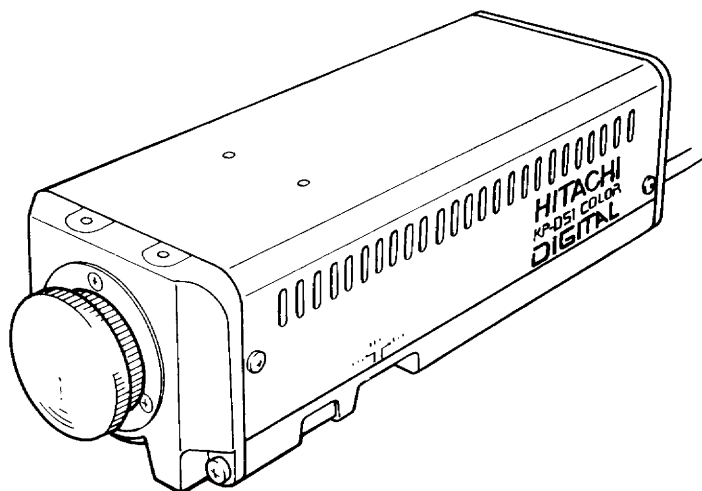


Color Video Camera

MODEL KP-D51



OPERATION MANUAL

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

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

Table of contents

CAUTION FOR SAFE OPERATION	A	Installation of camera	11
IMPORTANT NOTICE	F	Description on setting menus	12
General	1	Configuration of setting menus	12
Features	1	Setting procedures	13
Operating considerations	2	Main setting menu	14
Phenomena inherent to CCD imaging device	3	Character display setting menu	15
Name and function of each section	4	Light control setting menu	17
Connection	6	AGC setting menu	22
Connection of video output connector	6	White balance control setting menu	24
Connection of external sync input connector	6	Shutter speed setting menu	27
Lens	7	Sync mode (phase adjustment) setting menu	28
Recommended lenses	7	Special setting menu	30
Note on lens selection	8	Color temperature and white balance adjustment	32
Installation of CS-mount lens	8	Remote operation	33
Lens selector switch	9	Major specifications	35
Use of lens connector	9	Accessories	37
Flange focal distance adjustment	10	Optional accessories	37

The Hitachi KP-D51 is a 1/2" CCD color camera using a digital signal processing circuit.

Features

● High sensitivity

Minimum illumination is 2 lx(f 1.2) thanks to the CCD with micro lenses and a low noise circuit.

● High resolution

Horizontal resolution of 470 TV lines NTSC (460 TV lines PAL) is achieved by using a CCD having the 380,000 NTSC (440,000 PAL) effective pixels.

● High picture quality

- * Digital signal processing LSI
- * Contour compensation by digital technology and 2H vertical enhancer
- * Dynamic range improved by contrast correction processing (black stretch and white suppression)

● Various functions

- * Backlight correction function (auto or manual setting)
- * Auto tracking white balance
- * Electronic shutter function (up to 1/10000 s)
- * Auto electronic shutter function, and auto electronic shutter + auto iris function

Operating considerations

Power supply

Be sure to use the power source specified in the Major Specifications.

- Before plugging or unplugging a connector, be sure to turn off power.
To plug or unplug a connector, be sure to hold the connector section.
- Note that it will take several seconds until a picture is displayed on the monitor after power on.

Handling

- Do not attempt to remove cover.
- When installing or removing a lens, be sure to use care that water or dust does not enter the inside of the camera.

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 50°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 in picture quality 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.

Name and function of each section

REMOTE connector

Use this connector to control a setting menu remotely.
See Remote operation on page 33.

Setting menu operation switches

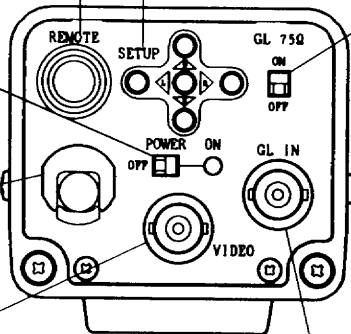
Use these five switches to set or confirm each setting according to the respective menu.
For details, see Setting procedure on page 13.

POWER switch

Pilot lamp

Power cable

VIDEO output connector



Ext. sync termination switch

Set to ON except when looping through a sync signal.

Ext. sync input connector

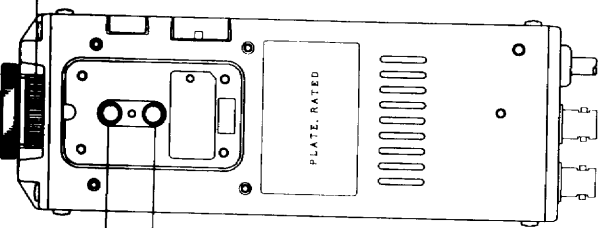
Connect a black burst or composite video (VBS) signal to this connector.

Flange focal distance adjustment ring

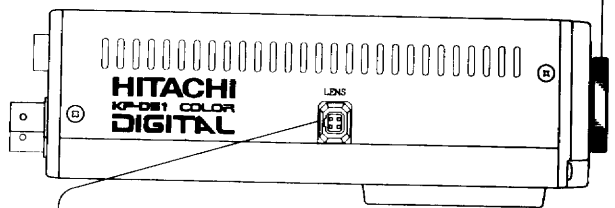
For detail, see Flange focal distance adjustment on page 10.

C-mount adaptor

Use this adaptor when a C-mount lens is used.
Remove the C-mount adaptor when a CS-mount lens is used.

