

3-CMOS Color Camera MODEL HV-HD30

OPERATION MANUAL



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

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

Model No. _____

Serial No. _____

Hitachi Kokusai Electric Inc.

IMPORTANT SAFETY INSTRUCTIONS

1. Read Instructions

All the safety and operating instructions should be read before the product is operated.

2. Retain Instructions

The safety and operating instructions should be retained for future reference.

3. Heed Warnings

All warnings on the product and the operating instructions should be adhered to.

4. Follow Instructions

All operating and use instructions should be followed.

5. Cleaning

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

6. Attachments

Do not use attachments not recommended by the product manufacturer as they may cause hazards.

7. Water and Moisture

Do not use this 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.

8. Accessories

Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

9. Moving

A product and cart combination should be moved with care.

Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

10. Ventilation

Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered.

The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a

built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

11. Power Sources

This 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 product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

12. Grounding or Polarization

This product is equipped with a three-wire grounding-type plug a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

13. Power-Cord Protection

Power-supply cords should be routed to that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plug, convenience

receptacles, and the point where they exit from the product.

14. Lightning

For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power-line surges.

15. Overloading

Do not overload wall outlets, extension cords or integral convenience receptacles as this can result in a risk of fire or electric shock.

16. Object and Liquid Entry

Never push objects of any kind into this 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 product.

17. Inflammable and Explosive Substance

Avoid using this product where there are gases, and also where there are inflammable and explosive substances in the immediate vicinity.

18. Heavy Shock or Vibration

When carrying this product around, do not subject the product to heavy shock or vibration.

19. Servicing

Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

20. Damage Requiring Service

Unplug this 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 product.
- c. If the product has been exposed to rain or water.
- d. If the 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 product to its normal operation.
- e. If the product has been dropped or damaged in any way.
- f. When the product exhibits a distinct change in

performance-this indicates a need for service.

21. 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.

22. Safety Check

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

23. Wall or Ceiling Mounting

The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

24. Heat

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

WICHTIGE SICHERHEITSANWEISUNGEN

1. Alle Anweisungen lesen

Vor Betrieb des Erzeugnisses sollten alle Sicherheits-und Bedienungsanleitungen gelesen werden.

2. Die Anweisungen aufbewahren

Die Sicherheits-und Bedienungsanleitungen sollten fünftigen Bezug aufbewahrt werden.

3. Warnungen beachten

Die Warnungen auf dem Erzeugnis und in den Bedienungsanleitungen sollten beachtet werden.

4. Anweisungen befolgen

Alle Bedienungsanleitung-und Verwendungsanweisungen sollten befolgt werden.

5. Reinigung

Den Stecker des Geräts vor Reinigung aus der Steckdose ziehen. Keine flüssigen Reinigungsmittel oder Aerosolreiniger verwenden. Zum Reinigen einen feuchten Lappen verwenden.

6. Zubehör

Nur vom-Hersteller des Erzeugnisses empfohlenes Zubehör verwenden, da es sonst zu Störungen kommen kann.

7. Wasser und Feuchtigkeit

Dieses Erzeugnis nicht in der Nähe von Wasser verwenden - z.B, in der Nähe einer Badewanne, eines Waschbeckens, einer Küchenspüle, eines

Waschzubers, in einem nassen Keller, in der Nähe eines Schwimmbeckens usw.

8. Aufstellung

Das Erzeugnis nicht auf einen unstabilen Wagen, Stand, Dreifuß, Träger oder Tisch stellen.

Das Erzeugnis kann sonst herunterfallen und ein Kind oder einen Erwachsenen schwer verletzen.

Außerdem kann das Gerät schwer beschädigt werden. Nur mit einem Wagen, Stand, Dreifuß, Träger oder Tisch verwenden, der vom Hersteller empfohlen oder mit dem Erzeugnis verkauft worden ist. Für jegliche Anbringung sollten die Anweisungen des Herstellers befolgt werden, und das vom Hersteller empfohlene Anbringungszubehör sollte verwendet werden.

9. Eine Kombination von Erzeugnis und Wagen sollte vorsichtig bewegt werden

Schneller Halt, übermäßige Krafteinwirkung und unebene Oberflächen können Umkippen der Kombination von Erzeugnis und Wagen verursachen.

10. Ventilation

Schlitze und Öffnungen im Gehäuse dienen der Ventilation. Sie sind für zuverlässigen Betrieb des Gerätes und Schutz vor Überhitzung

erforderlich und dürfen nicht blockiert oder abgedeckt werden.

