

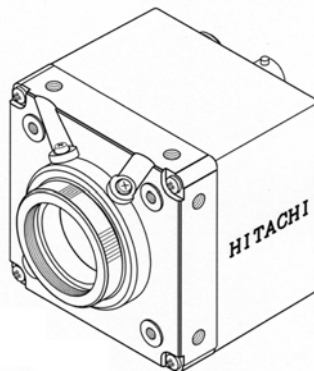
CCD Color Camera

KP-FD30

Operation manual

Thank you for procuring this fine Hitachi Kokusai Electric color CCD camera.

Before using the camera, please read this operation manual carefully and keep this manual on file for ready reference in the future.



Hitachi Kokusai Electric Inc.

MGA2700

CAUTION FOR SAFE OPERATION

	CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.		
	This symbol is intended to alert the user to the presence of unisolated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.	
	This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.	

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS COLOR CAMERA TO RAIN OR MOISTURE.
AVERTISSEMENT Afin d'éviter tout risque d'incendie ou d'électrocution, ne pas exposer l'appareil à la pluie ou à l'humidité. Afin d'écarter tout risque d'électrocution, garder le coffret fermé. Ne confier l'entretien de l'appareil qu'à un personnel qualifié.
VORSICHT Um Feuergefahr und die Gefahr eines elektrischen Schiages zu vermeiden, darf das Gerät weder Regen noch Feuchtigkeit ausgesetzt werden. Um einen elektrischen Schiag zu vermeiden, darf das Gehäuse nicht geöffnet werden. Überlassen Sie Wartungsarbeiten stets nur

NOTE FOR USERS IN THE UNITED KINGDOM:

IMPORTANT:

The wires of the mains lead are coloured in accordance with the following code:

Green-and-Yellow:	EARTH
Blue:	NEUTRAL
Brown:	LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

- The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol \perp or coloured green-and-yellow.
- The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
- The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

WARNING: This product must be earthed.

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.

IMPORTANT NOTICE

For U. S. A.

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

WARNING

Changes or modifications not expressly approved by Hitachi Denshi responsible for compliance could void the user's authority to operate the equipment.

For Canada

These products do not exceed the class A limits for radio noise emissions from digital apparatus as set out in the radio interference regulations.

Le présent appareil n'émet pas de bruits radioélectriques dépassant les limites applicable aux appareils numériques de classe A prescrites dans le règlement sur le brouillage radioélectrique édicté par le ministère des communications du Canada.

Declaration of Conformity

Ref. No. K'9-0132

Manufacturer's Name: Hitachi Kokusai Electric, Inc.
Manufacturer's Address: 3-14-20 Higashimakano, Nakano-ku,
Tokyo 164-8511, Japan

Representative(s) Address: Hitachi Denzhi (Europe) GmbH
Weslaracher StraÙe 88,
Jügesheim D-63110 Rodgau, Germany
in the EU:

Hitachi Denzhi (U.K.) Ltd
14 Garrick Industrial Centre,
Iring Way, Hendon, London,
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declares, that the product:

Product Name: CCD Color Cameras
Model Number(s): KP-FD30

conforms to the following Standards:

EMC: EN 61000-6-3 / 2001
EN 50130-4 / 1995

Supplementary Information:

"The product complies with the requirements of the Low Voltage Directive 79/270/EEC and the EMC Directive 89/336/EEC."

Signature:



K. Kano
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Hitachi Kokusai Electric Inc.



M. Kano
Managing Director
Hitachi Denzhi (Europe) GmbH
Hitachi Denzhi (U.K.) Ltd

Date: 26th, July, 2004

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.
- In event dust or other debris is lodged between the CCD and optical filter, consult dealer for cleaning by an optical technician.

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.



3) Moire

When fine patterns are shot, moire may be displayed.

4) Burning

When excessively intense light comes to the CCD for a long time, the spectral filter in the CCD pixel may be deteriorated, and the colour of the corresponding portion may change.

Avoid using the camera under such condition.

2) Fixed pattern noise

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

General

The KP-FD30 is a single CCD type RGB color camera which utilized the progressive scan CCD image sensor with square pixel for VGA format of 1 / 2-inch which adopted the RGB primary color mosaic filter.

Features

- Analog RGB output (60 frame/second)
- Small, Compact, Self-contained
- High picture quality (Digital signal processing LSI (DSP))
- CCD drive functions (Preset electronic shutter, Variable electric shutter, Auto electronic shutter, frame / field on demand.)
- Auto level control (AVERAGE, AREA, PEAKE/AVE)
- White balance (Auto, Preset, Manual)
- Auto iris lens (galvanometer type)
- Picture adjustment
(Modes and settings can be selected and adjusted from.)
- NTSC (VBS, Y/C, RGB) output
It can be set as the image output of NTSC system by Switch change.

