

1. In the MENU mode, set up WHITE BAL:AUTO.

(Note) If the color temperature of the scene being taken is changed abruptly (when the camera is oriented from indoor side to outdoor side), the image may become bluish or reddish momentarily. This phenomenon is not a symptom of trouble, however. Immediately after it, the optimum white balance condition is set.

Where the camera is mounted fixedly and the orientation and image-taking range of the camera remain unchanged, it is advisable to use the white gate function in combination for attaining higher accuracy in white balance.

1. In the MENU mode, set up WHITE GATE:ON.
2. Using the WHITE GATE menu in the MENU mode, bring the display window to a monochrome part (white or gray part) in the image.

For details of the WHITE GATE function, refer to p. 16. Be sure to set the WHITE GATE window to a white or gray part in the image. Do not set it to a colored part.

Auto Shading Correction

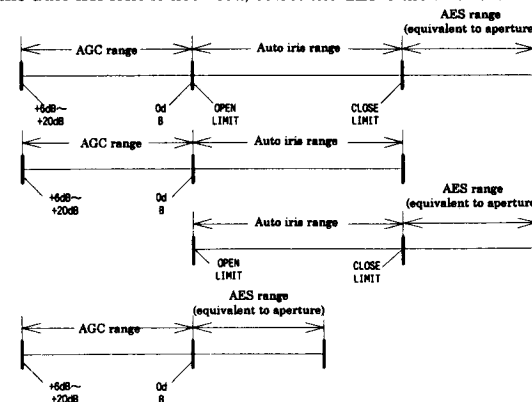
Color shading may occur in the vertical direction on screen due to any characteristic of lens. This camera is equipped with a function for correcting color shading automatically.

1. Provide a proper aperture value of lens using the auto iris function or manually.
2. Take an white image fully on screen. At this step, take care so that uneven brightness will not occur in the vertical direction.
3. In the DIRECT mode, press the AWB button. White balance is adjusted automatically.
4. In the MENU mode, carry out AUTO SHADING. Thus, color shading in the image is corrected automatically.

ALC

In combination of GAIN:AGC, SHUTTER:AES and AUTO IRIS, the following four kinds of ALC (auto level control) can be performed. This feature ensures stable video signal output according to a wide-range change in illumination.

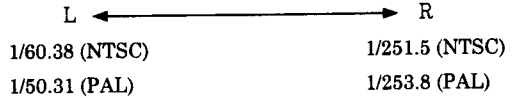
(Note) In case that the auto iris lens is not used, select the LENS menu and set IRIS MODE to MANUAL.



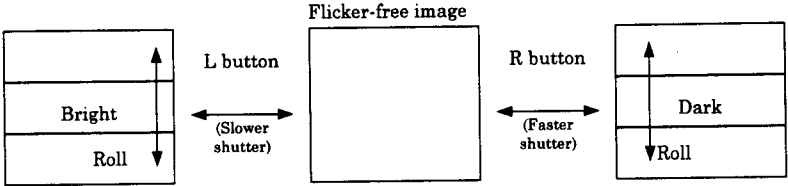
Lock scan mode shutter speed setting

① Press the Setup button and open the main menu, then open Sub menu 1. Set the cursor to SHUTTER by pressing D, select the VARIABLE position with the L-R buttons, again press D to shift to the variable items.

② Select the desired speed with the L-R buttons.



When picking up a computer monitor or other display having a different scanning frequency from conventional TV, white or dark horizontal bars appear to roll up or down across the screen. The shutter speed can be finely adjusted with the L and R buttons to minimize the bars and provide an essentially flicker-free image.

