

3-CCD--Color Camera

MODEL HV-C20

Operation Manual



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.

• Lens

To select a lens, be sure to read "Selection of lens" on page 8.

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:0 to 40°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.

Standard composition

Camera, HV-C20	1
Accessories	1set
Lens mount cap	1
Plug, RM12BPG-3S, for 12V IN	1
Plug, E4-191J-100, for LENS	
Operation Manual	1

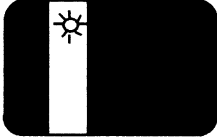
Phenomena inherent to CCD imaging device

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 shot, 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.

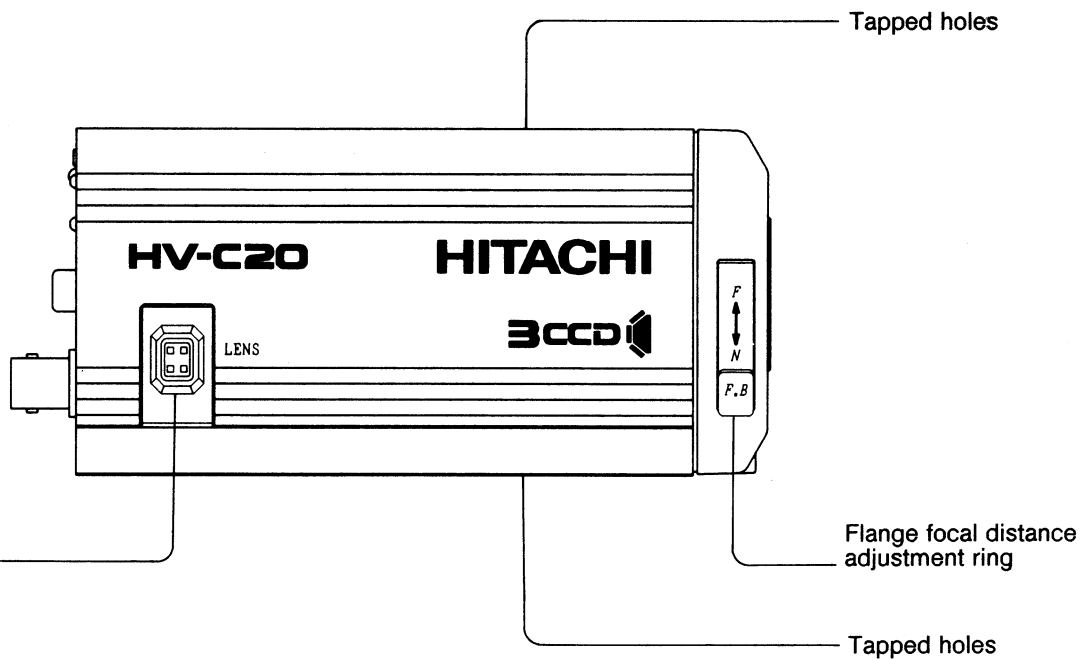
3) Moire

When fine patterns are shot, moire may be displayed.

4) Note for shooting

When strong light (electric bulb, fluorescent lamp, reflected sunlight, or the like) is present near an object, ghost can be generated. This phenomenon may be remarkable according to the lens iris condition or the kind of a lens in use. In such a case, change the angle of the camera.

Name and function of each section



Pilot lamp

VIDEO connector
A composite video signal (1Vp-p /75Ω) is available.

REMOTE connector
connect the remote control box RC-C10 or the RS-232c level converter

12V IN connector

Y/C connector
Y/C signals are available.

MULTI connector
The RGB signals, sync signal, etc. are available.
A trigger signal is connected in the external shutter mode.

BAR/SEL switch

Direct mode: Operates as the ON/OFF switch of the color bar signals.
MENU mode: Operates as a cursor shift key to select each function.

MENU switch

Switches between the direct mode and the MENU mode.
When the MENU mode is selected, the menu is displayed.

ASC/DOWN switch

Direct mode:
Operates as the ON switch of the auto shading correction (ASC) function.
MENU mode:
Operates as the switch to change or execute the data of each function.

AWB/UP switch

Direct mode:
Operates as the ON switch of the auto white balance (AWB) function.
MENU mode:
Operates as the switch to change or execute the data of each function.

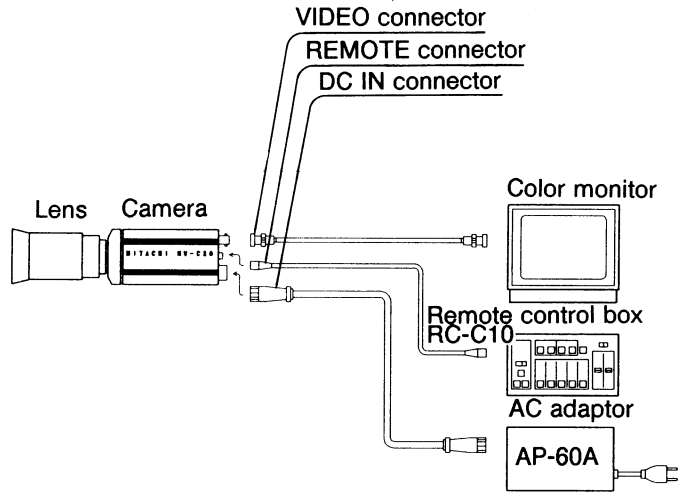
GL IN connector

Connect a black burst signal or a composite video signal to operate the camera in the genlock mode.