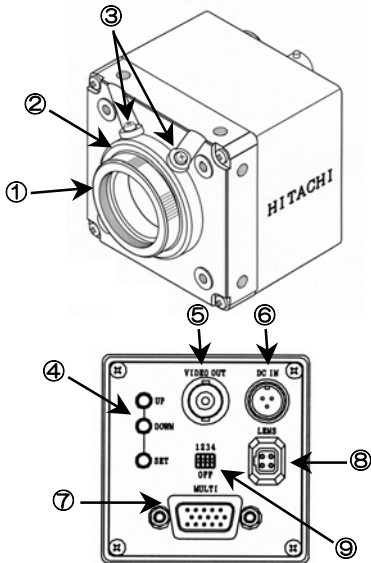
Composition

- Camera (with C mount adaptor)
- Operation manual

Optional accessories

- DC input plug (R03-P3F) R03-P3F
- Lens plug (E4-191J-100) E4-191J-100
- MULTI cable plug KEC-15P (Housing)
- JK-SP2140 (Pin contact)
- JK-C151C (Cover)

Section names and functions



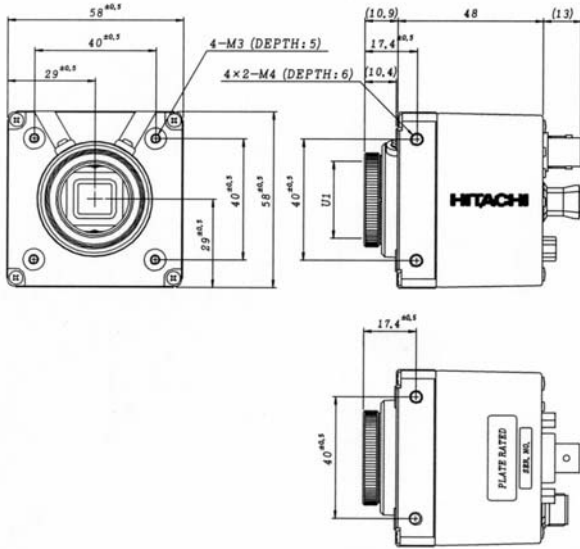
- ① C-mount adaptor
(When using a CS-mount lens, remove the C-mount adaptor.)
- ② Lens mount ring
- ③ Lens mount screws
- ④ Set up buttons [SET/UP/DOWN]
- ⑤ Video output connector [VIDEO OUT]
- ⑥ DC input connector [DC IN]
- ⑦ MULTI connector [MULTI] (Inch size screws)
- ⑧ Lens connector [LENS]
Iris control voltage input (galvanometer) type lens
- ⑨ Camera rear switch
Set the switch according to the type of video signal.
SW-1 ON (Upper side): VGA (progressive scan) mode*
OFF (Lower side): NTSC (2:1 interlace scan) mode



*Factory setting is
VGA (progressive) mode.

Note: Please turn OFF SW-2 and 3 and 4. (They are not used.)

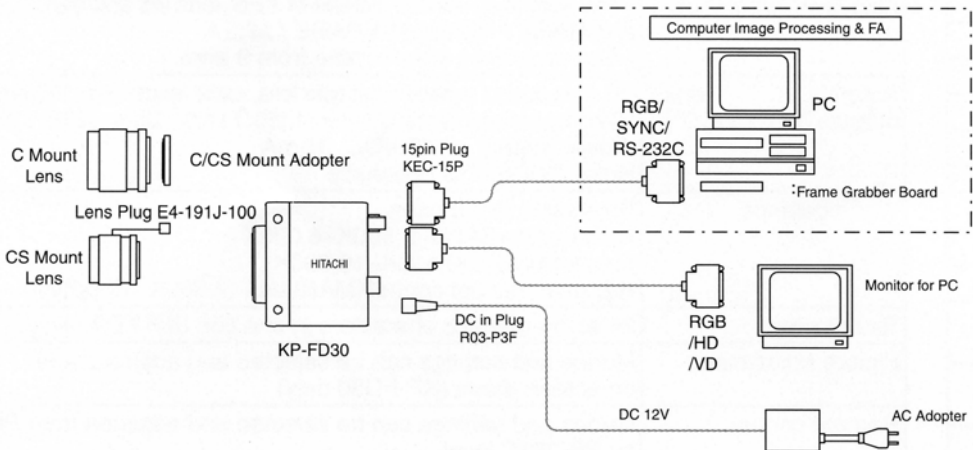
External View



Unit:mm

Connections

EXP. VGA (progressive scan) mode

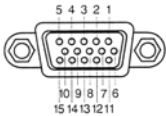


In NTSC mode, connect RGB cable C-501RR/C-102RR or BNC cable to Color Monitor.

Connectors

● Multi connector (inch size screw)

Pin No.	Signal name
1	R/(C)output
2	G/Y output
3	B/(VBS)output
4	WE output
5	GND (TXD/RXD)
6	VIDEO GND
7	VIDEO GND
8	VIDEO GND
9	UNREG +12V input
10	TRIG input
11	GND
12	RXD
13	HD input / HD output / SYNC output
14	VD input /VD output
15	TXD



Plug : Housing (KEC-15P)
Pin contact (JK-SP2140)
Cover (JK-C151C)

● DC input connector [DC IN]

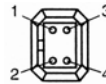
Pin No.	Signal name
A	GND
B	+12V input
C	N C



Plug : R03-P3F

● Lens connector [LENS]

Pin No.	Signal name
1	Damp(-)
2	Damp(+)
3	Drive(+)
4	Drive(-)



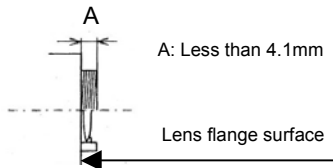
Plug : E4-191J-100

Note:
The length of a cable is required 150mm or more.

Lens

Note on lens selection

- 1) Observe the maximum size limit (A in the figure)
When installing the lens. Internal damage can occur if a larger lens is used.
- 2) Avoid using a lens that is heavier than the camera.
If unavoidable, be sure to fix the lens itself on a support.