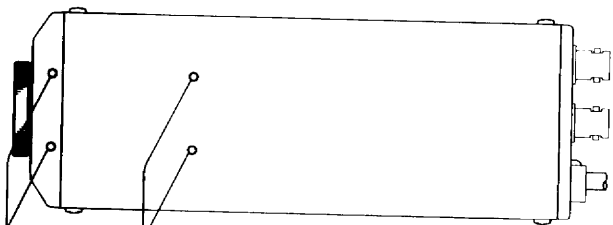


Tapped hole for camera mounting screw
1/4"-20UNC (depth:7.5mm)



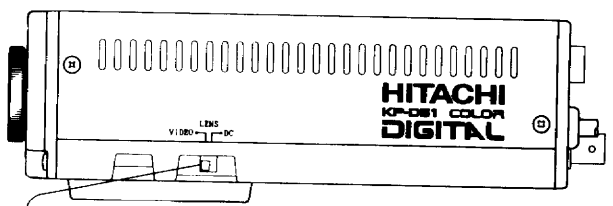
Lens cable connector

Connect a lens cable when an auto iris lens is used.



Tapped hole for camera mount adaptor

For detail, see Installation of camera on page 11.



Lens selector switch

Set this switch according to the type of the lens to be used.

VIDEO: Set to VIDEO when a lens to which a video signal is supplied is used.

DC: Set to DC when a lens to which a DC voltage is supplied is used.

Connection

• Connection of video output connector

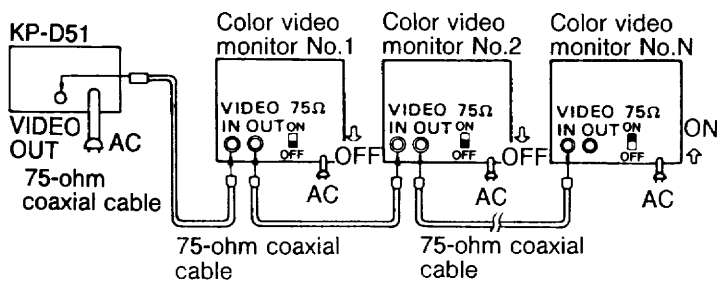
Connect the video output of the camera to the video input connector of the equipment to be connected.

When more than one video monitor is looped through, set the 75Ω termination switch of the final monitor to ON.

Select a coaxial cable, considering the length between the camera and the connected equipment.

Approximate maximum cable length that ensures a picture with less deterioration in quality is as follows.

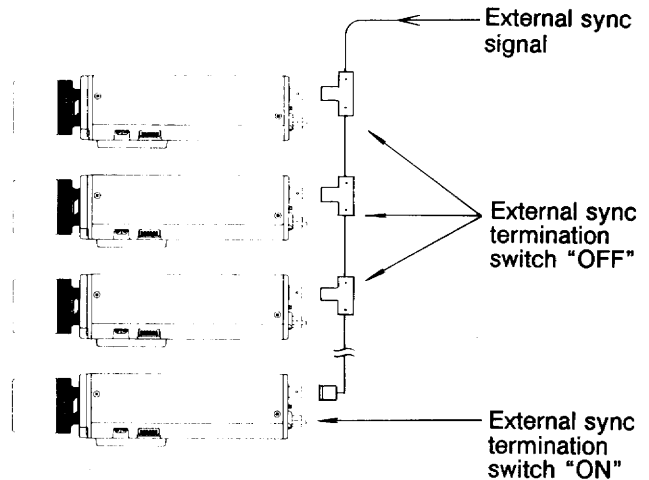
- 3C-2V ... 150m
- 5C-2V ... 200m
- 7C-2V ... 300m
- 10C-2V ... 400m



• Connection of external sync input connector

Connect a black burst signal (B.B.) or a composite video signal (VBS) to the external sync input connector, the external synchronization mode is established.

When more than one camera is genlocked in loop-through mode, set the 75Ω termination switch of the final camera to ON.



Lens

Recommended lenses

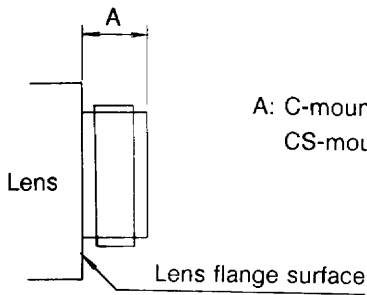
To demonstrate the full performance of the camera, select a lens from the following recommended lenses.

Type	Type name	Specification	Lens mount
Fixed iris	HS316	3.7 mm, f1.6	CS-mount
	H416	4.2 mm, f1.6	C-mount
	H612A	6 mm, f1.2	C-mount
	HS614A	6 mm, f1.4	CS-mount
	H1212A	12 mm, f1.2	C-mount
Auto-iris	HS1214C	12 mm, f1.4	CS-mount
	H416EX-2	4.2 mm, f1.6	C-mount
	H316HX	3.7 mm, f1.6	CS-mount
	HS316GX	3.7 mm, f1.6	CS-mount
	※HS316GX(HJ)	3.7 mm, f1.6	CS-mount
	H612AEX-2	6 mm, f1.2	C-mount
	H614HX	6 mm, f1.4	CS-mount
	HS614GX	6 mm, f1.4	CS-mount
	※HS614GX(HJ)	6 mm, f1.4	CS-mount
	H1212AEX-2	12 mm, f1.2	C-mount
	H1214CHX	12 mm, f1.4	CS-mount
	HS1214GX	12 mm, f1.4	CS-mount
	※HS1214GX(HJ)	12 mm, f1.4	CS-mount

Note: The auto-iris lenses marked with ※ require a DC control voltage.

Note on lens selection

- 1) Observe the following condition for the dimension of the lens mounting section.



A: C-mount lens: 8.0mm or less
CS-mount lens: 4.5mm or less

In case the above condition is not observed, the inside of the camera may be damaged.

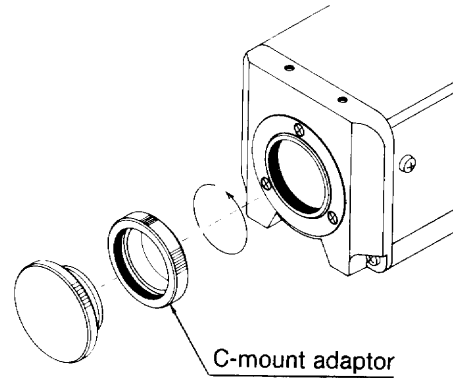
- 2) Do not use a lens heavier than the camera body itself.
If a lens is heavier than the camera, the camera is not balanced, resulting in possible damage.