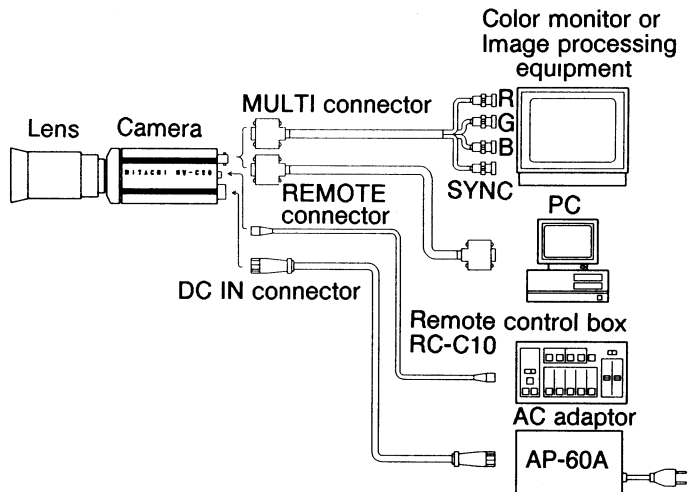
For details of each connector, see "Connectors" on page 24.

Typical system configurations

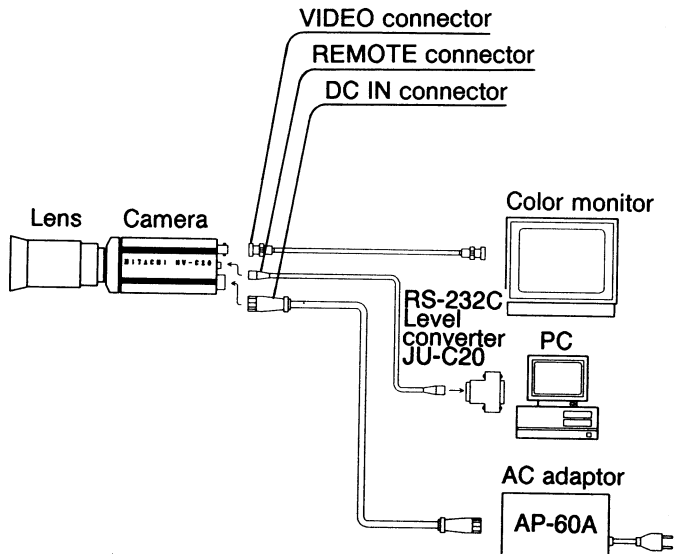
When a VBS signal is used
(generally for observation
applications)



When RGB signals are used
(generally for image
processing applications)



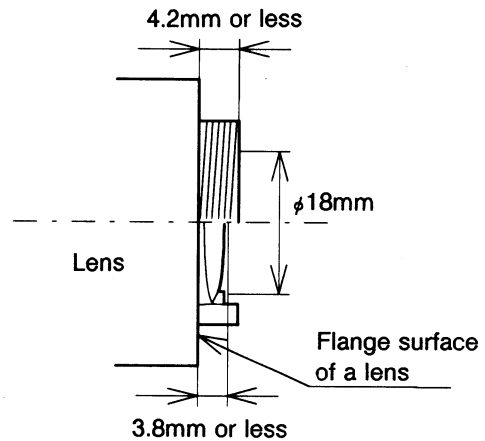
When the camera is
controlled from a PC



Lens

Caution

Observe the dimensions of the lens mounting section as illustrated at the right.
If the dimensions are not observed, do not use such a lens, because the lens and the camera will be damaged.



Selection of lens

(1) Optical characteristics

If an appropriate lens is not used, the performance of the camera cannot be fully demonstrated. In case of a 3-CCD camera using a C-mount lens, the exit pupil of a lens is an important factor. If the exit pupil is short, colors at the upper and lower parts of the screen become uneven. Therefore, select a lens having the optical characteristics equivalent to the lenses listed below.

Manufacturer	Type	Specification	Position of exit pupil(reference)
Cosmicar	C6Z1218	12.5 to 75mm f1.8	-40mm
Fujinon	D10×8A-MDM21	8 to 80mm f1.4	-138mm
Canon	PH10×8R II	8 to 80mm f1.4	-118mm

When a lens is approaching the fully opened state, picture quality can be impaired by the deterioration of resolution, and the generation of shading or flare.

When the camera is used with the lens iris opened fully, it is recommended to use a lens for a 3-chip CCD color camera as listed below.