A: Less than 4.1mm

Lens flange surface

Lens

DC control voltage [galvanometer] system should be used for an automatic iris lens.

Although arrangement of a lens connector is based on JEITA, the length of the cable between the main part of a lens and a plug is required 150mm or more.

● Flangeback adjustment

Flangeback adjustment is needed in cases where focus cannot be obtained by normal lens focus operation or focus is lost at the maximum telephoto and wide angle settings of a zoom lens.

In such cases, open the lens iris and adjust as follows.

● Fixed focus lens

- 1) Set the lens focus ring to infinity.
- 2) Aim toward an object at least 20 meters distant.
- 3) Loosen the (2) lens mount screws and turn the lens mount ring to adjust the focus. Use care not to disturb the lens focus ring.
- 4) Tighten the lens mount screws.

● Zoom lens

- 1) Set the lens to telephoto and aim toward an object at least 20 meters distant.
- 2) Turn the lens focus ring to adjust the focus.
- 3) Set the lens to wide angle. Loosen the (2) lens mount screws and turn the lens mount ring to adjust the focus. Use care not to disturb the lens focus ring.
- 4) Again set to telephoto but adjust the focus by turning the lens mount.
- 5) Repeat these steps and carefully adjust for best focus.
- 6) Finally, tighten the lens mount screws.



Main specifications

1. Imaging device	1/2-inch progressive scan interline CCD	6. Video signal output	
Total number of pixels	692(H) x 504(V)	RGB output	RGB 0.7 Vp-p/75-ohm Positive
No. of effective pixels	659(H) x 494(V)		SYNC (G on SYNC) 0.3 Vp-p Negative
Unit cell size	9.9(H) x 9.9(V) μ m (Square pixel)		MULTI connector (D-sub15)
Color filter	R, G, B primary color mosaic filters on chip	Y/C output ⁽¹⁾	Y 0.7 Vp-p/75-ohm Positive
2. Scanning area	6.52(H) x 4.89(V)mm		SYNC 0.3 Vp-p Negative
3. Scanning system	Progressive scan (VGA mode)		C 0.3 Vp-p(Burst)/75-ohm
(Switch change)	2:1 interlace scan (NTSC mode)		Subcarrier frequency 3.579545MHz
4. Frequency	Horizontal 31.468kHz (15.734kHz ⁽¹⁾) \pm 0.5Hz	VBS output ⁽¹⁾	MULTI connector (D-sub15)
	Vertical 59.94Hz		Video 0.7 Vp-p/75-ohm Positive
5. Sync system	Internal / external (HD/VD auto selection ⁽¹⁾)		SYNC 0.3 Vp-p Negative
Internal sync output			Burst 0.3 Vp-p 8 cycles
HD	31.468kHz (15.734kHz ⁽¹⁾) \pm 0.5Hz		Subcarrier frequency 3.579545MHz
(Switch change)	2Vp-p/75-ohm or 5Vp-p Negative		MULTI connector (D-sub15)/BNC
VD	59.94Hz	7. Video signal processing	Digital processing (input 10 bits)
(Switch change)	2Vp-p/75-ohm or 5Vp-p Negative	8. S/N (Y signal)	More than 50dB
SYNC	2Vp-p/75-ohm Negative		(AGC, enhancer and gamma off)
WEN	5Vp-p Negative	9. Resolution	Horizontal 440TV lines
External sync input		(Y signal at center)	Vertical 480 TV lines (350 TV lines(*))
HD	31.468kHz (15.734kHz ⁽¹⁾) \pm 0.5Hz	10. Standard sensitivity	2,000 lx (F5.6, 100IRE)
2~5Vp-p	Negative	11. Minimum illumination	
VD	59.94Hz 2~5Vp-p Negative		10 lx (F1.4, AGC ON, 50IRE)
TRIG	Low 0 Vdc High 2~5Vdc		

⁽¹⁾Only at the NTSC mode

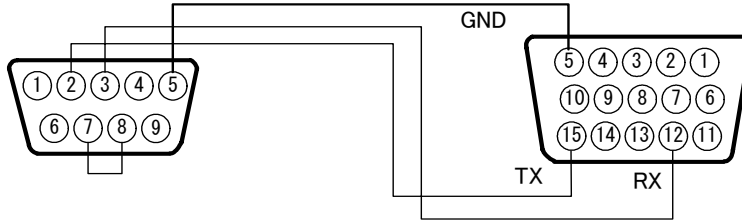
12. Sensitivity selection	AGC OFF/ON	16.White balance	Selectable in 3 modes
	Manual Gain Adjustable at AGC OFF. Limit Gain Adjustable at AGC ON (0~Approx. 18dB)		ATW / AWC / MANUAL
13.Electric shutter speed		17.Text display	24 alpha-numeric characters in one line
PRESET	Select high speed shutter:OFF(1/60),1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/20000 1/30000, 1/50000 second	18.Camera setting menu	Mode selection, quality-of-image adjustment
	⁽²⁾ low speed shutter:OFF(1/60),1/30, 1/15, 1/10, 1/7.5, 1/6, 1/5, 1/3.75 1/3, 1/2.5, 1/1.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8 second	19.Remote control	RS-232C level (MULTI Connector)
	⁽²⁾ An image output becomes intermittent.	20. Power supply	DC +12V \pm 10%
VARIABLE	Approx. 1H steps from 1/60 second to 1/10,000 second	21. Power consumption	Approx. 360mA (Including 60mA for auto-iris lens)
AES	1/60 sec ~ Approx. 1/50000 sec	22.Lens mount	C/C/S mount (Frange-back adjustment)
	From 1/60 second to approx. 1/50,000 second SLOW/NORMAL/FAST	23. Ambient temperature	
EXT. TRIG	ONE trigger / Fixed shutter	Operating	-10~+50C/30~80%RH ⁽³⁾
14.Auto level control(ALC)		Storage	-20~+60 C/20~90%RH
	AVERAGE	⁽³⁾ Note : If operated continuously, be sure to use at less than +40 (104F) for long term stable performance.	
	PEAK&AVERAGE	24. Vibration endurance	68.65 m/s ² (10 to 200Hz, 30 minutes each on XYZ axes) ⁽⁴⁾
	AREA (Scanning area is selectable from 9 area.)	⁽⁴⁾ Note : Do not subject to strong vibration for long periods of time.	
15.Auto-iris lens outputs		25. Shock endurance	490.3 m/s ² (vertical, horizontal, once each face)
	Iris control voltage input (galvanometer) type lens	26. External dimensions	58(W) x 58(H) x 48(D) mm (not including lens and protrusions)
Coupling coil impedance	Damper 1150-ohm \pm 10% Drive 190-ohm \pm 10%	27.Mass	Approx. 220g (without lens)