Caution:

If it is needed to use a lens heavier than the camera body, be sure to fix the lens itself on a support.

Installation of CS-mount lens

Before shipment, the C-mount adaptor for a C-mount lens is provided for the camera. When using a CS-mount lens, remove the C-mount adaptor by turning it counterclockwise.



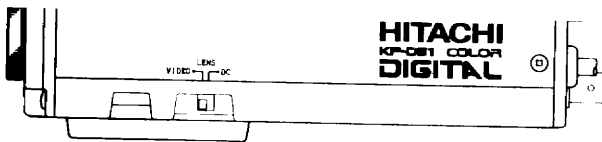
Store the removed C-mount adaptor for future use.

Lens selector switch

Switch the lens selector switch appropriately according to the lens to be used.

VIDEO: Set to **VIDEO** when a lens to which a video signal is delivered is used.

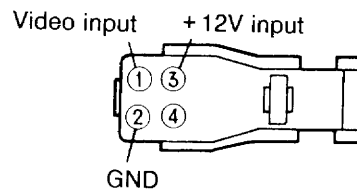
DC: Set to **DC** when a lens to which a DC control voltage is delivered is used.



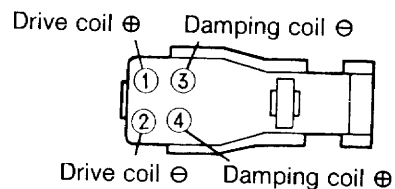
Use of lens connector

When an auto-iris lens is used, connect the lens cable to the supplied lens plug as illustrated below. For the combination of the signals in the lens cable and wire colors, see the operation manual of the used lens.

- Lens having an iris amplifier
(Set the lens selection switch to **VIDEO**.)



- Lens having no iris amplifier
(Set the lens selection switch to **DC**.)



After connecting the lens plug to the tip of the lens cable, insert the plug into the lens connector [LENS] on the side of the camera.

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.

To adjust the flange focal distance, take the following procedure.

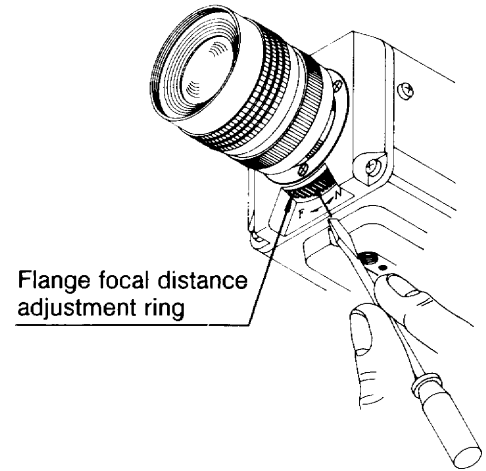
1. In case of fixed-focus lens

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 so that the picture becomes in focus.

2. In case of zoom lens

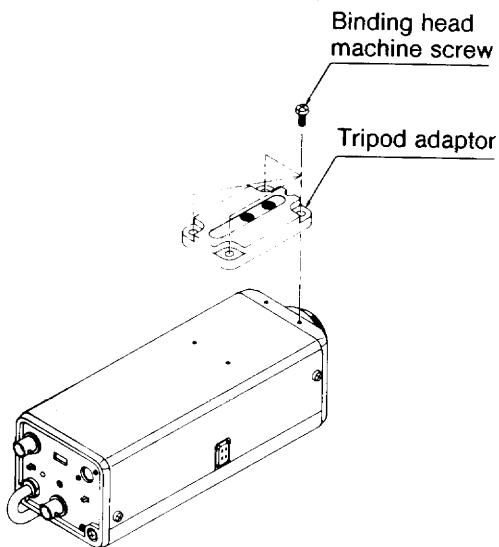
1) Set the zoom lens to the telephoto position and shoot an object more than 3 meters away. Then, rotate the focus ring appropriately so that the picture becomes in focus.

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

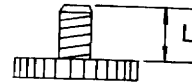
To secure the camera to the hanging bracket, install the optional adaptor TA-231 on the top of the camera as illustrated below.



Caution

Use a camera fixing screw as illustrated below.