Die Öffnungen sollten niemals dadurch blockiert werden, daß, das Gerät auf ein Bett, ein Sofa, einen Teppich oder eine ähnliche Oberfläche gestellt wird.

Das Gerät sollte nur dann in Einbauinstallation wie in einem Bücherschrank oder einem Gestell verwendet werden, wenn angemessene Ventilation vorgesehen ist bzw. Die Anweisungen des Herstellers befolgt worden sind.

11. Stromversorgung

Dieses Erzeugnis sollte nur an der auf dem Typenschild angegebenen Stromversorgungsart betrieben werden. Wenn Sie nicht sicher sind, was für eine Stromversorgung Sie haben, so wenden Sie sich bitte an Ihren Erzeugnishändler oder an das lokale Elektrizitätswerk. Beziehen Sie sich für Batteriebetrieb oder andere Stromquellen vorgesehene Erzeugnisse bitte auf die Bedienungsanleitungen.

12. Erdung oder Polarisierung

Dieses Erzeugnis ist mit einem Schutzkontaktstecker mit drei Leitern ausgerüstet, mit einem Erdungskontakt. Dieser Stecker paßt

nur in ein schuko-Steckdose. Dies ist eine Sicherheitsmaßnahme. Wenn Sie den Stecker nicht in die Steckdose stecken können, so wenden Sie sich bitte an ihren Elektriker, damit er die veraltete Schutz des Schutzkontaktsteckers unwirksam.

13. Netzkabelschutz

Netzkabel sollten so verlegt werden, daß möglichst nicht darauf getreten wird und daß sie nicht eingeklemmt werden, mit besonderer Beachtung der Kabel an Stackern, Verlängerungskabeln und dem Austritt des Kabels aus dem Erzeugnis.

14. Blitzschlag

Für zusätzlichen Schutz des Erzeugnisses während eines Gewitters oder bei Nichtverwendung für lange Zeit den Stecker aus der Steckdose ziehen. Dies verhindert Beschädigung durch Blitzschlag und Netzspannungsschläge.

15. Überlastung

Wandsteckdosen, Verlängerungskabel und eingebaute Bequemlichkeitssteckdosen nicht überlasten, da dies Feuer oder elektrischen Schlag verursachen kann.

16. Eindringen von Fremdkörpern und Flüssigkeit

Niemals Objekte irgendwelcher Art durch die Öffnungen in das Gerät schieben, da diese unter hoher Spannung stehende Teile berühren oder kurzschließen können, wodurch es zu Feuer oder elektrischem Schlag kommen kann. Niemals Flüssigkeiten irgendwelcher Art auf das Erzeugnis verschütten.

17. Entflammbare und explosive Substanzen

Vermeiden Sie Verwendung dieses Erzeugnisses an Orten mit Gasen bzw. entflammbaren oder explosiven Substanzen in der direkten Umgebung.

18. Starke stöße oder Vibrationen

Setzen Sie das Erzeugnis beim Transport nicht starken Stößen oder Vibrationen aus.

19. Wartung

Versuchen Sie nicht, dieses Erzeugnis Selbst zu warten, da Sie sich durch Öffnen bzw. Entfernen von Abdeckungen hohen Spannungen und sonstigen Gefährdungen aussetzen können. Beziehen Sie sich für jegliche Wartung auf qualifiziertes Wartungspersonal.

20. Beschädigung, die Wartung erfordert

Ziehen Sie den Stecker dieses Erzeugnisses aus der Steckdose und wenden Sie sich an

qualifiziertes Wartungspersonal, wenn eine der folgenden Bedingungen vorliegt:

- a. Wenn das Netzkabel oder der Stecker beschädigt ist.
- b. Bei Eindringen von Flüssigkeit oder Fremdkörpern in das Gerät.
- c. Wenn das Erzeugnis Regen oder Wasser ausgesetzt worden ist.
- d. Wenn das Erzeugnis bei Befolgen der Bedienungsanleitungen nicht normal funktioniert.
Nur die Regelelemente verstellen, die in den Bedienungsanleitungen behandelt werden, da unangemessene Einstellung anderer Regelelemente Beschädigung verursachen kann und oft beträchtliche Arbeit durch einen qualifizierten Techniker erfordert, um das Erzeugnis wieder, zu normalem Betrieb zurückzubringen.
- e. Wenn das Erzeugnis fallen gelassen oder beschädigt worden ist.
- f. Wenn das Erzeugnis eine klare Änderung in der Leistung zeigt-dies weist darauf hin, daß Wartung erforderlich ist.

