

Ikegami

INSTRUCTION MANUAL

MODEL ICD-840

SINGLE CHIP COLOR CCD CAMERA

OUTDOOR USE WARNING

WARNING—TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

	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.		



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



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

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION;
ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PART RESPONSIBLE FOR COMPLIANCE COULD VOID THE USERS AUTHORITY TO OPERATE THE EQUIPMENT.

IMPORTANT SAFEGUARDS

- **Read Instructions** — All the safety and operating instructions should be read before the appliance is operated.
- **Retain Instructions** — The safety and operating instructions should be retained for future reference.
- **Heed Warnings** — All warnings on the appliance and in the operating instructions should be adhered to.
- **Follow Instructions** — All operating and use instructions should be followed.
- **Cleaning** — Unplug this video product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- **Attachments** — Do not use attachments not recommended by the video product manufacturer as they may cause hazards.
- **Water and Moisture** — Do not use this video product near water — for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.
- **Accessories** — Do not place this video product on an unstable cart, stand, tripod, bracket, or table. The video product may fall, causing serious injury to person, and serious damage to the appliance. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the video product. Any mounting of the appliance should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
- **Power Sources** — This video product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For video products intended to operate from battery power, or other sources, refer to the operating instructions.
- **Grounding or Polarization** — This video product is equipped with a polarized alternating current line-plug (a plug having one blade wider than the other) or a 3-wire grounding-type plug (a plug having a third grounding pin). This is a safety feature. The plug having one blade wider than the other will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, try reversing the plug. The plug having a third grounding pin will only fit into a grounding-type power outlet. If the plug should fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug or the grounding-type plug.
- **Power-Cord Protection** — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
- **Lightning** — For added protection for this video product receiver during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the cable system. This will prevent damage to the video product due to lightning and power-line surges.
- **Power Lines** — An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
- **Overloading** — Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
- **Object and Liquid Entry** — Never push objects of any kind into this video product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the video product.
- **Servicing** — Do not attempt to service this video product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- **Damage Requiring Service** — Unplug this video product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - a. When the power-supply cord or plug is damaged.
 - b. If liquid has been spilled, or objects have fallen into the video product.

- c. If the video product has been exposed to rain or water.
 - d. If the video product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the video product to its normal operation.
 - e. If the video product has been dropped or the cabinet has been damaged.
 - f. When the video product exhibits a distinct change in performance — this indicates a need for service.
- **Replacement Parts** — When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.
 - **Safety Check** — Upon completion of any service or repairs to this video product, ask the service technician to perform safety checks to determine that the video product is in proper operating condition.

FEATURES

- **CCD (Charge Coupled Device) solid state imaging device**
An adoption of this imaging device has reduced after image, sticking, and picture distortion, and has enhanced the anti-vibration and anti-impact characteristics.
- **Designed for high resolution and high sensitivity**
Using the complementary color CCD of 1/2 inch size 410,000 picture elements (in total), the camera is so designed that the high resolution and high sensitivity have been achieved: The horizontal resolution is 460 TV lines and the minimum necessary illuminance on an object is approximately 5 luxes (F1.4). The minimum illuminance of 2.5 luxes (F1.4) can be selected by a switch.
- **1/60, 1/100, 1/125, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 seconds: You can make a selection among these shutter speeds.**
The shutter speed selecting function enables you to videotape quick motions so that such videotaped quick motions be played back as clear-cut still frame pictures and slow motion images. Selecting the shutter speed of 1/100 cuts off flickering effects of the fluorescent light.
- **C mount**
An adoption of the C mount enables you to choose one among a variety of C mount lenses for use.
- **Easy installation**
A camera fixing tapped hole is provided in both the top and the bottom of the camera. Use whichever for more convenient installation. The camera is designed so compact and light that you can install it at any place you desire. The ICD-840 is driven by DC 12V power. The built-in external synchronizing circuit enables synchronized connection with plural cameras. That makes excellent systematization.
- **RGB output available**
The RGB sync. signal is outputted besides the composite and video signals. So it can directly be connected to the instruments used in the medical and industrial fields that requiring the RGB signal.

PRECAUTIONS FOR INSTALLATION

- **Never expose the unit to rain or water.**
Water intrusion can be a cause of trouble or accident.
- **Use within the range of specified operating temperature.**
When used in extremely hot or cold place where the temperature goes beyond the specified operating temperature range (-10°C to $+50^{\circ}\text{C}$), the adverse effect will be exerted on the picture or the parts and lead to trouble.
- **Avoid installation in extremely humid or dusty place.**
Adverse effect will be exerted on component parts.
- **Avoid installation in the place where radiant ray or X-ray exists.**
Adverse effect will be exerted on CCD or other component parts and lead to trouble.
- **Avoid installation in the place where powerful radio wave or magnetism exists.**
Adverse effect will be exerted on the picture.
- **Avoid installation in the place subject to extreme vibrations.**
Adverse effect will be exerted on the picture or the component parts.

Prior to use, please read carefully Precautions for Use on page 17.