U1/4-20
L = 4.5 to 7mm



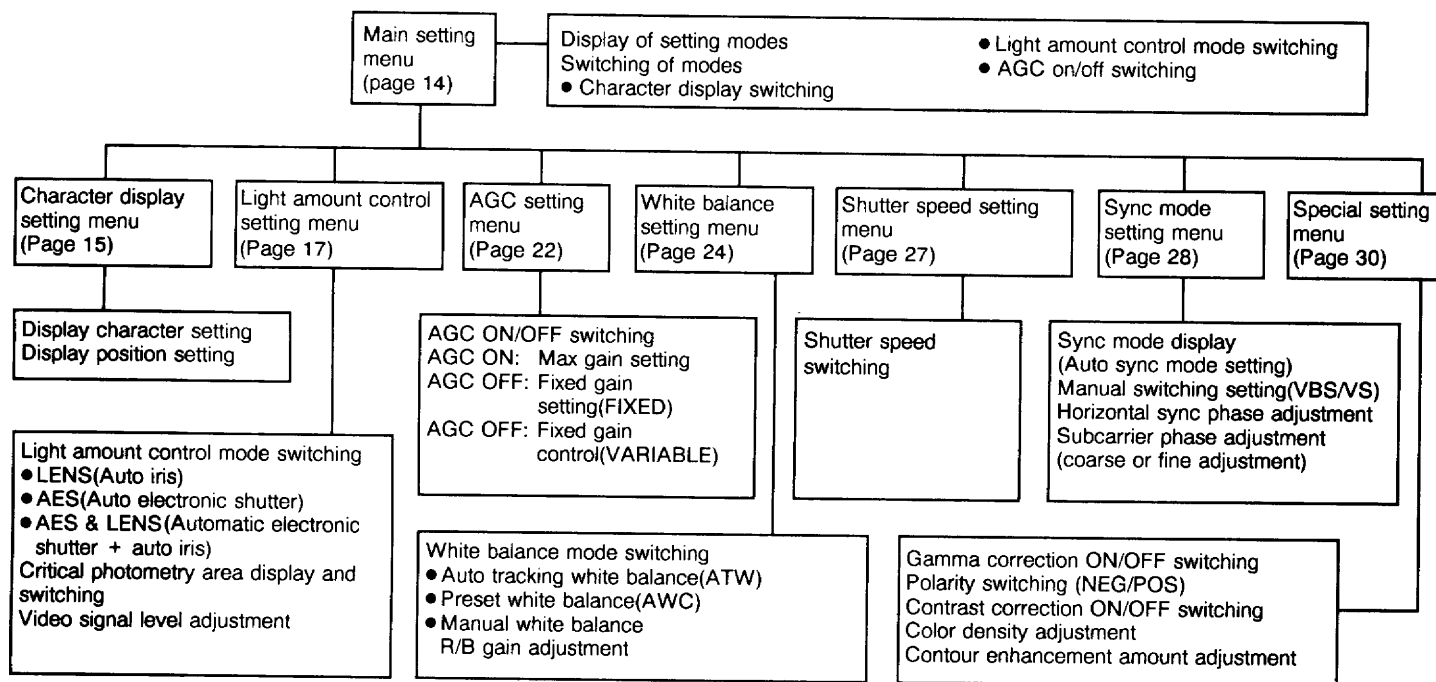
If a screw other than specified is used, the camera cannot be installed securely or may drop, resulting in damage.

Description on setting menus

Setting modes or values of the camera can be changed by using the corresponding setting menu displayed on a monitor screen.

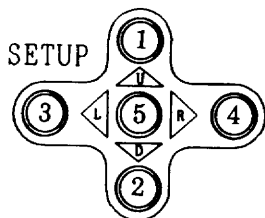
The setting menus are configured as follows.

Configuration of setting menus



Setting procedures

Settings can be made by the five keys on the rear.



- ① △ switch: Press to move the cursor upward.
- ② ▽ switch: Press to move the cursor downward.
- ③ ◀ switch: Press to move the cursor leftward.
- ④ ▶ switch: Press to move the cursor rightward.
- ⑤ Setting switch: Press to display the main setting menu or to proceed to the next item after entering the set value.

Main setting menu

- 1) Press the setting switch more than 2 seconds, then the main setting menu (MAIN MENU) is displayed on the monitor.

Cursor

```
<<<< MAIN MENU >>>>
>SET           :CLOSE      .... Memory write CLOSE/OPEN(switchable)
TEXT DISPLAY  :ON          .... Text character display ON/OFF(switchable)
LIGHT CONTROL:LENS        .... Light control mode(switchable)
AGC           :ON (21DB)   .... AGC ON/OFF(switchable)
WHITE BALANCE:ATW         .... White balance setting mode display
SHUTTER SPEED:1/60        .... Shutter speed setting display
SYNC MODE     :INT         .... Sync mode setting display
SPECIAL MENU                                     .... Special setting menu
END                                               .... End
```

Main setting menu

- 2) Confirm the current setting status on this menu screen.
- 3) If it is not needed to change any setting item, move the cursor to END at bottom left of the screen. Then press the setting switch to return to the normal shooting picture.

- 3) Press the setting switch.

- 4) When the cursor is moved to the next item or when the setting switch is pressed after the setting status is changed, the changed data is stored to the memory (EEPROM) in the camera. When the camera is turned on, the stored data is effective.

Caution:

The main setting menu will disappear if any key on the rear is pressed for approximately 5 minutes.

Storage of set data

- 1) Press the Δ (or ∇) switch to move the cursor to **SET**.
- 2) Press the \triangleright (or \triangleleft) switch to change **CLOSE** at the right side of **SET** to **OPEN**.

```
<<<< MAIN MENU >>>>
>SET           :OPEN
TEXT DISPLAY  :ON
LIGHT CONTROL:LENS
AGC           :ON (21DB)
WHITE BALANCE:ATW
SHUTTER SPEED:1/60
SYNC MODE     :INT
SPECIAL MENU
END
```

Main setting menu

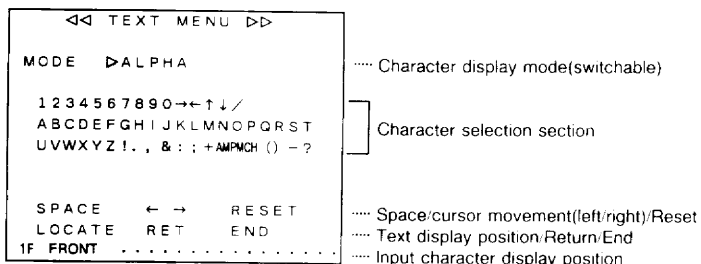
Caution:

When the setting data is changed with **CLOSE** displayed, the data disappears at power-off and the previous data becomes effective at power-on.

Character display setting menu

Up to 24 characters (one line) can be displayed on the screen. Whether or not to display characters on the screen can be selected on the main setting menu.

- 1) Establish the memory write enable mode (**SET:OPEN**).
- 2) Move the cursor to **TEXT DISPLAY** by the ∇ switch.
- 3) Whether or not to display characters on the screen can be selected by the \triangleright or \triangleleft switch. (When characters are not set, they cannot be displayed.)
- 4) Change **OFF** after the **TEXT DISPLAY** item to **ON** by the \triangleleft or \triangleright switch.
- 5) Press the setting switch to display the text creation menu as shown below.