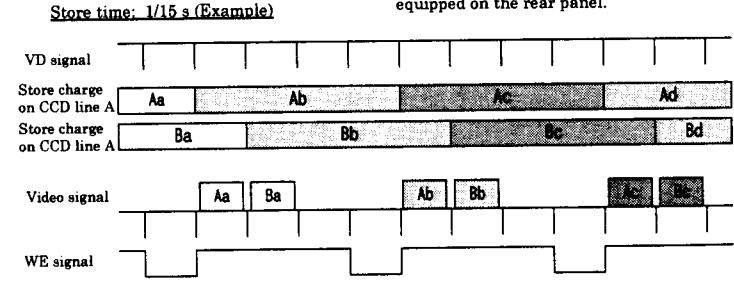
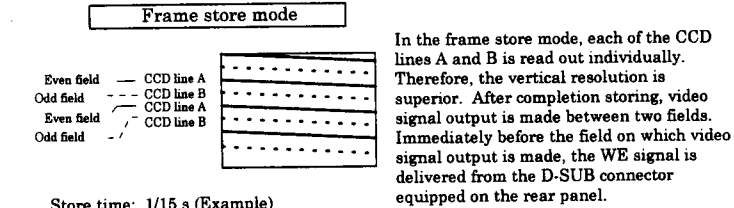
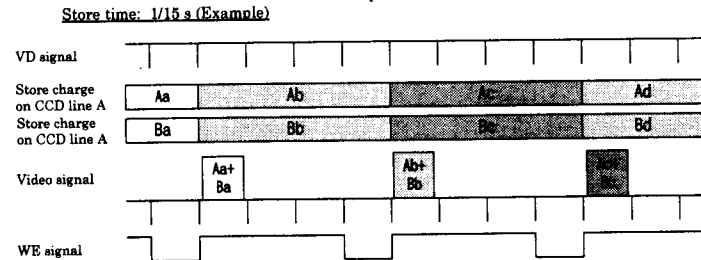
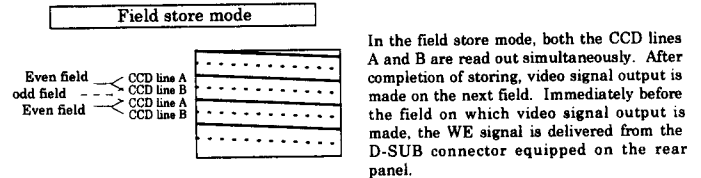


- Notes
1. Each pressing of the L or R button changes the shutter speed by 1 H. Hold the button depressed for continuous change.
 2. Flicker cannot be compensated if the scanning frequency is below 60 Hz.
 3. Raising the shutter speed improves resolution of moving objects, but loses sensitivity to the extent auxiliary lighting may be needed for outdoor scenes. Also, vertical smear increases with higher shutter speeds due to the physical properties of CCD cameras.

Long-Time Store Mode

In case that illumination on the subject is insufficient, just increasing the gain of the camera may cause an increase in noise, resulting in an unclear image. In such a situation, it is advisable to select the long-time store mode using the external memory. Thereby, the image can be brighter and clearer according to the stored amount of image. This camera is provided with two kinds of image store functions (CCD MODE:FLD/FRM in MENU). When one of these image store functions is used, video signal output is delivered from the camera with the timing shown below.

Since the degree of after-image increases for a moving subject because of image storing, it is recommended to use the image store function when taking a still picture or scene.



RC-C10 Remote Control Box

The RC-C10 enables operation of all camera menu items by remote control. Before connecting the remote control box, check the camera settings as follows.

- (1) SW405 : Camera internal switch SW405 should be set to RC-C10 (factory setting).
See Page 33 for internal switch setting details.
- (2) Baud rate : Open the Special menu and set the baud rate to 62500 bps (factory setting).

Operation

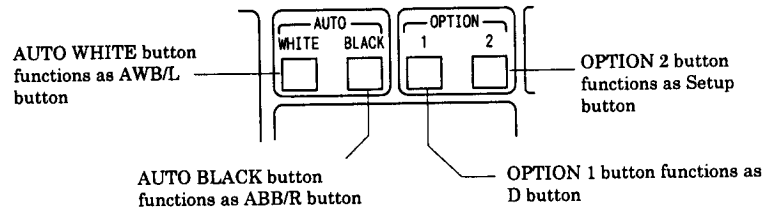
(1) Direct control

The following items can be controlled directly from the RC-C10 buttons. Refer to the RC-C10 operating instructions.