- ① **Lens mount (C mount)**
A mount for lens installation. Accepts a variety of the C mount lenses. (See Page 7.)
- ② **Optical focus fixing screw**
When the image cannot be focused by the focus ring of the lens, loosen this screw and adjust the flange-back (distance from the lens fitting face up to the image forming face). After the adjustment, tighten the screw again. (See Page 15.)
- ③ **Camera fixing tapped hole**
A camera fixing tapped hole (UNC 1/4 inch-20) is provided in both the top and the bottom of the camera. The tapped hole is used for installing the camera on a holder, bracket, or tripod. (See Page 8.)
- ④ **White balance adjusting volume**
This volume is used when the white balance selection switch is set in manual position. (See Page 12.)
- ⑤ **R. white balance adjusting volume**
This volume is used when the white balance selection switch is set in manual position. (See Page 12.)
- ⑥ **White balance selection switch**
Used to select the white balance adjusting type. There are two such types: push-type auto white, and manual. (See Page 12.)

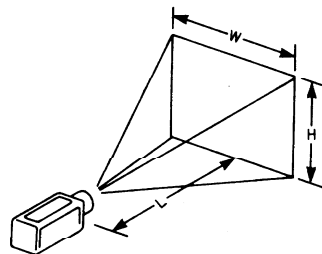
- ⑦ **White balance setting switch**
This switch is used for setting the white balance when the push-type auto white adjustment is selected. (See Page 12.)
- ⑧ **Auto iris connector**
This connector is used for connecting the iris cord of the auto iris lens. Use a lens wired to the dedicated plug (RO5-PB3M of Tajimi Ltd. make). (See Page 8.)
- ⑨ **AUX connector**
This connector is for connecting the RGB sync signal, the VBS output, the power input, etc. When equipped with the GENLOCK, the GENLOCK signal is put into the SYNC OUT pin. (See Page 9.)

LENS SELECTION

- Use the C-mount lens for 1/2" video camera.
- Select the lens which can provide desired view range (picture range).
If object size and the distance between the object and the lens are known, a lens of the proper focal length must be selected. The proper focal length can be determined by the following equations. (The equation offers a guideline when the

distance (L) between the lens and the object is more than 100 times of the lens focal length. The value thus obtained should be regarded as reference value only.)

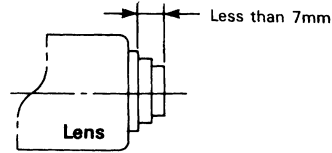
Equation to obtain picture range	$H = \frac{4.8 \times L}{f}$	$W = \frac{6.4 \times L}{f}$
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- H: Height of object (m)
- W: Width of object (m)
- L: Distance between lens and object (m)
- f: Focal length of lens (mm)

Notes:

- Use the auto iris lens which is powered by DC 9 V and consumes less than 50 mA.
- The mounting dimensions of the lens, shown in the diagram, otherwise the lens will damage the camera.
- B/W lens is available, however please note that some lenses can deteriorate color reproduction level and picture quality. (Please pay attention especially when is used outdoor or in extremely bright place.)



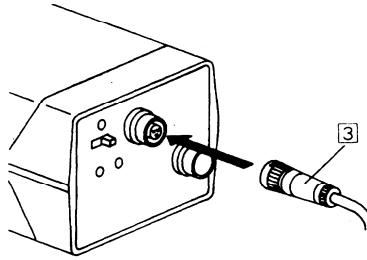
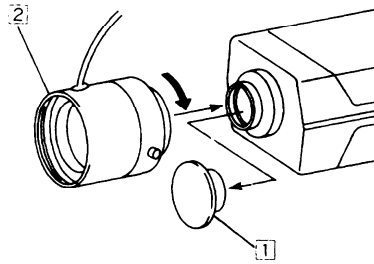
MOUNTING OF LENS

- 1 Remove the lens mount cap.
- 2 Mount the Auto Iris Lens by turning it clockwise into the lens mount of the Camera. Screw it in until it is completely fixed.
- 3 When using the auto iris lens, connect the auto iris cable connector (3-pin type) to the auto iris connector on the rear panel of the camera. (See below.)

* Use the auto iris lens which controls video signal as input signal.

Notes:

- Read carefully, the instructions of the lens, too.
- Auto iris lens is recommended to draw full benefits of the camera functions.
- After lens mounting, the flange-back adjustment is sometimes required. And when using the auto iris lens which controls video signal as input signal, the additional adjustments of lens level and ALC volume is sometime also required. (See page 15.)



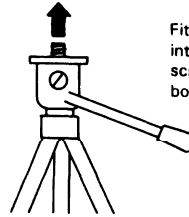
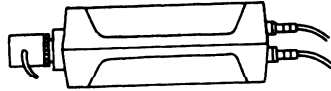
CAMERA INSTALLATION

- With the camera mounting screw hole (UNC 1/4"×20) provided on each of top and bottom faces, the camera unit can be mounted on tripods or camera holder on either side.