(2) Kinds of auto iris lenses

An auto iris lens of the video signal (built-in iris amp) type or DC type (Cosmicar's manual override type) can be used. The lens without an iris amp cannot be used.

Some settings must be changed according to the type of the auto iris lens to be used.

For settings, see "Menu screens" on page 11.

Flange focal distance adjustment

When the picture is out of focus after a lens is replaced, or when the picture is out of focus at the telephoto and wide positions, adjust the flange focal distance by taking the following procedure.

Manufacturer	Type	Specification
Cosmicar	H10ZAME-R	7.5~75mm
	C10ZBME-R	F1.2 10.5~105mm
Fujinon	S10×8DB-SNDS21	F1.4 8~80mm
Canon	J7×10B CM	F1.6 10~70mm
		F2.1

1. In case of fixed-focus lens

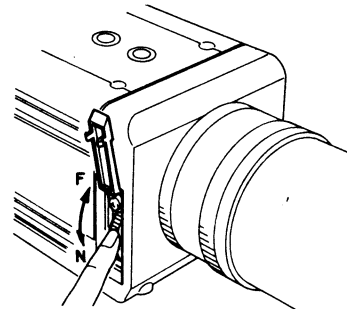
Set the focus ring of the lens to the infinite position and shoot an object more than 20 meters away, then rotate the flange focal distance adjustment ring in the direction of N or F for optimum focus.

2. In case of zoom lens

1) Set the zoom lens to the telephoto position and shoot an object more than 3 meters away. Then, rotate the focus ring appropriately for optimum focus.

2) Set the zoom lens to the wide position and rotate the flange focal distance adjustment ring, taking care that the focus ring does not move.

Repeat the above steps 1) and 2) appropriately so that the picture becomes in focus at the telephoto and wide positions.



Installation of camera

A tapped hole is provided in the top plate and the bottom plate.

Fix the camera on a tripod or a camera mount, using either of the tapped holes.

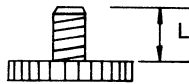
Caution

Use a camera fixing screw as illustrated below.

U1/4-20

L = 4.5 to 6mm

If a screw other than specified is used, the camera cannot be installed securely or may drop, resulting in damage.



Menu screens

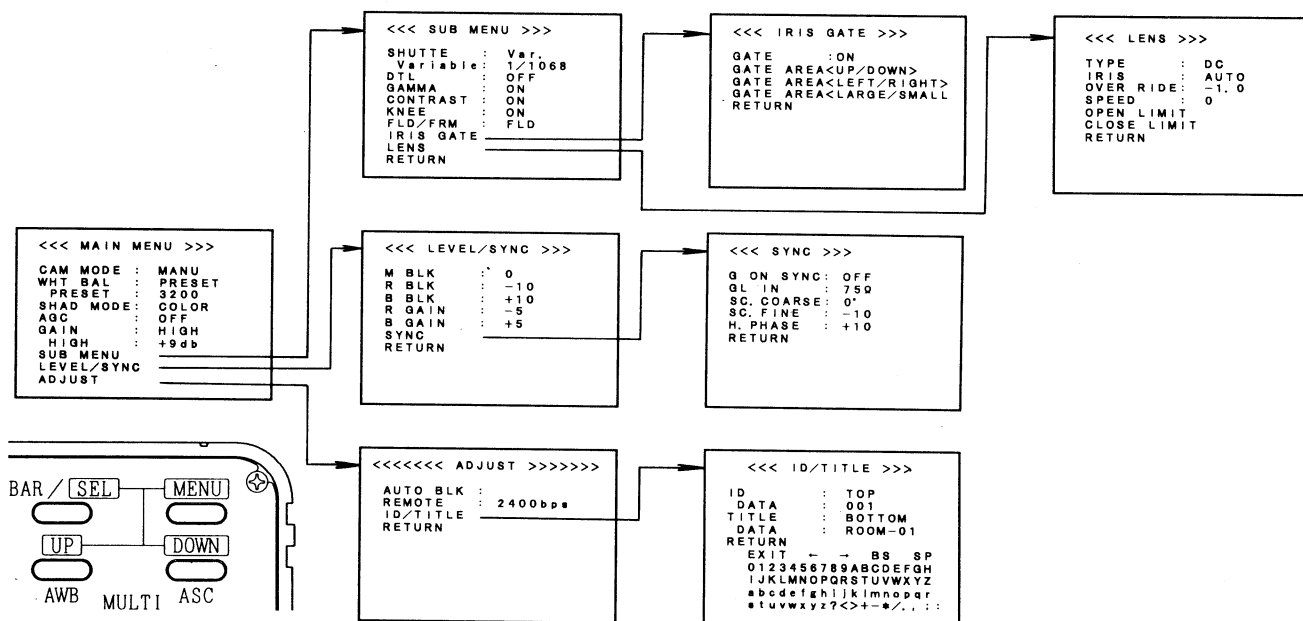
1. Configuration of menus

Various settings of the camera can be changed, using the corresponding menu screen. Pressing the **MENU** switch establishes the menu mode, and the menu screen is displayed. Another pressing the **MENU** switch establishes the direct mode.