Text setting menu(ALPHA)

Functions of each display above input character display position

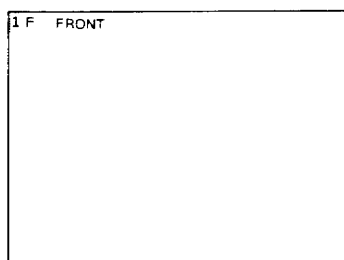
SPACE: Move the blinking cursor to this position and press the setting switch. Then, a blank space is set.

← →: Use these arrows to change a display character.

- 1) Move the blinking cursor to the desired arrow, and press the setting switch. Then, the blinking cursor in the input character display area moves to the corresponding direction.
- 2) Press the setting switch until the blinking cursor reaches the desired character position.

to the end of the screen, it stops.

- 3) Press the setting switch when the text comes to the desired position. Then, the main setting menu appears.



Move the text to the desired position by the four arrow switches, and press the setting switch.

Text display screen(LOCATE)

- 3) Move the blinking cursor to the character to be inserted by the four arrow switches, and press the setting switch. The character in the input character display area is thus changed.

RESET: To erase all the characters in the input character display area, move the blinking cursor to **RESET**, and press the setting switch.

After the characters are erased, the blinking cursor returns to the beginning of the input character selection section.

RET: To return to the **MAIN MENU** from the **TEXT MENU**, move the blinking cursor to **RET**, and press the setting switch.

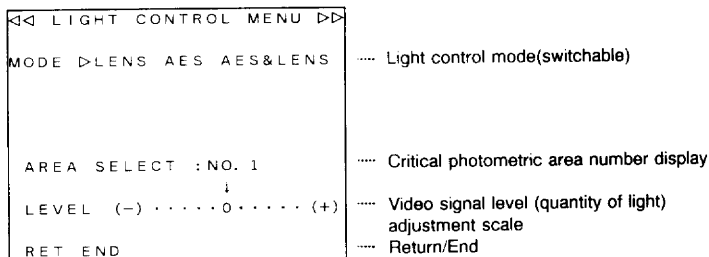
END: To return to the normal shooting picture from the **MAIN MENU**, move the blinking cursor to **END**, and press the setting switch.

LOCATE: Use this function to determine the display position of setting contents.

- 1) Move the blinking cursor to **LOCATE** and press the setting switch. Then, the contents of text are displayed.
- 2) Move the text to the desired position by the four arrow switches. When the text comes

Light control setting menu

- 1) Press the setting switch for more than 2 seconds, then the main setting menu is displayed on the monitor.
- 2) To store the set contents, move the cursor to **SET** by the Δ or ∇ switch.
- 3) Change **CLOSE** to **OPEN** by the \triangleleft or \triangleright switch, and press the setting switch.
- 4) Move the cursor to **LIGHT CONTROL** and press the setting switch. Then, the **LIGHT CONTROL MENU** screen is displayed.



Light control menu

Three control modes are available in combination with the AGC operation.

The LENS mode is established at factory. To change the LENS mode to other mode, move the cursor to the desired control mode by the ◀ or ▶ switch, and press the setting switch.

To use the LENS mode, move the cursor to **LENS**, and press the setting switch.

① **LENS mode:**

In this mode, quantity of light can be controlled only by the lens iris.

② **AES mode:**

In this mode, quantity of light can be controlled only by the automatic electronic shutter of the CCD imaging device.

An optimum video signal level is maintained for a fixed iris lens.

When an auto iris lens is used, the lens iris is automatically opened to a maximum, and only the automatic electronic shutter operates.

A shutter speed is selectable from the standard (1/60s) to 1/10,000s.

Therefore, the automatic electronic shutter operates under the illumination condition within the range of 160 times, compared with the quantity of light, and this mode may not be effective in the outdoors where

illumination changes largely. In such cases, change to other mode.

When the lens iris is opened to a maximum in this mode, the depth of focus may become shorter than the auto iris lens used in other mode, and objects in the distance are out of focus. The depth of focus is in inverse proportion to the opening of a lens iris.

When an automatic electronic shutter is activated, the following phenomena may be observed. In such cases, change to other mode.

- Strong smear or blooming is observed when objects are illuminated by strong illumination like a spot light.
- Flickers or change in color are observed on the screen.

③ **AES & LENS mode:**

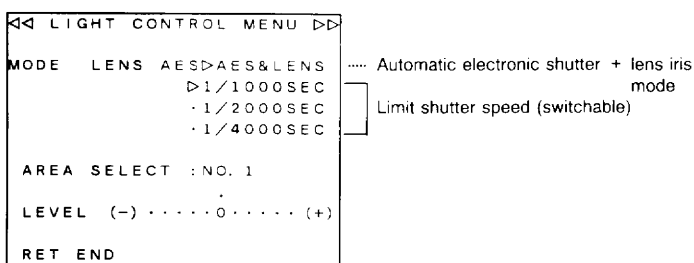
In this mode, the automatic electronic shutter operation has priority to control the quantity of light.

When illumination becomes bright, automatic electronic shutter control is performed from the standard (1/60s) to the set shutter speed with the lens iris opened to a maximum.

When illumination becomes brighter, the shutter speed is fixed to the set shutter speed, and the quantity of light is controlled only by the lens iris.

When illumination becomes dark gradually, the

quantity of light is controlled by the inverse operation.



Light control menu

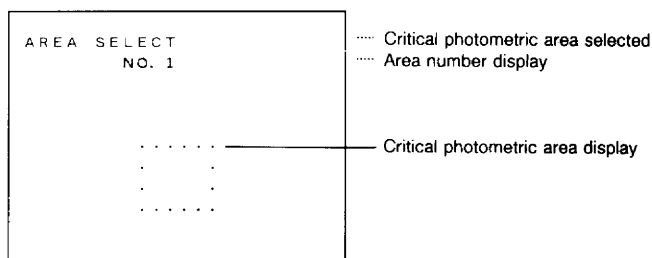
Photometric area setting screen

The standard area No.1 is set at factory. When the setting switch is pressed while "No.1" is blinking, the critical photometric area is displayed. The critical photometric area is indicated by dots. When this area is changed, a video signal level is changed according to the illumination of this area.