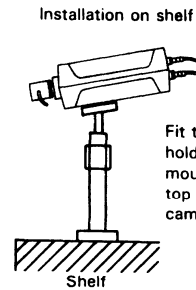
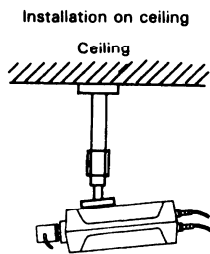
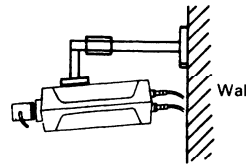
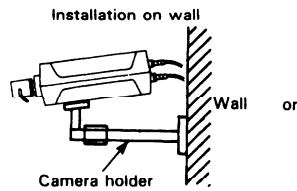
Notes:

- The length of the fitting screw used on tripods or camera holder should be less than 5.5 mm.

< Installation on tripods >



Fit the screw on the tripods into the camera mounting screw hole on the camera bottom face, and tighten it.



Fit the screw on the camera holder into the camera mounting screw hole on either top or bottom side of the camera, and tighten it.

CONNECTING PROCEDURE

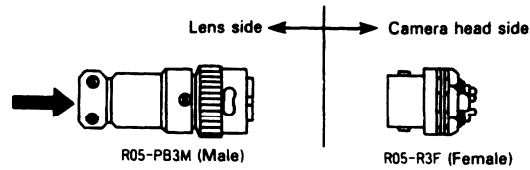
- Keep the camera and connected equipment power switched OFF during installation.
- Read carefully the instructions of each equipment to be connected.

Notes:

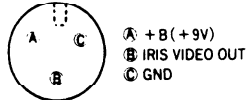
- Use the auto iris lens which is powered by DC 9V and 50mA. Max.

1 Auto iris connector (A.I.)

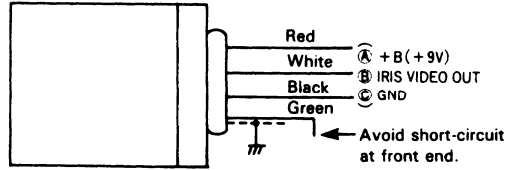
- Connect the iris cord of the auto iris lens.
- When the iris cord connector plug is different, use the attachment special iris connector plug (3-Tajimi R05 PB3M).



Viewed from arrow side

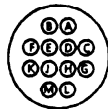


Auto iris lens

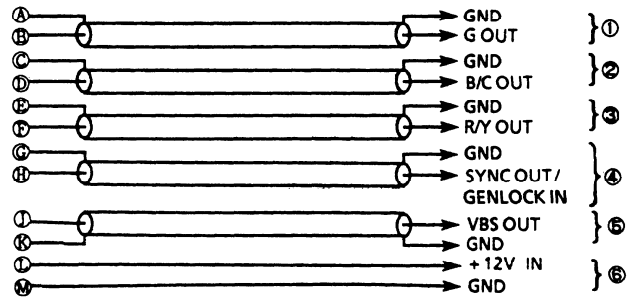


2 AUX CONNECTOR

(Sample connection)



Soldering side



The AUX connector pins are assigned as shown left. The cable size wirable to the connector is below 10.5 in diameter. Therefore, make sure of the cable size for connections ① to ⑥.

① Gch video signal output terminal

From this terminal the Gch video signal is outputted. Connect it to the Gch video signal input terminal of a monitor, etc.

② Bch video or C signal output terminal

Since the Bch video signal is outputted from this terminal when the internal switch of the camera is in RGB position, connect the terminal to the Bch video signal input terminal of a monitor or other if the switch is in that position. When the internal switch of the camera is in Y/C position, the chroma signal is outputted. In this case, connect the terminal to the C signal input terminal of a monitor or other which is provided with the Y/C input. (See the figure below.)

③ Rch video or Y signal output terminal

Since the Rch video signal is outputted from this terminal when the internal switch of the camera is put in RGB position, connect it to

the Rch video signal input terminal of a monitor or other if the switch is in that position. When the internal switch of the camera is in Y/C position, the Y signal is outputted. In this case, connect the terminal to the Y signal input terminal of a monitor or other which is provided with the Y/C input. (See the figure below.)