The menu screen contains the function mode setting items and the popup menu items. The hierarchy of the menus is shown below.

A cursor can be moved by the **SEL** switch, and a mode can be changed by the **UP/DOWN** switches.

Further, a pop up menu screen can be displayed by the **UP/DOWN** switches. The popup menu item screen is displayed by the **RETURN** key.



2. MAIN MENU

CAM MODE: Camera mode

MANU mode

Almost all function modes can be set. Select the MANU mode to perform the camera setting precisely.

AUTO mode

The full auto mode is established. The functions with * are fixed to the respective values, and the cursor skips these functions.

In the AUTO mode, the graphics "AUTO" blinks at the top right of each menu screen.

Menu	Function and mode
MAIN MENU	WHT BAL :AUTO
	AGC :ON
	LIMIT :Fixed to the value in the MANU mode.
SUB MENU	SHUTTER :AES(in the LENS TYPE:DC mode) :OFF(in the LENS TYPE:VIDEO mode)
	GAMMA :ON
LEVEL/SYNC	R BLK :0
	B BLK :0
	R GAIN :0
	B GAIN :0
LENS(TYPE:DC)	TYPE :DC(fixed to the value in the MANU mode)
	OPEN LIMIT
	CLOSE LIMIT
LENS(TYPE:VIDEO)	TYPE :VIDEO(fixed to the value in the MANU mode)
	REF :Disable

WHT BAL:White balance mode

PRESET mode

The same status as the white balance is controlled at 3200K or 5600K is established. A color temperature can be switched by the PRESET item on the next line.

MEM mode

The same status as the white balance is controlled by the **AWB** switch in the direct mode is established. The reference color temperature is displayed on the next line.

AUTO mode

The real-time auto white balance mode is established.

SHAD MODE:Auto shading correction mode

COLOR mode

Unevenness of the color at the upper and lower parts of the screen becomes minimum.

LUMIN mode

Each signal level of the RGB signals at the upper and lower parts of the screen becomes equal.

AGC:AGC ON/OFF

ON mode

Gain is automatically controlled. The upper limit of gain is the value set by the LIMIT on the next line.

OFF mode

Gain is fixed to the value set by the GAIN on the next line.

LIMIT:Upper limit value of AGC (in the AGC:ON mode)

The upper limit value of gain in the AGC ON mode can be set. The settable range is between +6dB and +18dB. When both **UP** and **DOWN** switches are pressed together for 2 seconds, the upper limit value is set to +18dB.

This value cannot be set in the CAM AUTO mode.

GAIN:Gain setting (in the AGC:OFF mode)

NORM mode

Gain is set to 0dB.

HIGH mode

Gain is the value set by the HIGH on the next line.

MAX mode

Gain is the value set by the NEXT on the next line.

HIGH:Gain setting in the GAIN:HIGH mode (in the AGC:OFF mode)

Gain can be set in the range from 1 to 17dB. When both **UP** and **DOWN** switches are pressed together for 2 seconds, gain is set to +9dB.

MAX: Gain setting in the GAIN:MAX mode (in the AGC:OFF mode)

Gain can be set in the range from 2 to 18dB.

However, a value smaller than the set value by HIGH cannot be set. When both UP and DOWN switches are pressed together for 2 seconds, gain is set to 18dB.

SUB MENU:The SUB MENU is executed.

LEVEL/SYNC:The LEVEL/SYNC menu is executed.

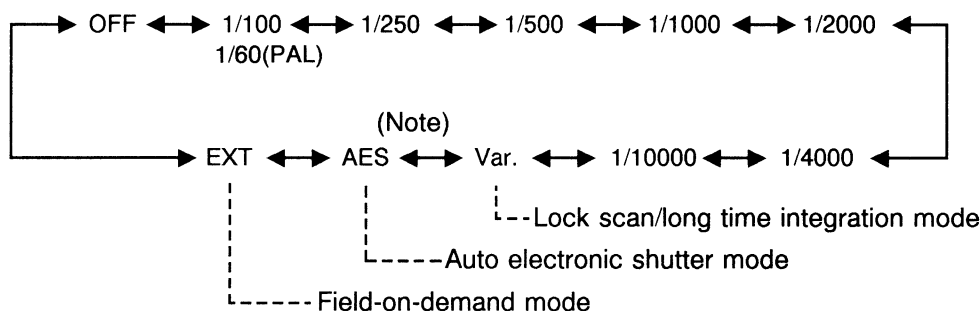
ADJUST:The ADJUST menu is executed.

3. SUB MENU

SHUTTER:Electronic shutter mode

The electronic shutter mode is switched in the following sequence.

In the Var. or EXT mode, further settings can be made by the item on the next line.