- | | |
|-------------|-------------|
| · BAR/CAM | · R GAIN |
| · WHITE BAL | · B GAIN |
| · GAIN | · R BLK |
| · DTL | · B BLK |
| · IRIS MODE | · H PHASE |
| · IRIS | · SC COARSE |
| · M.BLK | · SC FINE |

(2) Menu control

Items not mentioned in the above list are controlled by menu settings. The control box Option 1, Option 2, Auto White and Auto Black buttons are assigned to menu operating buttons. When AUTO WHITE and AUTO BLK are not indicated in the menu, the functions are conducted directly from the control box buttons.



Refer to menu operation.

Note: Hold OPTION 1 depressed and press OPTION 2 for 2 seconds to produce the Special Set menu.

The accessory labels can be affixed to the controller buttons if required.



(3) Memory operation

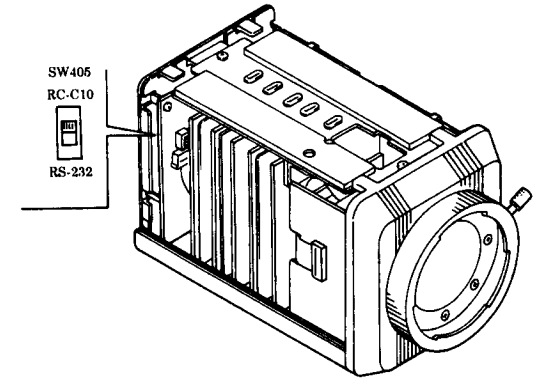
Press the Set button to store menu and direct setting data in memory.

Note: If not saved to memory, the setting data will be lost when another application file is selected or power switched off. Care is needed in this regard.

Function Selection by Internal Switch Setting

SW405

For connection with the remote control box RC-C10, set SW405 to the RC-C10 position. For connection with the personal computer, set SW405 to the RS-232C position. At shipment from factory, SW405 is set at the RC-C10 position.



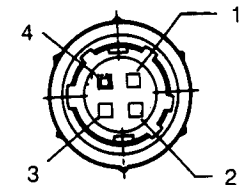
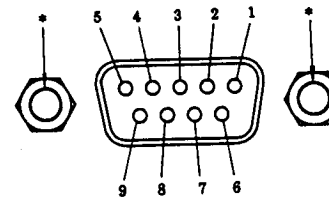
Connectors

MULTI connector (SDEB-9S)

Pin No.	Signal designation
1	GND
2	WE
3	R/R-Y/C output
4	G/Y output
5	B/B-Y output
6	VBS output
7	SYNC output
8	HD output
9	VD output

REMOTE connector (HR10A-7R-4S)

Pin No.	Signal designation
1	+12V output
2	RXD/SD input
3	TXD/SD output
4	GND

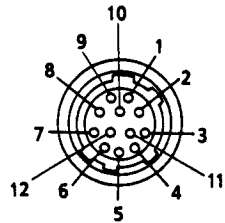


* Use M2.6 plug retaining screws.

Specifications

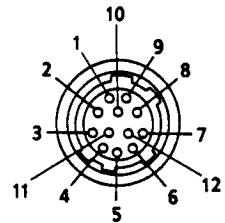
LENS connector (HR10A-10R-12SB)

Pin No.	Signal designation
1	NC
2	NC
3	GND
4	ENF AUTO output
5	IRIS CONT output
6	+12V output
7	IRIS POS input
8	IRIS A/R output
9	NC
10	NC
11	NC
12	NC



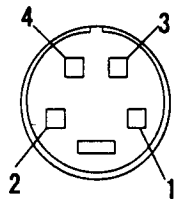
AUX connector (HR10A-10R-12PB)