④ Sync. signal output terminal

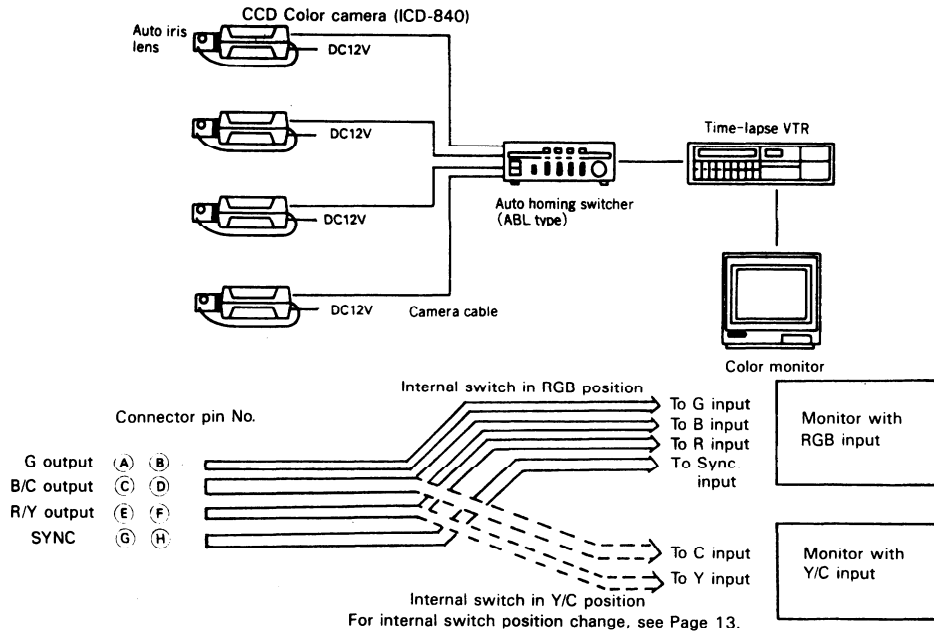
From this terminal the 4-V p-p sync. signal is outputted. Connect the terminal therefore to the sync. signal input terminal. (See the figure below.)

* In the GENLOCK mode, the GENLOCK signal is put into the SYNC OUT pin.

⑤ VBS out terminal

- This terminal is the video signal output.
- Connect it to the video input terminal of the monitor, switcher, or other appliance to which the video camera is to be connected. (Terminate it at 75 Ω)

- Use a coaxial cable as the connecting cable.



3 POWER INPUT TERMINAL

- Connect the cable to this terminal to supply the main power.
- Use the supply voltage within the range DC 12 V plus or minus 1 V.

Notes:

- Be sure to connect the power as the last step. Before connecting it, be also sure to turn off the apparatus connected to the camera.
- As the voltage of DC 12 V, use the ripple voltage of below 25 mV.

- * a) The system can be partially modified in order to hook up the VIDEO OUT BNC connector and the DC 12V input connector.
- b) The system may also be partially modified so that the VBS or BBS signal can be put into the SYNC OUT pin to make the GENLOCK mode. The SYNC output is not available in this case, though.
- * For the above modifications, contact our service engineer. You will be charged for parts and labor.

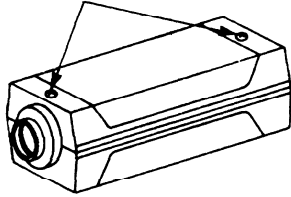
Notes: (OPTION)

- The external sync. signals to be inputted are as follows:
 - Videoburst and sync. signal (VBS) 1.0 V p-p/75 Ω
 - Black burst signal (BBS) 0.45 V p-p/75 Ω
- Signal from the VTR or other that causes the jitters (up-and-down/right-and-left irregular movement) much may disturb the synchronization.
- For generator lock, image condition adjustment (adjusting the horizontal phase and color phase) is needed. (See Page 14.)

ADJUSTMENT AND SETTING

- When adjustments for each functions are required. The top and bottom cases can be removed by removing the screws (2 pieces on the top, 2 pieces on the bottom) in the following drawing.

Screws (provided at same positions on the lower case)

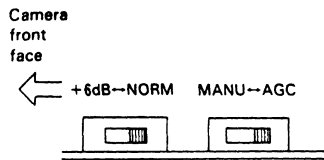
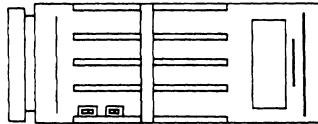


■ AGC (Automatic Gain Control) selection

- Sensitivity level is automatically raised by this function when luminance of the object is insufficient.

■ GAIN (sensitivity) selector

- Slide this selector into +6dB side, and the gain will be nearly doubled.



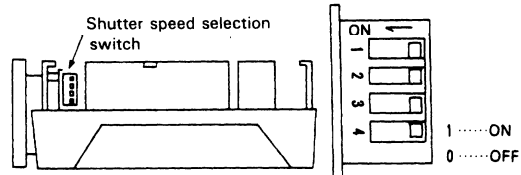
Notes:

- In setting the AGC or GAIN switches, remove the upper case only. After the adjustment is completed, do not fail to put the upper case back together with the PWB holder in position.
- When the AGC function is activated or when the gain is doubled, the picture will be a little rough.
- The AGC and the GAIN selectors have been factory-set at the MANU and the NORM positions, respectively.
- For qualified service personnel only.

■ Shutter speed selection

- This function is used to change the shutter speed (signal electric charge storing time). When a quick-motined image videotaped is played back in still-frame or slow-motion mode, the image is normally blurred. Select the shutter speed 1/60 (for normal videotaping), 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, or 1/10000 second according the speed of movement so any quickly moving image can clearly be taken.

Select the shutter speed by changing the dip switch positions as follows:



- Selecting the shutter speed of 1/100 enables you to eliminate the flicker of fluorescent light.