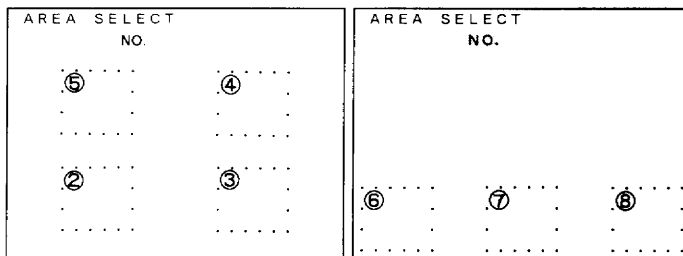
The desired photometric area can be selected from among the areas No.1 thru No.8.

Therefore, select the photometric area so that the optimum video signal level can be obtained.

When the setting switch is pressed with the desired photometric area displayed, the video signal level adjustment scale appears.



Critical photometric area display (1)



Critical photometric positions Nos. 2 to 5

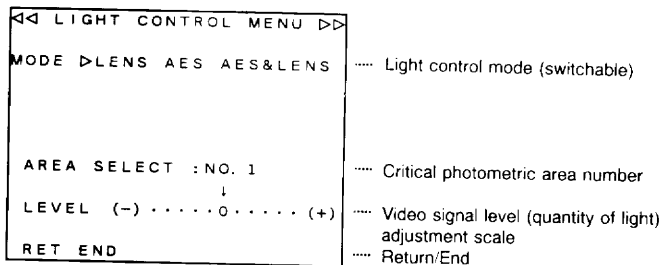
Critical photometric positions Nos. 6 to 8

Video signal level setting menu

The video signal level is set to the standard at factory. To adjust the video signal level, move the cursor to the desired level by the ◀ or ▶ switch, and press the setting switch.

When it is not needed to change the standard setting, press the setting switch, then the cursor moves to **RET**.

Select the AES & LENS mode and press the setting switch. Then, the cursor blinks at "1/1000 SEC". The shutter speed of an automatic electronic shutter is set to 1/1000 seconds at factory.



Light control menu

When it is not needed to change a shutter speed

- 1) Press the setting switch.

When it is needed to change a shutter speed

- 1) Move the cursor to the desired shutter speed, and press the setting switch.
- 2) Move the blinking cursor to **RET** by the ◀ or ▶ switch, and press the setting switch. Then, the main setting menu appears.
- 3) Allow **END** to blink, and press the setting switch. Then, the normal shooting picture is displayed.

Backlight correction

When strong backlight enters the lens, the lens iris closes accordingly, and the other objects become dark.

The backlight correction function is provided for this camera. With this function, the signal level for such a strong backlight is automatically corrected, and the other objects do not become dark.

When strong light enters the upper half portion of the critical photometric area No.1 with the photometric area set to No.1, the backlight correction function is activated automatically. The backlight correction function is activated in any light control mode.

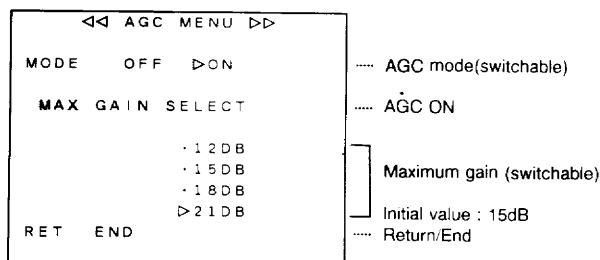
When strong light enters the critical photometric area, effective backlight correction is performed by selecting a photometric area far from the position of strong light.

If video signal level is not appropriate when the backlight correction function is being activated, adjust the video signal level.

AGC setting menu

- 1) Press the setting switch for more than 2 seconds. Then, the main setting menu is displayed.
- 2) To store the set contents, move the cursor to **SET** by the Δ or ∇ switch.
- 3) Change **CLOSE** to **OPEN** by the \triangleleft or \triangleright switch, and press the setting switch.
- 4) Move the cursor to **AGC MENU**, and press the setting switch. Then, the AGC setting menu (**AGC MENU**) is displayed.

With the AGC setting menu, the AGC ON mode or the AGC OFF mode is selectable.



AGC setting menu

AGC ON mode setting menu

The AGC mode is set to the ON mode at factory, and the maximum amplification degree of AGC circuit is +15dB.

Change of maximum amplification degree

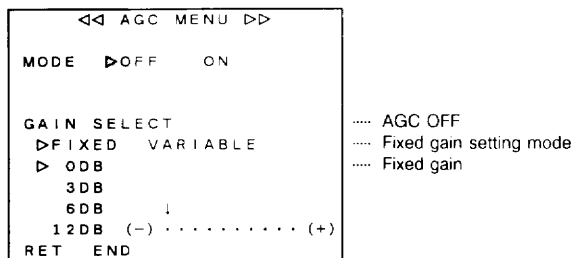
- 1) Press the setting switch when the cursor at the left side of **ON** is blinking, the cursor at the **MAX GAIN SELECT** section blinks.
- 2) Move the cursor to the desired amplification value, and press the setting switch.

Caution: When the maximum amplification degree is set to a higher value, sensitivity is increased, but noise may be increased for dark scene.

AGC OFF mode setting menu

In the AGC OFF mode, amplification degree is fixed.

- 1) Move the cursor to **OFF** on the AGC setting menu by the \triangleleft or \triangleright switch, and press the setting switch. Then, the amplification degree selection screen is displayed.