- (Note) 1. The AES mode cannot be established when TYPE:VIDEO is selected, using the LENS menu.
 2. When TYPE:VIDEO is selected in the AES mode, using the LENS menu, the SHUTTER:OFF mode is established.

Variable: Setting of variable electronic shutter speed (in the SHUTTER:Var. mode)

1/1 to 1/30 (1/25 PAL):Long time integration mode

The video signal is output intermittently from the camera. To obtain a continuous picture, an image memory or the like is required.

1/60.38 (1/50.31 PAL) to 1/10168 (1/10040 PAL):Lock scan mode

EXTERNAL:Setting of Field-on-Demand function (in the SHUTTER:EXT mode)

The electronic shutter can be operated at the desired timing and exposure time.

1 TRIG mode

The desired shutter speed can be set by a pulse width.

2 TRIG mode

The desired shutter speed can be set by the interval between two trigger pulses.

FIX TRIG mode

The electronic shutter operates for approximately 1/1600 for an input pulse.

EXT TRIG mode

Only exposure time can be controlled by inputting one pulse.
 SYNC is not reset.

Note: For the use of the Field-on-Demand function, contact your local Hitachi Denshi sales representative.

DTL:DTL amount control

Select OFF, LOW, NORM or HIGH.

GAMMA:Gamma ON/OFF

CONTRAST:Contrast ON/OFF

When ON is selected, the contrast of dark portion is enhanced.

KNEE:Knee ON/OFF

When ON is selected, the gradation of white portion becomes natural.

FLD/FRM:Integration mode of CCD

FLD mode

The field integration mode is established. (Normal use)

FRM mode

The frame integration mode is established.

- Note** 1. In this mode, vertical resolution is increased, but after image is increased. Therefore, this mode is effective for freeze picture.

2. Do not use this mode in the SHUTTER:AES mode.

IRIS GATE: The IRIS GATE menu is executed.

LENS: The LENS menu is executed.

RETURN: The MAIN MENU is displayed.

4. LEVEL/SYNC

M BLK:Master black level

The master black level can be set in the range from -128 to 127. When both **UP** and **DOWN** switches are pressed together for 2 seconds, the value is set to zero.

R. BLK:R. black level

The R black level can be set in the range from -128 to 127. When both **UP** and **DOWN** switches are pressed together for 2 seconds, the value is set to zero.

B. BLK:B black level

The B black level can be set in the range from -128 to 127. When both **UP** and **DOWN** switches are pressed together for 2 seconds, the value is set to zero.

R. GAIN:R gain level

The R gain level can be set in the range from -128 to 127. When both **UP** and **DOWN** switches are pressed together for 2 seconds, the value is set to zero. However, the value is automatically set to zero in the WHT BAL:AUTO mode.

B. GAIN:B gain level

The B gain level can be set in the range from -128 to 127. When both **UP** and **DOWN** switches are pressed together for 2 seconds, the value is set to zero. However, the value is automatically set to zero in the WHT BAL:AUTO mode.

SYNC: The SYNC menu is executed.

RETURN: The MAIN MENU is displayed.

5. ADJUST

AUTO BLACK: The auto black balance function is executed by pressing the **UP** switch.

REMOTE: Setting of baud rate for remote control.

Note: Prior to setting the baud rate, connect the cable to the REMOTE connector.

62,500 bps

Set to 62,500 bps when the dedicated remote control box like RC-C10 is used.

In this case, be sure to set the baud rate of the RC-C10 to 62500bps.

For the baud rate setting of the RC-C10, see the operation manual of the RC-C10.

2,400 bps, 4,800 bps, 9,600 bps

Set to either of these baud rates when a PC is used.

In this case, contact your nearest Hitachi Denshi sales representative.

ID/TITLE:The ID/TITLE menu is executed.

RETURN:The MAIN MENU is displayed.

6. IRIS GATE

GATE:Iris gate ON/OFF

ON mode

The AGC, lens iris and auto electronic shutter are controlled by detecting the video signal level at the set window section. As the window signal is superimposed on the video signal in the menu mode, the optimum window signal can be set by changing the size and position of the gate area, while observing the monitor.

In the direct mode, the gate area is not displayed.

OFF mode

The AGC, lens iris and auto electronic shutter are controlled by detecting the video signal of the entire screen. The gate area is not set. Further, the window is not displayed.

GATE AREA

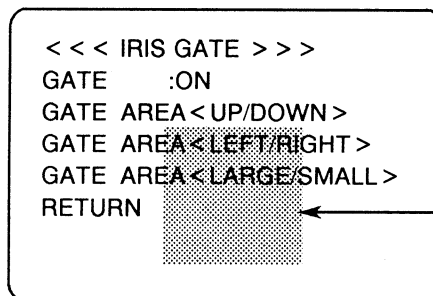
<UP/DOWN>: Moves the gate area vertically.

GATE AREA

<LEFT/RIGHT>: Moves the gate area horizontally.

GATE AREA

<LARGE/SMALL>: Sets the size of the gate area.