Shutter speed	1/60	1/125	1/250	1/500	1/1000	1/2000	1/4000	1/10000	1/100
Dip switch positions	1	0	1	0	1	0	1	0	1
	2	0	0	1	1	0	0	1	1
	3	0	0	0	0	1	1	1	1
	4	1	1	1	1	1	1	1	0

Notes:

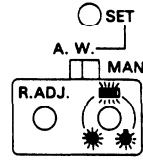
- For qualified service personnel only.
- For a shutter speed change, remove only the upper case of the camera. (When reinstalling the upper cover after completing a shutter speed change, be sure to remember to install the PWB presser).
- When used in shutter mode, the camera needs more light than normal camera operation. In such a case, use the camera in a rather bright place.
- The sensitivities in shutter mode as against the 1/60 position are as follows:

Shutter speed	1/100	1/125	1/250	1/500	1/1000	1/2000	1/4000	1/10000
Sensitivity	1/1.7	1/2	1/4.2	1/8.3	1/17	1/33	1/67	1/167

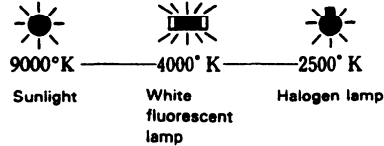
- When other shutter mode than that of 1/100 seconds is selected, the blinking light (especially the fluorescent light) will emphasize the flicker. It will also emphasize the smear (tail-like appearance in the longitudinal or lateral direction).
- If the shutter speed of faster than 1/250 is selected, color aberration will occur when used under fluorescent light. If the shutter speed is such, avoid using the camera under fluorescent light so long as you can.
- The shutter speed was set to 1/60 seconds when shipped.

■ White balance adjustment

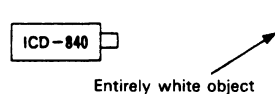
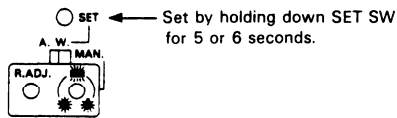
- The color temperature is compensated by this function. Adjustment is made to reproduce the most natural color depending on the color temperature of the lighting source for the object. (To make color confirmation, please see the color monitor which is correctly adjusted.)



- White balance adjustment selection switch**
AUTO WHITE position:
 Sets the push-type auto white balance adjustment method.
MAN. position:
 The white balance can be adjusted manually.
 * Color temperature range of approx 2500°K—9000°K.



- Push-type auto white balance adjustment**
 - Put in A. W. position the white balance selection switch located on the rear panel.
 - Catch an entirely white object by the camera so its image occupies the entire monitor screen.
 - Keeping down the SET switch for 5 or 6 seconds, watch the color monitor screen and make sure the white is properly balanced.



- Manual white balance adjustment**
 - Set the white balance selection switch on the rear panel to MAN. position.
 - Monitor the all white object such as white wall paper on the full screen.
 - Adjust the color temperature change with the control on the rear panel. The range of adjustments by the control is as follows.

- The white balance adjustment can produce red (or green) shade in the picture. Adjust with R.ADJ. control so that the screen color may become natural.
 * If the white balance is to be adjusted with special accuracy, use the vector scope.

Notes:

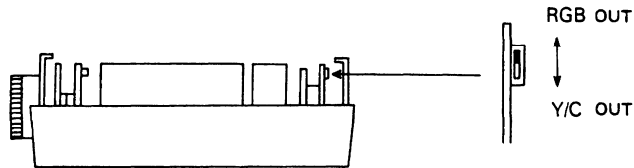
- Since the push-type AUTO WHITE balance adjustment is provided with no memory function, re-set it if the power is once turned off.
- The camera is shipped with the switch in AUTO WHITE position.
- For color temperature and brightness guides, see the table given in Page 13-14.

■ **Selection Between RGB Output and Y/C Separate Output**

- By changing the position of the switch inside the camera, the C signal is outputted to the BCH output and the Y signal is outputted to the RCH output.
See Page 9 for connecting the connector.

Notes:

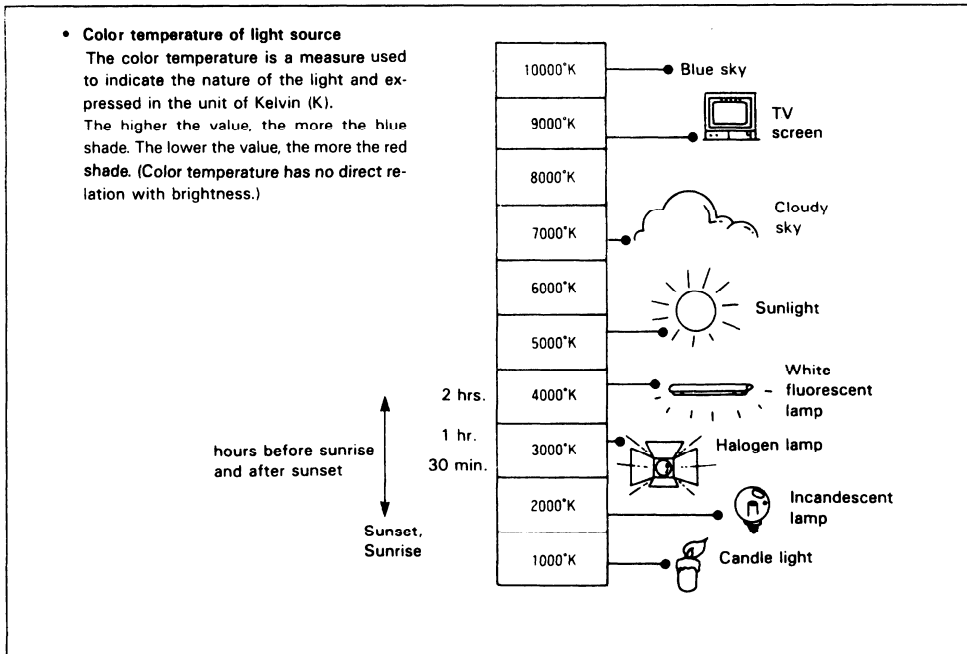
- For an RGB or Y/C output switch position change, remove only the upper cover of the camera. (Be sure to set the PWB presser in position when reinstalling the upper cover after completing the switch position change.)
- Since the switch is quite small in size, exercise due caution not to apply too much force to the switch when changing its position.
- For qualified service personnel only.