Pin No.	Signal designation
1	GND
2	NC
3	ZOOM output
4	FOCUS output
5	GND
6	HD input
7	VD input
8	PAN output
9	TILT output
10	GND
11	NC
12	GND



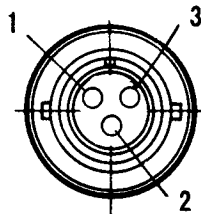
Y/C connector (TCS-7547-01-401)

Pin No.	Signal designation
1	Y GND
2	C GND
3	Y output
4	C output



12V-IN connector (RM12BRD-3PH)

Pin No.	Signal designation
1	+12V input
2	GND
3	NC



- | | |
|---|--|
| (1) Color system | NTSC,PAL |
| (2) Optical system | 1/2-inch F1.4 prism |
| (3) Imaging system | RGB 3-chip |
| (4) Imaging device | 1/2-inch interline CCD (with microlenses) |
| Total pixels | NTSC: 811 (H) × 508 (V)
PAL : 795 (H) × 596 (V) |
| Effective pixels | NTSC: 768 (H) × 494 (V)
PAL : 752 (H) × 582 (V) |
| Effective image area | 6.45 (H) × 4.84 (V) mm
6.47 (H) × 4.83 (V) mm |
| (5) Encoder system | R-Y/B-Y |
| (6) Sync system | Internal/external
(Automatic changeover VBS/BBS or HD/VD. However, the GL MODE needs to be switched.) |
| (7) Horizontal resolution | 800 TV lines (Y signal center, Y OUT and DTL off) |
| (8) Signal to noise ratio | 63 dB typ(DNR:ON),60 dB typ(DNR:OFF)
61 dB typ(DNR:ON),58 dB typ(DNR:OFF)
(Y OUT, $\gamma=1$, DTL off, Gain 0 dB) |
| (9) Standard sensitivity | 2000 lx, F8.0 |
| (10) Minimum illumination | 1.0lx(50 IRE, F1.4, Gain +20 dB) |
| (11) Gamma correction | 0.35 to 1.0 (on/off selectable) |
| (12) Picture distortion | Total: 0 % (not including lens characteristics) |
| (13) Registration | Total: 0.05 % (not including lens characteristics) |
| (14) Vertical contour correction | 2 H |
| (15) Lens mount | Bayonet (flangeback: 35.74 mm in air) |
| (16) Sensitivity selection AGC (0 to +20 dB), Norm/High/Max (3 positions) | |
| (17) Detail control | DTL level and frequency |
| (18) Applicatine files | 3 applications (APP-1, APP-2, APP-3)
Files items WHITE BAL, Masking, Chroma gain,
Auto knee, Dynamic chroma, Iris mode,
M BLK, R/B gain ets |
| (19) Ultra gain function | Selects CCD readout to increase gain approx. 12dB
(but with reduce horizontal resolution) |

(20) CCD drive functions

Preset	1/100 (1/60 PAL), 1/250, 1/500, 1/1,000, 1/2,000, 1/4,000, 1/10,000 second
Lockscan	NTSC: 1/60.38 to 1/251.5 second (1 H steps) PAL : 1/50.31 to 1/253.8 second (1 H steps)
AES	Off to approx. 1/1,000 second (up to equivalent of 4 F stops, continuously variable in 1 H steps)
Long integration	Selectable field/frame integration NTSC: 1/30 to approx. 8 seconds (1 frame steps) PAL : 1/25 to approx. 8 seconds (1 frame steps) (External picture memory required for continuous picture.)
Frame readout	(Image lag response deteriorates)
(21) Color bar	NTSC: SMPTE PAL : Full
(22) Power supply voltage	12 V rated Use a DC power supply with risetime after power on of less than 0.5 second. Stable operation is ensured with DC power supply of 10.5 to 17 V. No ripple and noise shall occur.
(23) Power consumption	Approx. 8 W (camera head only) Current for lens is less than 300 mA.
(24) Dimensions	80 (W) × 85 (H) × 134 (D) mm
(25) Mass	Approx. 950 g (excluding lens)
(26) Ambient temperature (operating)	-10 to 45 °C
(27) Ambient temperature (storage)	-20 to 60 °C