Gate area

RETURN:The SUB MENU is displayed.

7. LENS

TYPE:Setting of kind of auto iris

DC mode

Select the DC mode when a lens whose iris is controlled in proportion to the DC voltage is used.

Select the DC mode when the auto iris lens is not used.

VIDEO mode

Select the VIDEO mode when a lens whose iris is controlled by the video signal is used.

Note: In the VIDEO mode, the auto electronic shutter (AES) cannot be used.

IRIS:Setting of iris mode (in the TYPE:DC mode)

AUTO mode

Select the AUTO mode when an auto iris lens is used.

MANUAL mode

Select the MANUAL mode when an auto iris lens is not used.

Note: When the AGC function is interlocked with the AES function, set the iris mode correctly.

OVERRIDE: Fine adjustment of auto iris (in the TYPE:DC mode)

Select -1.0, -0.5, 0, 1.5 or 1.0

SPEED:Auto iris speed (in the TYPE:DC mode)

Adjust the auto iris speed in the range from 1 to 15.

OPEN LIMIT:Open limit (in the TYPE:DC mode)

Adjust the lens iris for the position where the lens iris opens fully, while observing the lens iris. In case picture quality becomes poor when the lens iris opens fully, this function is effective.

Note 1. Prior to this setting, set AGC to OFF, GAIN to NORM and SHUTTER to OFF.
2. If this setting is insufficient, AGC does not function correctly.

CLOSE LIMIT:Close limit
(in the TYPE:DC mode)

Adjust the lens iris to a minimum, while observing the lens iris.

Note 1. Prior to this setting, set AGC to OFF, GAIN to NORM and SHUTTER to OFF.

2. If this setting is insufficient, AES does not function correctly.

REF:Reference setting (in the TYPE:VIDEO mode)

This setting is needed after a lens of VIDEO type is replaced or when a lens is used first.

First of all, adjust the LEVEL/ALC control or the like at the lens side for optimum video signal level. Then, press the UP switch when the auto iris function is activated.

Perform this setting by pressing the UP switch with the auto iris executed (with the lens iris opened fully or not closed completely).

For the control on the lens, see the operation manual of the lens.

Note 1. Prior to this setting, set AGC to OFF, GAIN to NORM and SHUTTER to OFF.

2. If this setting is insufficient, AGC does not function correctly.

3. When the setting at the lens side is changed after performing the reference setting, interlocking with the AGC does not function normally. When the setting at the lens side is changed, be sure to perform the reference setting.

RETURN: The SUB MENU is displayed.

8. SYNC

G ON SYNC:G ON SYNC ON/OFF

The sync signal in the RGB signals or the G signal is switched.

GL IN:Switching of impedance of genlock input signal

HIGH

Set to high impedance.

75Ω

Set to 75Ω.

As the impedance becomes high when the camera is turned off, do not use this function in the system where the camera is turned off independently.

SC COARSE: Coarse adjustment of subcarrier phase Select 0°, 90°, 180° or 270°.

SC FINE: Fine adjustment of subcarrier phase
 The phase can be set in the range from -128° to 127° . When this range is exceeded, the setting by the SC COARSE is automatically updated and the phase can be adjusted continuously.

H. PHASE: Horizontal sync phase adjustment
 The phase can be adjusted in the range from -128° to 127° .

RETURN: The LEVEL/SYNC screen is displayed.

9. ID/TITLE

ID: Setting of ID No. display position

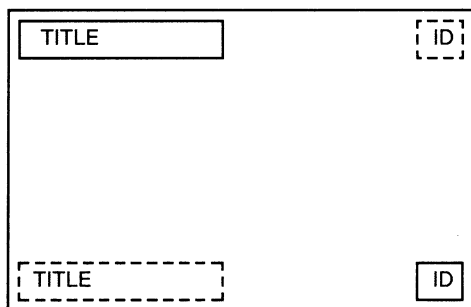
When ID number is registered to each camera, the desired camera can be remotely controlled from the a PC.

The data on the next line is executed. This ID number can be displayed on the screen.

OFF: No display
 TOP: Displayed at the top right
 BOTTOM: Displayed at the bottom right

TITLE: Setting of title display position
 The data on the next line is executed.

OFF: No display
 TOP: Displayed at the top left
 BOTTOM: Displayed at the bottom left



DATA: ID number data
 Three characters consisting of uppercase letters, figures and/or spaces.

TITEL data
 12 characters consisting of uppercase letters, figures, symbols and/or spaces.

Note: “_”(space symbol) on data display position is not displayed on the screen.

RETURN: The ADJUST screen is displayed.
 Setting procedure of ID/TITLE
 1. Move the cursor to DATA.
 2. Press the **UP** or **DOWN** switch, then the characters are displayed at the lower part of the screen.
 3. Move the blinking cursor to the desired blinking character by the **UP** or **DOWN** switch, and enter it by the **SEL** switch.
 Functions of soft keys displayed above the character screen.