• Guide for brightness expression in figures

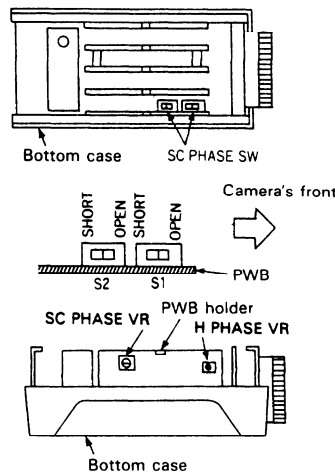
10		• Candle light (20 cm away) (10-15)
100	<ul style="list-style-type: none"> • Indoor golf practice yard (200-300) • Fluorescent lamp 30W x 2 (300) • Desk under fluorescent lighting (400) • Office room under fluorescent lighting (400-500) • Bowling play hall (500) • Department store (500-700) 	<ul style="list-style-type: none"> • Flashlight (1 m away) (250) • Subway platform (300) • Boutique (400-500) • Public library (400-500)
1,000	<ul style="list-style-type: none"> • Sunlight 1 hr before sunset on fine day (1,000) • Sunlight 1 hr after sunrise on cloudy day (2,000) 	<ul style="list-style-type: none"> • Subway coach (500) • Station ticket gate (650) • Well-lighted room (1,000)
10,000	<ul style="list-style-type: none"> • Sunlight at 10 AM on cloudy day (250×10^2) • Sunlight at noon on cloudy day (320×10^2) • Sunlight at 3 PM on fine day (350×10^2) • Sunlight at 10 AM on fine day (650×10^2) 	<ul style="list-style-type: none"> • Window side of office room under fluorescent lighting (1,000)
100,000 lux	<ul style="list-style-type: none"> • Sunlight at noon on fine day ($1,000 \times 10^2$) 	

* Shown above are the approx. values and for reference only. Use this table as a guide to estimate brightness level.



Horizontal Phase (H. PHASE) Adjustment and Color Phase (SC. PHASE) Adjustment (OPTION)

- Horizontal phase adjustment**
 This horizontal phase adjusting function is for external synchronization connection. If out of horizontal phase with another camera (or system), adjust and put them in phase. Using the variable resistor H.PHASE shown in the figure below enables you to vary the phase of the horizontal sync. signal between over $+3 \mu s$ lead and over $-3 \mu s$ delay on a continuous basis.



- Color phase adjustment**
 This color phase adjusting function is for external synchronization connection. If out of horizontal phase with another camera (or system), adjust the phase by using the SC.PHASE switches in combination with the SC.PHASE variable resistor and put them in phase. Using the two SC.PHASE switches can vary the color phase as follows:

		S1	
		OPEN	SHORT
S2	OPEN	+180°	0°
	SHORT	+90°	+270°

* When the phase with the S1 in SHORT position and the S2 at OPEN is the 0-degree reference phase:

Using the SC.PHASE variable resistor enables you to vary the color phase about 90 degrees on a continuous basis.

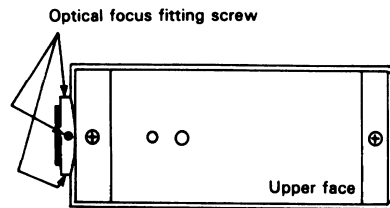
Notes:

- For phase adjustment, remove only the upper case. When reinstalling the upper case after completing the adjustment, do not fail to install the PWB holder in position.
- Signal from the VTR or other that causes the jitters (up-and-down or right-and-left irregular movement) much may disturb the synchronization.
- The adjustment here is not needed with no external synchronization connection.
- For qualified service personnel only.

ADJUSTMENT OF LENS

■ Adjustment of flange-back

After lens mounting, the adjustment of flange-back (distance between the lens mounting face and the image forming face) is required in some cases. When the image is not focused clearly by the focus ring of the lens, make adjustment by the optical focus fitting screw as shown below.