Input/Output Signals**1. Input signal****(1) Genlock input**

- VBS 1.0 V_{p-p} ± 3 dB or black burst, 75 Ω or high impedance (BNC)
(Sync 0.3 ± 0.1 V_{p-p}, burst 0.3 ± 0.1 V_{p-p})
- HD/VD TTL level (AUX connector)

(2) Serial data (4 pin connector)

- 1.5 V_{p-p} ± 3 dB, high impedance (in connection with RC-C10)
- RS-232C level (in connection with personal computer)

(Note) Set internal switch according to connected equipment.**2. Output signal ratings****(1) Composite video (BNC, D-sub connector)**VBS 1.0 V_{p-p}, 75 Ω**(2) Y/C (D-sub, Y/C connectors)**Y : 1.0 V_{p-p}, 75 ΩC : 0.28 V_{p-p} (burst), 75 Ω (NTSC),0.3 V_{p-p} (burst), 75 Ω (PAL)**(3) Component (D-sub connector)**Y : 1.0 V_{p-p}, 75 ΩR-Y: 0.7 V_{p-p}, 75 ΩB-Y: 0.7 V_{p-p}, 75 Ω**(4) RGB (D-sub connector)**R : 0.7 V_{p-p}, 75 ΩG : 0.7 V_{p-p}, 75 ΩB : 0.7 V_{p-p}, 75 Ω**(Note)** Menu settings select the D-sub connector output for Y/C, component or RGB.**(5) Sync (D-sub connector)**HD : 2 V_{p-p}, 75 ΩVD : 2 V_{p-p}, 75 ΩSYNC: 2 V_{p-p}, 75 Ω**(6) Serial data (4 pin connector)**• 1.5 V_{p-p}/ Low (in connection with RC-C10)

• RS-232C level (in connection personal computer)

(Note) Set internal switch according to connected equipment.**(7) Lens control**

Zoom : 0 Vdc (Wide) to 5 Vdc (Tele), 1 kΩ

Focus: 0 Vdc (Near) to 5 Vdc (Far), 1 kΩ

Pan : 0 Vdc (Left) to 5 Vdc (Right), 1kΩ

Tilt : 0 Vdc (Down) to 5 Vdc (Up), 1kΩ

(8) Lens iris control

2.5 Vdc (Close) to 7.5 Vdc (Open)

Major accessories

- 13x zoom lens (ENG type), YH13x7.5 KRS
- 14x zoom lens (Remote control type), S14x7.5BMD-D24
- Lens remote control units (for S14x7.5BMD-D24), RMD10
- Lens remote control units (for S14x7.5BMD-D24), RMD20
- Lens remote control units (for S14x7.5BMD-D24), RMD30
- Lens remote control cables (for S14x7.5BMD-D24), ECM-005M (5m)
- Lens remote control cables (for S14x7.5BMD-D24), ECM-010M (10m)
- Lens remote control cables (for S14x7.5BMD-D24), ECM-020M (20m)
- Lens remote control cables (for S14x7.5BMD-D24), ECM-050M (50m)
- Lens remote control cables (for S14x7.5BMD-D24), ECM-100M (100m)
- Lens iris extension cable, ECE-R22 (220mm)
- AC adaptor, AP-60A
- Camera control box, RC-C10
- Camera control box, JU-Z2
- 1/2"-2/3" lens mount conversion adaptor, LM-C10

HITACHI DENSHI (Europa) GmbH

Weiskircher Str. 88
63110 Rodgau, Germany
T. 06106-6992-0
Fax 06106-16906

http://ourworld.compuserve.com/homepages/Hitachi_Denshi

E-Mail: 100443.2014@compuserve.com

Dimensions