EXIT : Enter the DATA setting mode.
 ← : Moves a blinking character in the DATA section leftward by one character, when changing the input data.
 → : Moves a blinking character in the DATA section rightward by one character, when changing the input data.
BS : Backspace
SP : Space

The following characters and symbols can be used.

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H
I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r
s	t	u	v	w	x	y	z	?	<	>	+	-	*	/	.	,	;

Note: The characters on the upper two lines can be used for the ID data.

Adjustment for better picture quality

White balance adjustment

Adjust the white balance when illumination conditions are changed.

1. Set WHT BAL to MEM in the menu mode.
2. Select the direct mode.
3. Adjust the lens iris appropriately.
4. Place a white thing in the scene and zoom in.

5. Press the **AWB** switch. Then, AUTO WHITE:ON is displayed, and white balance is adjusted.

C. TEMP:3200 and C. TEMP:5600 are the reference color temperatures in the camera, and the proper temperature is selected automatically.

6. When white balance cannot be adjusted automatically, the corresponding error message is displayed.

Error message	Measures
AUTO WHITE:NG CHANGE TO CAM TRY AGAIN	<ul style="list-style-type: none"> • Turn off the color bars.
AUTO WHITE:NG CHANGE TO MEM TRY AGAIN	<ul style="list-style-type: none"> • Set WHT BAL to MEM.
AUTO WHITE:NG LOW LIGHT TRY AGAIN	<ul style="list-style-type: none"> • Insufficient quantity of light • Increase illumination, open the lens iris, or increase gain to obtain an appropriate video level. • Press the AWB switch again
AUTO WHITE:NG C.TEMP HIGH TRY AGAIN	<ul style="list-style-type: none"> • Color temperature is too high. (Continue to use if there is no practical problem.) • Lower the color temperature by adding a warm color temperature correcting filter to the lens or the illumination.
AUTO WHITE:NG C.TEMP LOW TRY AGAIN	<ul style="list-style-type: none"> • Color temperature is too low. (Continue to use if there is no practical problem.) • Increase the color temperature by adding a cold color temperature correcting filter to the lens or the illumination.

Real-time auto white balance

The built-in microprocessor adjusts the white balance in real-time by detecting white portion in the signal sent from the camera.

This function is useful when color temperature changes in the lapse of time.

(Note) when illumination is changed from reddish light source (electric bulb or the like) to bluish one (fluorescent lamp, cloudy sky, or the like), white balance will be lost instantly. This is not due to failure. White balance will be regained in the lapse of time.

1. Set WHT BAL to AUTO in the menu mode.

Auto shading correction

Unevenness in colors may be observed in the vertical direction according to a lens. This camera is provided with the function to correct such unevenness in colors automatically.

Two correction modes are available. Prior to execution of correction, select the desired correction mode in the menu mode.

Mode	Application
SHAD MODE:COLOR	• Normal lens
SHAD MODE:LUMIN	• Microscope

1. Establish the direct mode.
2. Set the lens iris appropriately.
3. Allow a white object to be displayed on the entire screen.
Use care that unevenness in colors cannot be observed in the vertical direction.
4. Press the **ASC** switch. Then, AUTO SHADING:OK is displayed, and unevenness in colors is corrected.
5. When auto shading correction is not made, the corresponding message is displayed.
Repeat the above procedure, if necessary.

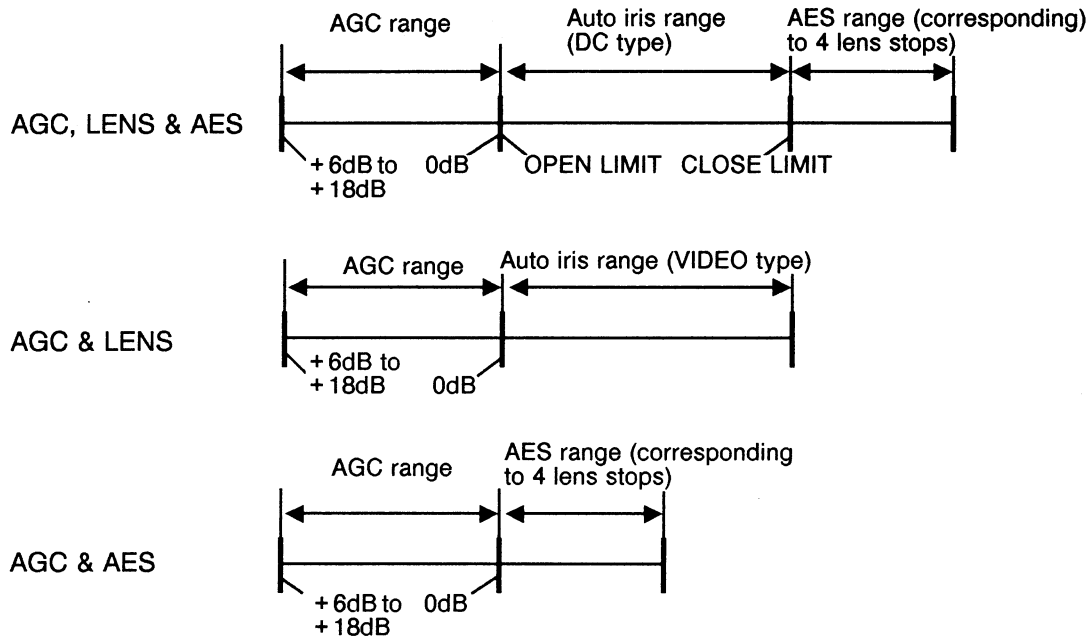
(Note) When the ASC switch is pressed, a message can disappear in accordance with the brightness of a white object in a scene. This is not due to failure. In this case, correction is being performed. Therefore, do not move the camera, or do not change the lens iris until the message AUTO SHADING:OK or NG is displayed. If wrong operation is made, correct shading correction data is not obtained. If wrong operation is made, repeat the steps 1 thru 4 above.