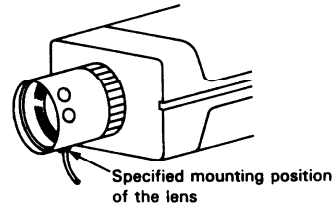
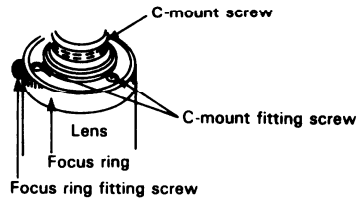


• When using fixed focus lens

- ① Open the iris as much as possible, and set to the distant object. Turn the focus ring to fix the focus.
- ② Set to the object nearby (approx. 30 cm), and fix the focus by the focus ring.
- ③ When the focus is not fixed for the distant or the nearby objects, loosen the optical focus fitting screw and turn the C-mount of the camera together with the lens until the focus is clearly fixed.
- ④ Repeat the above procedures several times until the focus can be fixed only by the focus ring for both distant and nearby objects. After this, tighten the optical focus fitting screw.
- ⑤ When the auto iris lens is used, loosen the C-mount fitting screw and turn the C-mount so that the lens can be mounted properly on the specified position of the camera. After this, tighten the C-mount fitting screw. (See the following figure.)

* The construction may differ on different lenses.

Please refer to the instructions of the lens.



Position of cord to bottom.

Cautions

- When fixing the focus for distant object, keep the distance more than 2,000 times of the focal length of the mounted lens. (When the lens focal length is 7.5 mm, for example, the distance should be more than 15 m.)

• When using zoom lens

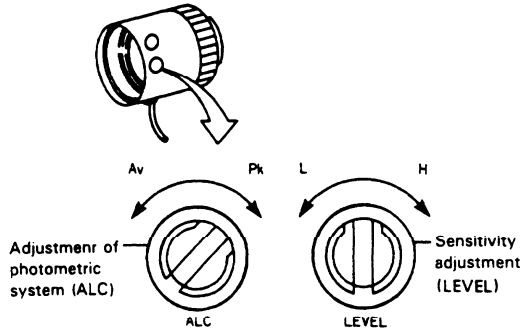
- ① Set the iris to open, and zoom the lens to the maximum TELE position. Fix the focus by the focus ring.
- ② When the image is out of focus with the lens zoomed to the maximum WIDE position, loosen the optical focus fitting screw and turn the C-mount of the camera together with the lens until the focus is fixed.
- ③ Repeat the above procedures ① and ② several times and reduce the deviation of focus in both TELE and WIDE positions.
- ④ After the best focus is obtained, tighten the optical focus fitting screw.

Cautions

- Keep the distance to the object more than 5 times of the minimum image forming distance of the mounted lens. (When the minimum image forming distance of the lens is 1 m, for example, keep the distance more than 5 m.)

■ Auto Iris Lens Adjustment

For the auto iris lens controlled with the video signal as the input signal, adjust it whenever necessary.



• Sensitivity adjustment (LEVEL)

Adjust the sensitivity in this way: While shooting an object, whose contrast ratio is relatively small, under sufficient illuminance (over 1000 luxes), conduct the adjustment by watching the monitor screen so that the image of the object achieves the optimal brightness and tone. For the adjustment, select an evenly lighted place with the ALC adjuster fully turned in the AV direction.

Turning in H direction:

When the entire screen is rather dark or when noise is much, turn the LEVEL switch in the H direction for bringing the screen into appropriate brightness.

Turning in L direction:

When the screen is rather whitish and there are white spots in colored areas, turn the LEVEL switch in the L direction for bringing the screen into appropriate brightness.

• Photometric system adjustment (ALC)

Watching the screen, choose the photometric method that suits the object caught in the lens, then make adjustment so that an optimal image be obtained.

Turning in Av direction:

Turning the ALC switch in the AV direction selects the average photometric method.

When turned to the end of the Av direction, the iris is automatically adjusted with the average value of the video signal level of the object regarded as the appropriate photometric value.

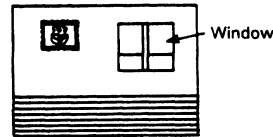
Turning in Pk direction:

Turning the ALC switch in the Pk direction selects the peak photometric method.

When turned to the end of the Pk direction, the iris is automatically adjusted with the value of the high luminance part of the video signal level of the object regarded as the appropriate photometric value.

Notes:

- When the situation is like the figure as shown and you desire the camera to bring the picture hanging on the wall into the screen, turn the ALC switch in the AV direction for adjustment. In this case, the window and its periphery will be in saturated white.



- When the situation is like the figure as shown and you desire the camera to bring the scene outside the window in to the screen together with its periphery, turn the ALC switch in the Pk direction for adjustment. In this case, the area around the picture on the wall including the picture itself will be dark in the screen since the luminance level for that area lowers.
- If the scene caught in the camera is evenly lighted more or less, the level will not change much, in whichever direction the switch is turned.