Remote Connection

This camera can perform remote control of various setup of A camera with a personal computer.
Please perform wiring as shown in a figure to an optional remote plug, and connect with the remote connector on the back of a camera after checking wiring correctly.

Note

Please perform extraction and insertion of a remote plug after turning off a camera power supply.



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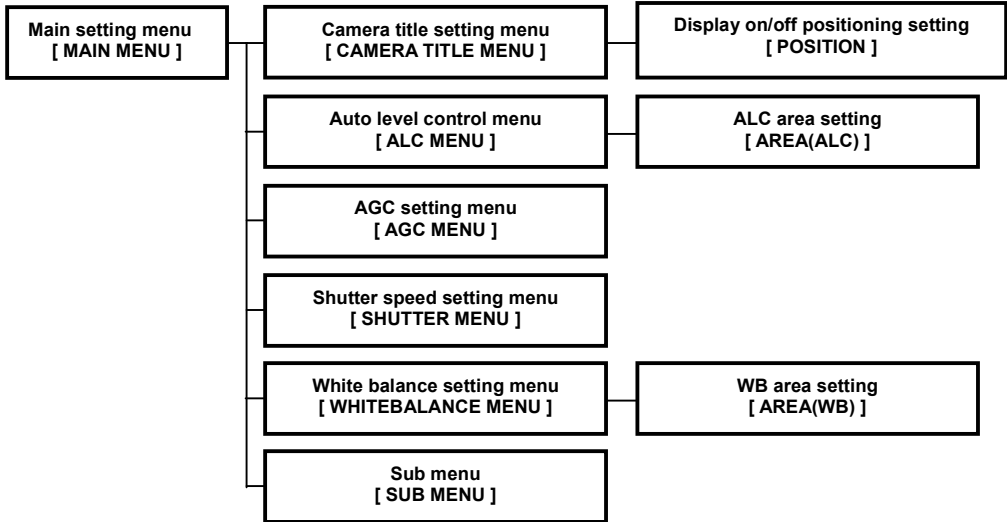
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Setting menu description

The camera setting and adjustments can be changed to conform to conditions of use. Use the setting menu indicated on the monitor screen to check and change the settings and adjustments. The setting menu is comprised as follows.



Menu Operation

Three rear panel setup buttons are used to shift the cursor and select items from the menus.

① Up button[UP]

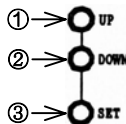
Shift the cursor in the upward direction or increase an adjustment value.

② Down button[DOWN]

Shift the cursor in the downward direction or decrease an adjustment value.

③ Set button[SET]

Press to display the main menu or to change a setting.



Note:

If no button is pressed, the menu display extinguishes automatically after about 5 minutes.

When an item indicated by a ↵ mark is selected, pressing the SET button shifts to the next menu.

Main menu

1) Main menu [MAIN MENU]

Press the SET button for at least 2 seconds to display the main menu on the monitor screen. Check the present settings at the main menu.

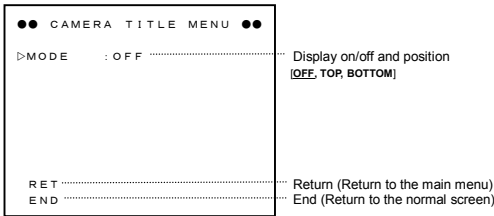
●●● MAIN MENU ●●●		
▷CAMERA TITLE	: OFF ↵	Camera title setting menu
ALC	: AVE ↵	Auto Level control menu
AGC	: OFF ↵	AGC setting menu
SHUTTER	: OFF ↵	Shutter speed setting menu
WHITE BALANCE	: MANUAL ↵	White balance menu
SUB MENU	↵	Sub menu
END		End (Return to the normal screen)

Main menu

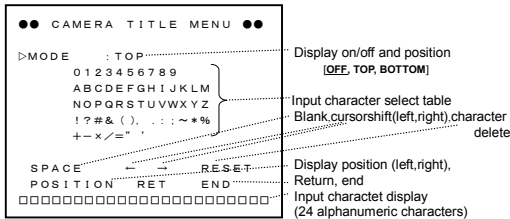
2) Camera title menu [CAMERA TITLE MENU]

One line of up to 24 alphanumeric characters can be displayed on the screen.