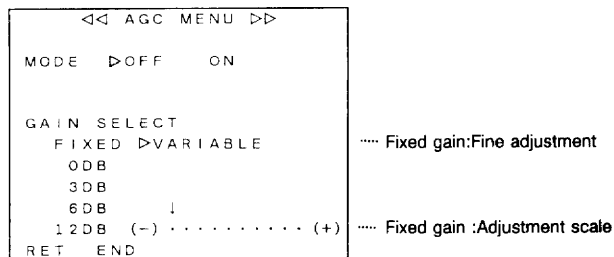


AGC setting menu

- 2) To select the desired amplification degree, press the setting switch when the cursor is at the **FIXED** position.
- 3) Move the cursor to the desired value by the Δ or ∇ switch, and press the setting switch.

Fine adjustment of each gain

- 1) Move the cursor to **VARIABLE**, and press the setting switch.

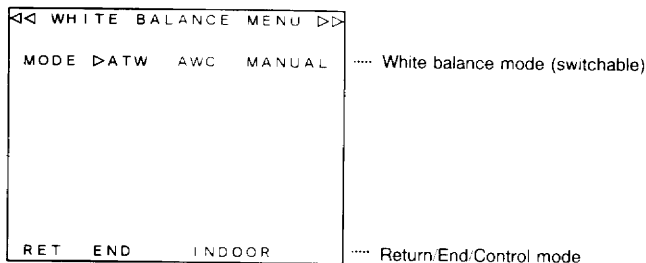


AGC setting menu(AGC OFF)

- 2) Adjust an amplification degree by the \triangleleft or \triangleright switch, and press the setting switch.
- 3) Allow **RET** to blink, and press the setting switch. Then, the main setting menu is displayed.
- 4) Move the blinking cursor to **END**, and press the setting switch. Then, the normal shooting picture is displayed.

White balance control setting menu

- 1) Press the setting switch for more than 2 seconds. Then, the main setting menu is displayed.
- 2) To store the set contents, move the cursor to **SET** by the Δ or ∇ switch, change **CLOSE** to **OPEN** by the \triangleleft or \triangleright switch, and press the setting switch.
- 3) Move the cursor to **WHITE BALANCE**, and press the setting switch. Then, the white balance setting menu (**WHITE BALANCE MENU**) is displayed.



White balance setting menu

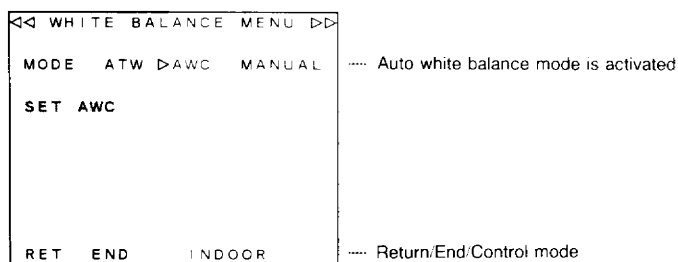
Three white balance control models are available.

1. Auto tracking white balance mode
2. Preset white balance mode
3. Manual white balance mode

- Most of the screen is covered by the same color or white portion is excessively small.
- Objects are illuminated by plural lamps of different color temperatures.
- When special lamps like a sodium lamp are used.
- Background color is blue or red.

2. Preset white balance mode (AWC)

- 1) Move the cursor to AWC by the \triangleleft or \triangleright switch and press the setting switch. Then, SET AWC starts to blink.



White balance setting menu

1. Auto tracking white balance mode (ATW)

The white balance mode is set to the auto tracking white balance mode at factory.

Press the setting switch when the cursor is at **ATW**.

When **INDOOR** is displayed in this mode or the preset white balance mode, white balance is automatically controlled for the color temperature of illumination in the range from 2500K to 8000K.

In most cases, this mode can be used. When **OUTDOOR** is displayed, white balance is automatically controlled for the color temperature ranging from 5000K to 8000K.

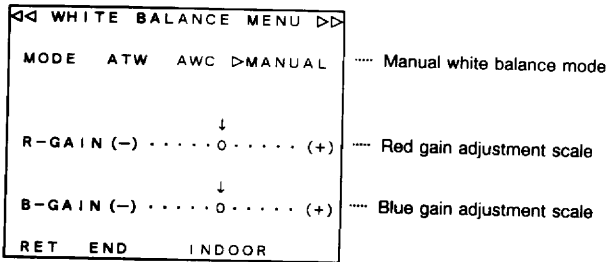
Use the **OUTDOOR** setting when the camera is used outdoors. In case of the **OUTDOOR** setting, loss of white balance due to pale red or yellow is prevented.

Caution: To select **OUTDOOR**, turn off the camera, and turn on the camera again while pressing the Δ switch.

To return to **INDOOR**, turn on the camera again, while pressing the ∇ switch.

Notes: In the following cases, adjust white balance manually, because ATW may not operate appropriately.

- 2) Allow white objects to be displayed under the illumination, and press the setting switch. Then, auto setting of white balance starts. When auto setting ends, SET AWC disappears and the white balance setting is fixed. The time needed for auto setting depends on the condition. If it exceeds 10 seconds, take the following procedure.
 - (1) Move the cursor to MODE ATW by the Δ or ∇ switch.
 - (2) Move the cursor to AWC, and press the setting switch.
 - 3) Display white objects largely, and adjust white balance. When this setting is performed with the SET on the main setting menu set to OPEN, the set data is retained after power off.
- ### 3. Manual white balance mode (MANUAL)
- 1) Move the cursor to MANUAL by the \triangleleft or \triangleright switch, and press the setting switch. Then, the adjustment scale for R GAIN and B GAIN are displayed. The respective cursors are at the zero positions.