21. Ersatzteile

Wenn Ersatzteile erforderlich sind, darauf achten, daß der Wartungstechniker nur die vom Hersteller festgelegten Ersatzteile oder Teile mit den gleichen Charakteristiken wie die ursprünglichen Teile verwendet. Unautorisierte Ersatzteile können Feuer, elektrischen Schlag oder sonstige Gefährdungen verursachen.

22. Sicherheitsprüfung

Bitten Sie den Wartungstechniker nach der Vollendung von Wartung oder Reparaturarbeiten an diesem Erzeugnis um die Durchführung von Sicherheitsprüfungen, um zu bestimmen, daß das Erzeugnis im angemessenen Betriebszustand ist.

23. Anbringung an der Wand oder an der Decke

Das Erzeugnis sollte nur entsprechend den Empfehlungen des Herstellers an einer Wand oder an der Decke angebracht werden.

24. Wärme

Das Erzeugnis sollte fern von Wärmequellen wie Radiatoren, Heizwiderständen, Öfen und anderen Wärme erzeugenden Erzeugnissen (einschließlich Verstärkern) aufgestellt werden.

MISES EN GARDE IMPORTANTES

1. Lire les instructions

Lire toutes les instructions de sécurité et de fonctionnement avant de faire fonctionner l'appareil.

2. Conserver ces instructions

Conserver les instructions de sécurité et de fonctionnement à des fins de référence ultérieure.

3. Tenir compte des avertissements

Tous les avertissements qui figurent sur l'appareil et dans le mode d'emploi devront être respectés.

4. Observer les instructions

Observer toutes les instructions de fonctionnement et d'utilisation.

5. Nettoyage

Avant de procéder au nettoyage, débrancher l'appareil de la prise secteur. Ne pas utiliser de produits de nettoyage liquides ou en aérosol. Nettoyer l'appareil avec un chiffon humide.

6. Fixations

Ne pas utiliser de fixations non recommandées par le fabricant de l'appareil car elles pourraient être source de danger.

7. Eau et humidité

Ne pas utiliser l'appareil à proximité d'eau - par exemple près d'une baignoire, d'un lavabo, d'un évier

ou d'un bac à lessive, dans un sous-sol humide, ou près d'une piscine, etc.

8. Accessoires

Ne pas placer l'appareil sur un chariot, un socle, un pied, un support ou une table instables. L'appareil pourrait tomber, blessant grièvement des enfants ou des adultes, et étant sérieusement endommagé.

Utiliser exclusivement le chariot, le socle, le pied, le support ou la table recommandés par le fabricant, ou vendus avec l'appareil. Pour tout montage de l'appareil, respecter les instructions du fabricant, et utiliser à cette fin l'accessoire de montage recommandé par le fabricant.

9. L'appareil monté sur son chariot devra être déplacé avec précaution

Des arrêts brusques, une force excessive et des surfaces irrégulières pourraient provoquer le renversement de l'ensemble appareil-chariot.

10. Ventilation

Les fentes et les ouvertures du coffret sont prévues pour la ventilation ainsi que pour garantir un fonctionnement en toute sécurité de

l'appareil et le protéger de toute surchauffe, et ces ouvertures ne devront donc être ni obstruées ni recouvertes. Ne jamais obstruer les ouvertures en plaçant l'appareil sur un lit, un sofa, un tapis ou toute surface similaire. Ne jamais placer l'appareil dans un support confiné, par exemple une bibliothèque ou une étagère, sans ventilation suffisante ou sans respecter les instructions du fabricant.

11. Sources d'alimentation

L'appareil devra être alimenté exclusivement sur le type d'alimentation indiqué sur l'étiquette signalétique. Si l'on n'est pas sûr du type d'alimentation du local, consulter le revendeur de l'appareil ou la compagnie d'électricité locale. Pour les appareils qui fonctionnent sur batterie ou sur d'autres sources, voir le mode d'emploi.

12. Mise à la terre ou polarisation

L'appareil est doté d'une fiche trifilaire avec mise à la terre, dont la troisième broche assure la mise à la terre. Cette fiche ne rentrera que dans les prises trifilaires de mise à la terre. Ceci est une mesure de sécurité. Si la fiche ne rentre pas dans la prise, faire remplacer la prise désuète par un électricien.

Ne pas rendre vaine la mesure de sécurité assurée par cette prise avec mise à la terre.