Camera title and a display position are set up.



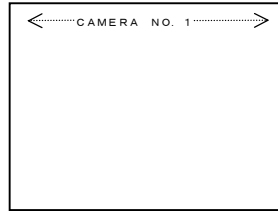
MODE: OFF



MODE: TOP/(or BOTTOM)

● Title positioning setting [POSITION]

Press the Up and Down buttons to shift the characters horizontally. Afterwards, press Set to confirm the display position and return to the main menu.



Camera title position setting

(3) Auto level control [ALC MENU]

Automatic light control mode is set up. This control is reflected during automatic level control operation of an automatic iris diaphragm lens, AGC, AES, etc.

There are the following three modes in automatic exposure control.

①[AVE]

Responds to the average lighting over a broad area.

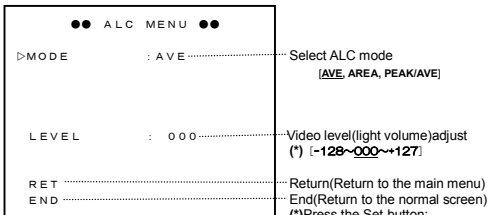
②[AREA]

Exposure is controlled only by the luminosity level of specific area. (Scanning area is selectable from 9 area.)

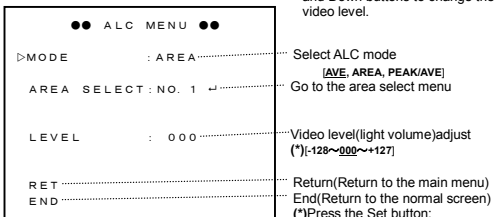
③[PEAK/AVE]

The peak level and the average level are used together and exposure is controlled.

(The ratio of a peak value and average value is changeable.)



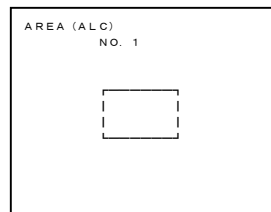
ALC MODE: AVE



MODE: AREA

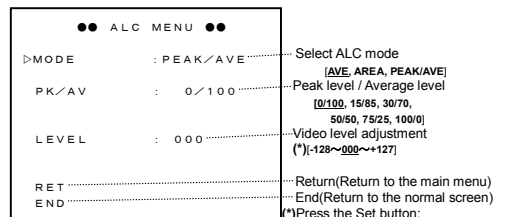
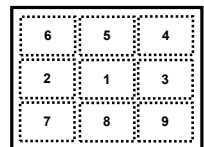
● Detection area setting

Shift the cursor to Area Select and press the Set button to display the detection area select menu. There are 9 light detect areas selected by the Up and Down buttons. Select the areas from nos. 1 to 9 that include the subject of main interest. After deciding the detection areas, press the Set button to return to the ALC menu.



Detect area indication

Detect area positions



MODE: PEAK/AVE

Note:

If the ratio of (PEAK) is enlarged, a picture level may flicker. In this case (PEAK) should reduce a ratio.

4) AGC setting [AGC MENU]

AGC (automatic gain control) mode is set up.
Please set up according to the operating environment of the camera.

●● AGC MENU ●●	
▷MODE : OFF	Select AGC mode [OFF / ON]
FIX GAIN : +00.0dB	AGC fixed gain adjustment (*) [+00.0dB ~ +17.9dB]
RET	Return (Return to the main menu)
END	End (Return to the normal screen)

AGC:OFF

●● AGC MENU ●●	
▷MODE : ON	Select AGC mode [OFF / ON]
AGC LIMIT : +17.9dB	AGC maximum gain adjustment (*) [+00.0dB ~ +17.9dB]
RET	Return (Return to the main menu)
END	End (Return to the normal screen)

AGC:ON

5) Shutter speed setting [SHUTTER MENU]

Electronic shutter mode is set up.
Please set up according to the operating environment of the camera.

●● SHUTTER MENU ●●	
▷MODE : OFF	Select electric shutter speed mode [OFF / PRESET / VARIABLE / AES / EXT. TRIG]
RET	Return (Return to the main menu)
END	End (Return to the normal screen)

MODE:OFF(1/60)

●● SHUTTER MENU ●●	
▷MODE : PRESET	Select electric shutter speed mode [OFF / PRESET / VARIABLE / AES / EXT. TRIG]
SHUTTER SPEED : 1/60	Select preset shutter speed(*)
RET	Return (Return to the main menu)
END	End (Return to the normal screen)

MODE:PRESET

● Electric shutter speed PRESET

(Slow:26 steps)

An image output becomes intermittent.

8.0→7.5→7.0→6.5→6.0→5.5→5.0→4.5→4.0→3.5→3.0
→2.5→2.0→1.5→1.0→1/1.50→1/2.0→1/2.50→1/3.00
→1/3.75→1/5.0→1/6.0→1/7.5→1/10→1/15→1/30→

(Fast:11 steps)

1/60→1/100→1/250→1/500→1/1000→1/2000→
1/4000→1/10000→1/20000→1/30000→1/50000

●● SHUTTER MENU ●●	
▷MODE : AES	Select electric shutter speed mode [OFF / PRESET / VARIABLE / AES / EXT. TRIG]
RESPONSE : NORMAL	Select AES response speed [SLOW / NORMAL / FAST]
RET	Return (Return to the main menu)
END	End (Return to the normal screen)

MODE: AES

The cautions at the time of slow shutter use:

- Sensitivity goes up. However, the image is output is intermittent.
- White flaws may become apparent at high Sensitivity; these are not due to malfunction.