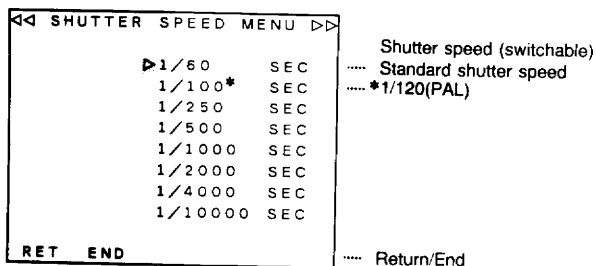


White balance setting menu

- 2) When the cursor of R GAIN blinks, adjust the amplification degree of red by the ◀ or ▶ switch, and press the setting switch to fix the adjusted value.
- 3) In a similar fashion, fix the adjusted value of blue.
- 4) If further adjustment is needed for red, allow the red adjustment scale to blink by the △ or ▽ switch, and take the same step as 3).
- 5) When adjustment ends, press the setting switch to allow RET to blink. Then, press the setting switch to return to the main setting menu.
- 6) Move the blinking position to END by the ◀ or ▶ switch, and press the setting switch. Then, the normal shooting picture is displayed.

Shutter speed setting menu

- 1) Press the setting switch for more than 2 seconds. Then, the main setting menu is displayed. When LIGHT CONTROL : LENS is displayed in the third line, a shutter speed can be set. In other mode, a shutter speed is controlled automatically and cannot be set optionally.



Shutter speed setting menu

Storage of the set contents

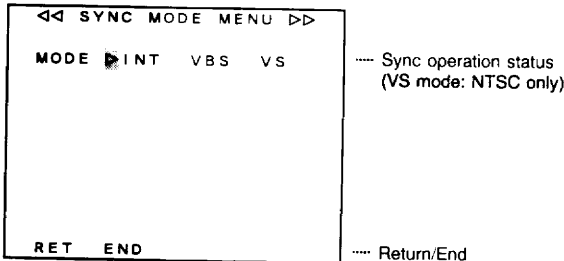
- (1) Move the cursor to SET by the △ or ▽ switch.
- (2) Change CLOSE to OPEN by the ◀ or ▶ switch, and press the setting switch.

- 2) Move the cursor to SHUTTER SPEED MENU, and press the setting switch. Then, the shutter speed setting menu is displayed.
- 3) Move the cursor to the desired value, and press the setting switch.
- 4) Move the blinking position to END by the ◀ or ▶ switch, and press the setting switch. Then, the normal shooting picture is displayed.

Sync mode (phase adjustment) setting menu

Storage of set contents

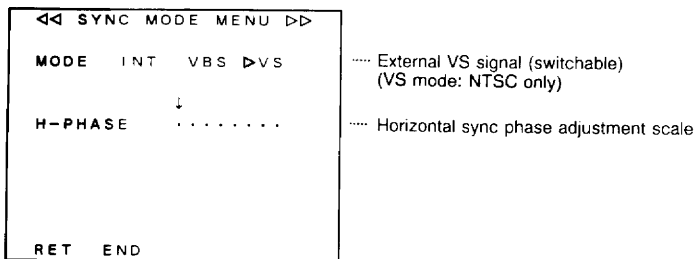
- 1) Move the cursor to **SET** by the Δ or ∇ switch .
- 2) Change **CLOSE** to **OPEN** by the \triangleleft or \triangleright switch, and press the setting switch.
- 3) Move the cursor to **SYNC MODE MENU**, and press the setting switch. Then, the sync mode setting menu (**SYNC MODE MENU**) is displayed.



Sync mode setting menu

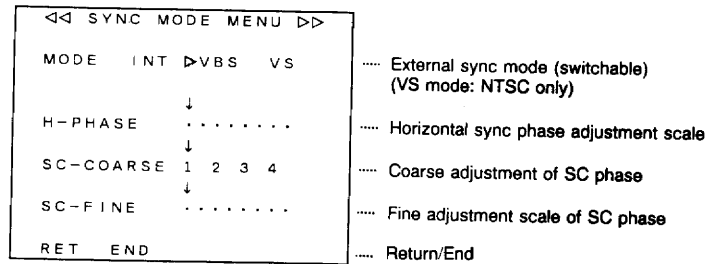
A composite color video signal, a black burst signal (VBS), a composite video signal or a composite sync signal can be connected to the camera as an external sync signal.

Internal sync mode or external sync mode is switched automatically.



Sync mode setting menu (VS)

- 3) The cursor for the phase adjustment (**H-PHASE**) of a horizontal sync signal blinks. Press the \triangleleft or \triangleright switch, and adjust so that the phase of the external sync signal coincides with that of the video signal, using an oscilloscope. Then, press the setting switch. Adjustable range is 0 to 4 μ s.
- 4) The cursor for the coarse adjustment (**SC COARSE**) of the subcarrier phase blinks. Press the \triangleleft or \triangleright switch, and adjust so that the phase of the external sync signal coincides with that of the subcarrier of the video signal, using a vectorscope. Then, press the setting switch. Adjustment is performed in 90° steps.
- 5) The cursor for the fine adjustment (**SC FINE**) of the subcarrier phase blinks. Press the \triangleleft or \triangleright switch,



Sync mode setting menu (VBS)

When an external sync signal is connected to the camera, the cursor before **INT** moves to **VBS**.

- 1) When the VBS signal including a color subcarrier is connected, press the setting switch.
- 2) When the VS signal is connected, press the \triangleright switch to move the cursor to **VS**, and press the setting switch.

and adjust so that the phase of the external sync signal coincides with that of the subcarrier of the video signal, using the vectorscope. Then, press the setting switch. Adjustment is performed up to 90 degrees.

If adjustment is insufficient, press the Δ switch to allow the cursor for the coarse adjustment (**SC COARSE**) of the subcarrier phase to blink, and press the \triangleleft or \triangleright switch. Then, perform the adjustment again.

- 6) When the VS signal is connected, adjust the horizontal sync signal only.
- 7) Allow **RET** to blink, and press the setting switch. Then, the main setting menu is displayed.
- 8) Press the \triangleleft or \triangleright switch to move the blinking position to **END**, and press the setting switch. Then, the normal shooting picture is displayed.

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