Notes:

- The ALC adjustment should be preceded by the LEVEL adjustment.
- Since the sensitivity adjustment (LEVEL) is the video signal level adjustment, avoid to needlessly turn the LEVEL switch after completing its adjustment. Otherwise, the sensitivity of the lens might change to result in picture quality deterioration or to put the camera out of order in the worst case.

PRECAUTIONS ON USE

- **Never set the camera toward the sun.**
Never turn the lens toward the sun in whatever usage of the camera.
- **Do not catch a intense light.**
If there is a highly luminant (intensely lighted) object as a part of the scene shown in the screen, it will appear like a tail in the longitudinal or lateral direction. It is called the smear which is peculiar to the solid state imaging device, and does not mean a trouble.
- **Never disassemble the camera.**
NEVER touch the interior of the camera. Otherwise, a trouble will result.
- **Keep the camera free from any foreign matters.**
The camera dislikes foreign matters, especially metallic and flammable pieces, entering it. Their entrance into the camera may cause a trouble or accident.
- **Gently handle the camera.**
Never drop the camera nor give it a shock or vibration.

■ In case of trouble or anything wrong with the camera:

If you discover anything wrong (such as unusual sound, smell, or smoke) with the camera or a trouble (such as a sudden disappear of the picture from the screen), stop operating the camera (turn off its power) all at once, and contact your dealer or salesman.

Caring the camera

- After turning off the power, clean the exterior of the camera with soft, dry cloth. If hard to remove any dirt or smear from the camera, gently wipe it off by cloth well wrought after wetted with water-diluted furniture/house cleaning detergent.
For cleaning the lens or other delicate component, use a camera lens blower or lens cleaning paper (sold in a camera shop).

WARRANTY AND AFTER-SALE SERVICING

This camera is provided with a warranty. Please be sure to receive the warranty when you purchase. Keep it after reading its contents and writing down necessary information in the warranty.

- The term of guarantee is one (1) year beginning from your purchase date (except that the warranty does not cover the expendables). Within that period, the dealer where you purchased your camera will repair according to the contents of the warranty. For details, see the warranty.
- For repair after the term of guarantee, consult your dealer or salesman. If considered that the camera will properly function when repaired, it will be repaired with charge if you so desire.
- Before requesting for a repair, please be through the instruction manual once again to be sure that the camera really needs the repair. When you are sure it really does, inform your dealer of the details such as the model name, the date of your purchase, and state of the trouble.

- For others you desire to know for our after-sale service, ask your dealer or salesman.
- * Earlier maintenance and inspection are advisable for keeping your camera always in good condition.

SPECIFICATIONS

Imaging system	Interline transfer system CCD
Color filter	Ye, Cy, Mg, G complementary color system
No. of picture elements	Effective 768 (H) x 494 (V) in total. 811 (H) x 508 (V)
Imaging area	Effective 6.4 mm (H) x 4.8 mm (V)
Scanning system	525 lines 60 fields/30 frames 2:1 interlace Conforming to NTSC system.
Scanning frequency	H : 15.734 kHz V : 60 Hz
Synchronizing system	Internal synchronization: Crystal oscillation • OPTION External synchronization: Generator lock by VBS or BBS input. Internal/external synchronization is automatically selected.
GL input (OPTION)	VBS 1.0 V p-p/75 Ω or BBS 0.45 V p-p/75 Ω.
Video output	VBS 1.0 V p-p/75 Ω. RGB signal output 0.7 V p-p/75 Ω. Sync signal output 4 V p-p/75 Ω (In the GENLOCK mode, the GENLOCK signal is put into the SYNC OUT pin.)
Resolution	Horizontal 460 TV lines Vertical 350 TV lines
S/N ratio	46 dB (P-P/rms) (Luminance signal) F 2.8 1000 luxes. 4.2 MHz. LPF used.
Standard luminance on object	F 2.8 1000 luxes (100 fc)/3200 °K Reflection factor: 89.9%
Minimum luminance on object	F 1.4 Approx. 5 luxes (0.5 fc)/3200 °K Reflection factor: 89.9% AGC ON By GAIN SW change, F1.4 Approx. 2.5 luxes (0.25 fc)/3200 °K
Auto iris circuit	Built-in
Auto white circuit	Built-in
Electronic shutter function	Built-in. 8 modes. 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, and 1/10000 available (Selectable by internal switch change)
Lens mount	C mount
Power supply	DC 12 V ± 1 V
Power consumption	Approx. 6 W
Ambient temp.	-10°C to +50°C
External dimensions	70 (W) x 60 (H) x 190 (D) mm
Weight	Approx. 850 g
Camera mount	1/4 inch 20 UNC (Top and bottom)
Connector	RGB output (Including power input VBS out) Round-shaped 12-pin 1 (R05-R12M) Auto iris lens (R05-R3F) 3-pin 1

■ Accessories

Iris plug: 3-pin (R05-PB3M)	1
Lens mount cap	1
AUX plug (RGB output):	
12-pin (R05-PB12F)	1

- * The specifications and the appearance are subject to change without prior notice.
- * Since the camera described herein is so designed as to output the video signal that conforms to the NTSC system, it cannot be used for VTR's and monitors that use other system.

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