13. Protection du cordon d'alimentation

Acheminer les cordons d'alimentation de façon qu'on ne risque pas de marcher dessus ou de les coincer sous un objet placé dessus ou contre eux. Faire particulièrement attention aux fiches des cordons, à la proximité des prises, et à l'endroit où ils ressortent de l'appareil.

14. Foudre

Pour renforcer la protection de l'appareil pendant un orage, ou si l'on s'en éloigne ou qu'on reste longtemps sans l'utiliser, le débrancher de la source d'alimentation. Ceci permettra d'éviter tout dommage de l'appareil dû à la foudre et aux surtensions de ligne.

15. Surcharge

Ne pas surcharger les prises, rallonges et prises multiples car cela pourrait entraîner un risque de feu ou de choc électrique.

16. Pénétration d'objets et de liquides

Ne jamais enfoncer d'objets d'aucune sorte dans les ouvertures de l'appareil car ils pourraient toucher des points de tension dangereuse ou court-circuiter des pièces, ce qui pourrait

provoquer un feu ou un choc électrique. Ne jamais renverser de liquide d'aucune sorte sur l'appareil.

17. Substances inflammables et explosives

Eviter d'utiliser l'appareil en présence de gaz, ainsi qu'à proximité immédiate de substances inflammables et explosives.

18. Chocs ou vibrations violents

Lorsqu'on transporte l'appareil, ne pas le soumettre à des chocs ou des vibrations violents.

19. Réparations

Ne pas tenter de réparer l'appareil soi-même car le fait d'ouvrir ou de retirer les caches risque d'exposer l'utilisateur à des tensions dangereuses notamment. Confier toute réparation à un personnel qualifié.

20. Dommages nécessitant réparations

Débrancher l'appareil de la source d'alimentation et confier les réparations à un personnel qualifié dans les cas suivants:

- a. Lorsque le cordon d'alimentation ou sa fiche sont endommagés
- b. Si du liquide s'est renversé sur l'appareil ou que des objets sont tombés dedans
- c. Si l'appareil a été exposé à la pluie ou à l'eau.

d. Si l'appareil ne fonctionne pas normalement lorsqu'on observe les instructions d'utilisation.

Ne régler que les commandes couvertes par le mode d'emploi ; en effet, un réglage incorrect des autres commandes pourrait entraîner des dommages et nécessiteront souvent des travaux de réparation coûteux par un technicien qualifié pour remettre l'appareil en état de marche.

e. Si l'appareil est tombé ou qu'il a été endommagé.

f. Si l'appareil affiche une nette modification de ses performances, cela signifie qu'il a besoin d'être réparé.

21. Pièces de rechange

Si l'on a besoin de pièces de rechange, veiller à ce que le technicien de réparation utilise exclusivement les pièces de rechange spécifiées par le fabricant ou des pièces ayant les mêmes caractéristiques que les pièces d'origine. Les pièces de rechange non autorisées risquent de provoquer un feu, un choc électrique et autres dangers.

22. Vérificaton de sécurité

Après tout travail d'entretien ou de réparation de l'appareil, demander au technicien de réparation d'effectuer les vérifications de sécurité pour s'assurer que l'appareil est en bon état de marche.

23.Montage au mur ou au plafond

L'appareil ne pourra être monté au mur ou au plafond que de la manière recommandée par le fabricant.

24. Chaleur

Eloigner l'appareil des sources de chaleur, telles que radiateurs, appareils de chauffage, cuisinières, et de tour produit engendrant de la chaleur (y compris les amplificateurs).

IMPORTANT NOTICE

For USA

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. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this product 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 Kokusai Electric responsible for compliance could void the user's authority to operate the equipment.

For Canada

This product does not exceed the class A/class B 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 rVglement sur le brouillage radioélectrique édicter par le ministère des communications du canada.

Table of contents

● IMPORTANT SAFETY INSTRUCTUIONS	A	COLOR DTL	33
● IMPORTANT NOTICE	L	AUTO WHITE	35
● Table of contents	M	SYSTEM	37
● Standard composition	1	TV SYSTEM SELECT	39
● Overview	1	ID/TITLE	41
● Features	2	LENS	43
● Notes to users	3	OTHER FUNC	45
● Name and function each section	5	● How to Attain Better images	47
● Lens	6	White Balance Adjustment	47
Lens selection	6	Real time Auto White	49
Flangeback adjustment	7	Auto Shading Correction	49
● Video signal type lens adjustment	8	ALC (Auto level control)	50
● Camera mounting	9	● RC-Z3 remote control panel	52
● System example	10	RC-Z3 panel facilities	54
● Menu Screen Operation	11	Menu screen composition	60
Menu Structure	11	● Function Selection by internal Switch Setting	61
MAIN MENU	14	● Connectors	62
GAIN/SHT.	16	● Specifications	65
DTL	19	● Input/Output Signals	67
ALC	20	● Major accessories	69
AUTO SETUP	22	● Dimensions	69
SPECIAL SET	23	● The solution in the case of having changed into	
FILE SET	24	the output mode which the color monitor does	
LEVEL	25	not support	70
MASKING	26		
GAMMA/KNEE	30		
DTL	31		

Standard composition

Check when unpacking.