●● SHUTTER MENU ●●	
▷MODE : VARIABLE	Select electric shutter speed mode [OFF / PRESET / VARIABLE / AES / EXT. TRIG]
SHUTTER SPEED : 1/60.0	Variable electric shutter speed [1/60.0 ~ Approx. 1/10000] (1H Step) (*)
RET	Return (Return to the main menu)
END	End (Return to the normal screen)

MODE: VARIABLE

●● SHUTTER MENU ●●	
▷MODE : EXT TRIG	Select electric shutter speed mode [OFF / PRESET / VARIABLE / AES / EXT. TRIG]
TRIGGER MODE : FIXED SHT	Select External trigger [ONE TRIG / FIXED SHT]
SHUTTER SPEED : NORMAL	Shutter speed setting(Only FIXED SHT)
TRIG POLARITY : POSITIVE	[NORMAL→1/250→1/500→ 1/1000→1/2000→1/4000→ 1/10000→1/50000]
RET	Select External trigger pulse input polarity [POSITIVE / NEGATIVE]
END	Select WEN pulse output polarity [POSITIVE / NEGATIVE]

MODE: EXT TRIG

6) White balance setting menu [WHITE BALANCE MENU]

White balance mode is set up. Please set up according to the operating environment of the camera.

●● WHITE BALANCE MENU ●●

▷MODE : MANUAL

R-GAIN : 000

B-GAIN : 000

RET

END

Select White balance mode
(MANUAL / ATW / AWC)

R Gain adjustment
(*)[-128~000~+127]

B Gain adjustment
(*)[-128~000~+127]

Return (Return to the main menu)
End (Return to the normal screen)

MODE: MANUAL

●● WHITE BALANCE MENU ●●

▷MODE : ATW

WB AREA : ON (NO. 1)

AREA SELECT

RET

END

Select White balance mode
(MANUAL / ATW / AWC)

White balance detection area select mode (OFF / ON)

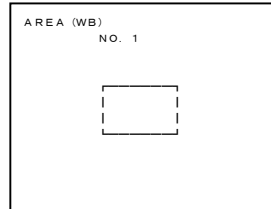
Go to the white balance detection area select

Return (Return to the main menu)
End (Return to the normal screen)

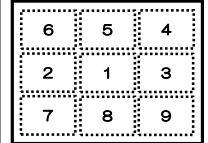
MODE: ATW

● White balance detection area setting

Shift the cursor to Area Select and press the Set button to display the White balance detection area select menu. There are 9 White balance detect areas selected by the Up and Down buttons. After deciding the detection areas, press the Set button to return to the White balance menu.



Detect area positions



White balance detection area

●● WHITE BALANCE MENU ●●

▷MODE : AWC

PRESET START : PUSH SET

R-GAIN OFFSET : 000

B-GAIN OFFSET : 000

RET

END

Select White balance mode
(MANUAL / ATW / AWC)

AWC preset start (A push on a set switch restarts AWC.)

R Gain offset fine adjustment
(*)[-128~000~+127]

B Gain offset fine adjustment
(*)[-128~000~+127]

(*)Press the Set button; the numerals flash. Press the Up and Down buttons to change the R/B Gain offset.

MODE:AWC

7) Sub menu [SUB MENU]

Changing the picture quality (video response) of the camera output image. Please set up according to the operating environment of the camera.

●● SUB MENU ●●

▷ITEM : PICTURE

CHROMA GAIN : 000

SHARPNESS : 000

PEDESTAL : 000

GAMMA : ON

POLARITY : POSITIVE

RET

END

Adjustment item selection
(PICTURE / PRESET)

Color level setting(*)[-128~000~+127]

Detail level setting(*)[-128~000~+127]

Pedestal level setting(*)[-128~000~+127]

Gamma on/off
(ON (γ=0.45) / OFF (γ=1.0))

Negative/positive (POSITIVE / NEGATIVE)

Return (Return to the main menu)
End (Return to the normal screen)

ITEM: PICTURE

●● SUB MENU ●●

▷ITEM : PRESET

SYNC MODE : HD / VD

H PHASE : 000

OUTPUT : R, G, B

SYNC/HD OUT : SYNC

SYNC ON G : OFF

LENS TYPE : MANUAL

CAMERA RESET : PUSH SET

RET

END

Adjustment item selection
(PICTURE / PRESET)

Synchronized mode (INT. / HD/VD)

H Phase adjustment (*)[-128~000~+127]

Video output setup (R, G, B / Y/C, VBS)

Synchronized signal output setup (SYNC / HD)

Sync on Green (OFF / ON)

Lens type (MANUAL / AUTO)

Camera initialize (Press the Up and Down buttons simultaneously for 2 seconds to return the initial setting.)

ITEM: PRESET

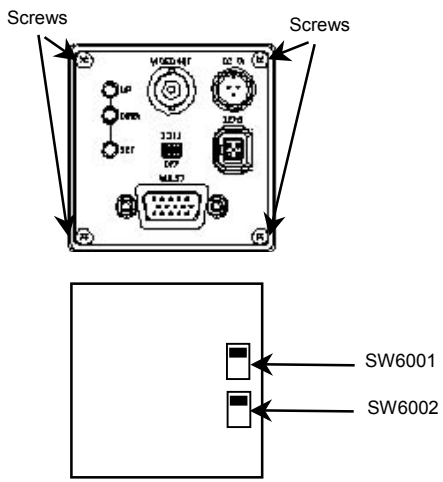
(*)Press the Set button; the numerals flash. Press the Up and Down buttons to change the H phase.