Error message	Measures
AUTO SHADING:NG CHANGE TO CAM TRY AGAIN	<ul style="list-style-type: none"> • Turn off the color bars.
AUTO SHADING:NG LOW LIGHT TRY AGAIN	<ul style="list-style-type: none"> • Insufficient quantity of light • Increase illumination, open the lens iris, or increase gain to obtain an appropriate video level. • Press the AWB switch again
AUTO SHADING:NG C.TEMP HIGH TRY AGAIN	<ul style="list-style-type: none"> • Color temperature is too high. (Continue to use if there is no practical problem.) • Lower the color temperature by adding a warm color temperature correcting filter to the lens or the illumination.
AUTO SHADING:NG C.TEMP LOW TRY AGAIN	<ul style="list-style-type: none"> • Color temperature is too low. (Continue to use if there is no practical problem.) • Increase the color temperature by adding a cold color temperature correcting filter to the lens or the illumination.
AUTO SHADING:NG SHAD MODE:COLOR CONTROL LIMIT	<ul style="list-style-type: none"> • The optimum correction could not be made because correction amount is too large. Correction has been made as much as possible. Continue to use if there is no practical problem. • Replace with a lens providing less shading.
AUTO SHADING:NG SHAD MODE:LUMIN CONTROL LIMIT	<ul style="list-style-type: none"> • The optimum correction could not be made because correction amount is too large. Correction has been made as much as possible. Continue to use if there is no practical problem. • Replace with a lens providing less shading.

ALC

Three kinds of the automatic level control (ALC) functions are available by the combination of the AGC:ON mode, SHUTTER:AES mode and auto iris. Therefore, a stable video output signal is available for the wide change in quantity of light.

- Note**
1. The AES function is not available for a lens of VIDEO type.
 2. When an auto iris lens is not used, set TYPE to DC and IRIS to MANUAL, using the LENS menu.



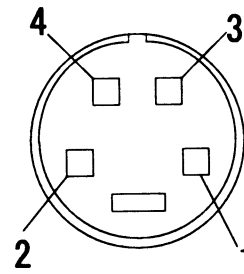
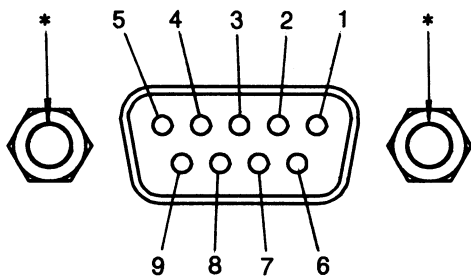
Connectors

MULTI connector

Pin No.	Signal
1	GND
2	GND
3	R output
4	G output
5	B output
6	VBS output
7	SYNC output
8	HD output
9	VD output

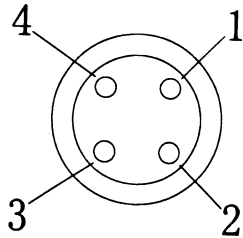
Y/C connector

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

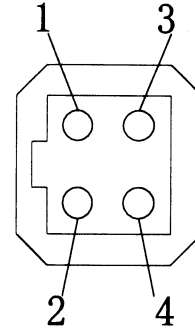


REMOTE connector

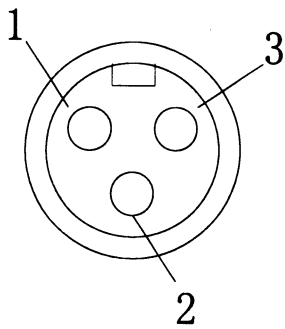
Pin No.	Signal
1	+ 12V output
2	SD input
3	SD output
4	GND

**LENS connector**

Pin No.	Signal
1	Control
2	GND
3	+ 12V
4	NC

**12V IN connector**

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



Optional accessories

- 1) AC adaptor, AP-60A
- 2) Zoom lens (see PAGE 13-25.)
- 3) Remote control box RC-C10
- 4) RC-232C Level converter, JU-C20