● Camera reset:

Press the Set button simultaneously for 2 seconds to return the initial setting.

An underline portion is the setup at the time of factory shipments.

Internal switch setting



To access the internal switches, remove the four screws on the back panel of the camera. Carefully remove the pack panel. There are two internal switches that may need to be changed depending on the use and connection of the camera.

(1)SW6001
 HD/SYNC, VD input-and-output change.
 Upper side: output* *Factory setting is
 Lower side: input HD/SYNC, VD output.

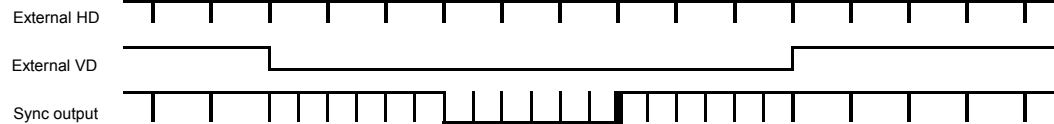
(2)SW6002
 75-ohm termination change.
 Upper side: 75 ohm termination* *Factory setting is
 Lower side: No termination 75ohm termination.

Cautions:
 Before removal of the back panel, make sure that power is shut off to the camera.
 Please remove the back panel carefully; there is a FPC cable that is connected between the back panel and the internal boards.
 If the back panel is forcefully removed, there is a possibility of damaging the cable and connector.

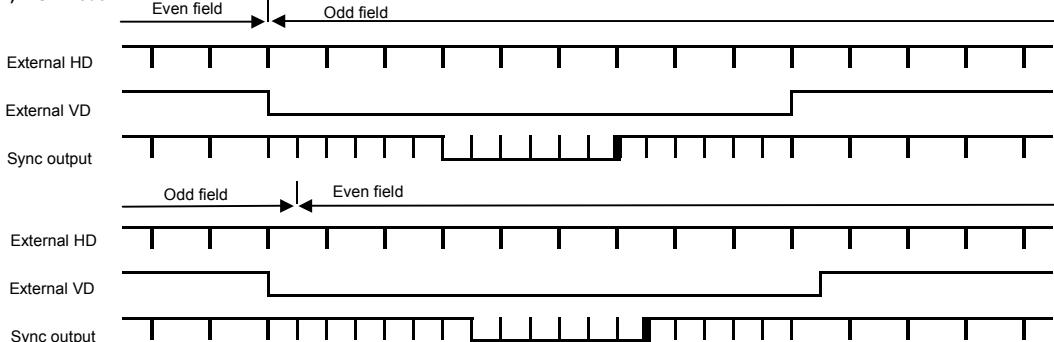
HD/VD External Timing chart

HD/VD inputs

1)VGA mode

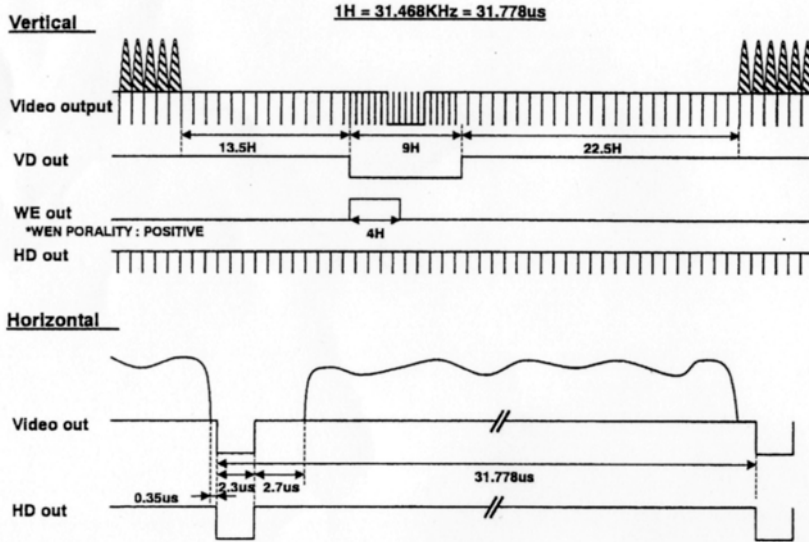


2)NTSC mode



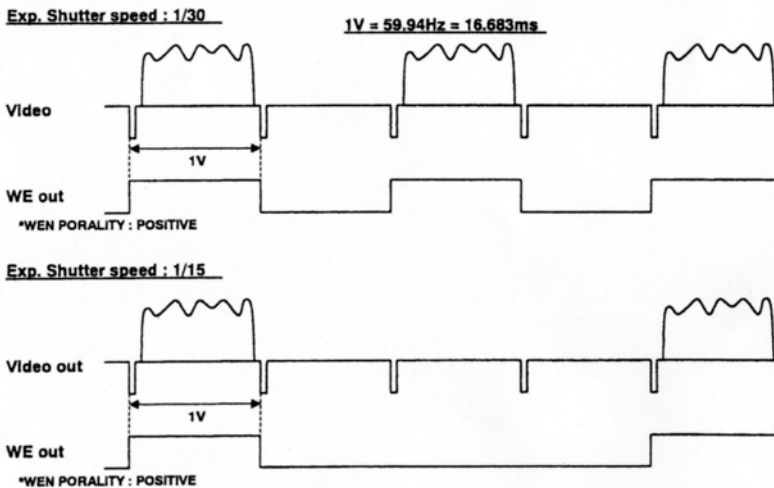
Video out signal timing (VGA)

VGA mode timing chart



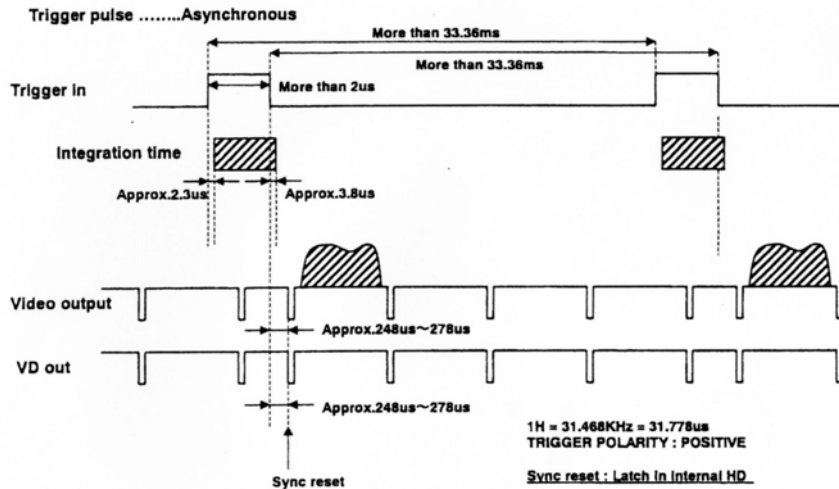
Slow shutter mode timing

Slow shutter mode timing chart

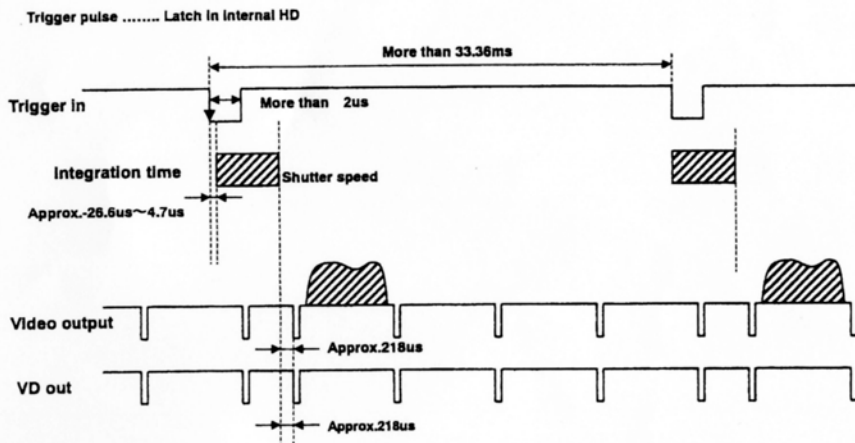


Frame On Demand Function

ONE trigger mode Timing chart



Fixed shutter mode Timing chart



The fixed shutter time is the electronic shutter setting.

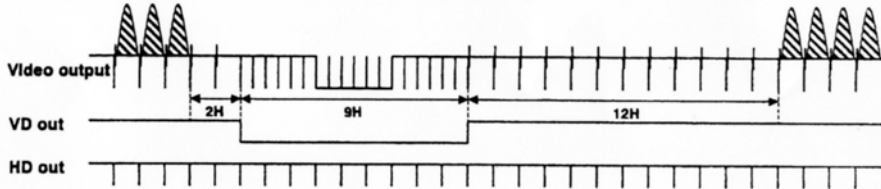
1H = 31.468KHz = 31.778μs
TRIGGER POLARITY : POSITIVE

Video out signal timing (NTSC)

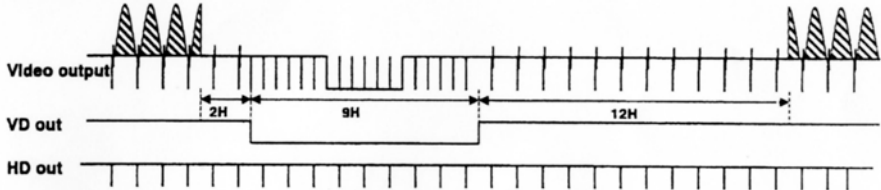
NTSC mode timing chart

Vertical ODD field

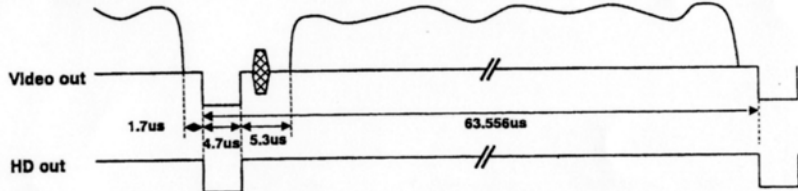
1H = 15.734KHz = 63.556us



Vertical EVEN field



Horizontal



(Important) About an external trigger signal prohibition period

When falling (rising) of a trigger pulse enters during the prohibition of the following figure, color reappearance may not be carried out correctly.

Please input the trigger pulse of the following specification not to input a trigger pulse during the prohibition.