Camera, HV-HD30	1
Power plug, R03-P3F (JPR0034*)	1
Lens plug, E4-191J-100(JPE0001*)	1
Operation Manual	1

* Part code

Overview

The HV-HD30 is a three CMOS HDTV camera combining high picture quality and high stability with the convenience of C mount optics. CMOS size is 1/3-inch and each consists of 1,300,000 picture elements.

Signal processing is all digitalized.

High quality signal processing and image compensating functions are attained by Hitachi's unique digital processing technology condensed into an advanced FPGA chip while power consumption is remarkably reduced by employing the latest CMOS and FPGA technologies.

The high-definition television format of four modes and the SD format of four modes can be switched by the menu, and the image can be used all over the world. Similar to the existing HV-D series products, both image signals can be output concurrently without using any option.

Features

● 3-CMOS Optical Block

Newly developed HDTV-use CMOS image pickup device realizes high resolution images by 59.94 frames (or 50 frames)/sec progressive scan. Good image can be attained even if the subject has ultra-high because it's theoretically smear-free. In addition, power consumption is remarkably lower as compared with CCD ones.

● C mount

The camera uses a C mount lens, which is the de facto standard in the industry. A built-in flangeback adjusting mechanism allows use with different types of optical systems.

Note : We recommend using a HDTV lens for obtaining full performance from the camera.

● Multiple Formats

HDTV:1080i or 720p can be output and the image be output by 59.94 frames or each 50 frames in four kinds of modes.

SDTV:576i, 50 frames or 480i and 59.94 frames can be output and the image be output in aspect ratio 4:3 or 16:9 respectively and 4 kinds of modes.

In eight kinds of in total modes, the HDTV/SDTV image can be output.

● Auto shading compensation (ASC)

Color shading incurred when using a C mount lens is automatically compensated (attenuated). Two modes of shading are provided and can be selected according to the cameras application, a vertical color shading mode or a two-dimensional luminance-shading mode.

● Bi-directional data communication

The camera can be connected to a personal computer via RS-232C for two-way data communications to provide finely detailed camera control. An identification (ID) code can be assigned to each camera in a system and allow remotely controlling multiple cameras from a single computer.

Notes to users

Important safety notes

- Use this camera with a 12 VDC power supply.
- Observe that flammable objects, water or metal do not enter the camera interior. These may lead to failure or accident.
- Do not modify the camera or use the camera with external covers removed. These may cause failure, void any warranties and pose a safety hazard.
- Stop using the camera at the approach of an electrical storm (thunder audible). Protect the camera from rain if using it outdoors.
- In event the camera shows any abnormality, switch off the camera and disconnect the power cord. Contact a Hitachi Kokusai Electric service representative.

Operating considerations

● Power supply

Check that the supplied voltage is between 10.5 and 15 VDC. Inadequate voltage can affect color fidelity and cause noise, while voltage over 15 V can damage the camera.

● Connectors

Confirm the power is off before connecting or disconnecting a signal cable. Grasp connectors by the body, not the attached wires.

● Lens

The correct lens is important for deriving optimum performance from the camera. Consult a Hitachi Kokusai Electric dealer for a selection of fine lenses according to the application.

● Installation and storage sites

The following types of environment can impair performance, lead to damage, pose safety hazards and shorten the useful life of the camera. Select the sites for installing the storing the camera carefully.

- Direct sunlight, rain or snow
- Flammable or corrosive gasses
- Very hot or cold (beyond -10 to 40 operating, -20 to 60 storage)
- Humid or dusty
- Exposed to vibration or shock
- Strong electrical or magnetic fields
- Exceptionally strong light

Continuous operation

In situations where the camera is used continuously for long periods of time, the ambient temperature should be kept below 40 in order to avoid accelerated deterioration of internal parts and to derive maximum long-term reliability.

Cleaning

- A photographer's blower or lens brush can be used for clearing dust from the lens and optical filters.
- Wipe dust from the case with a soft dry cloth. If soiling is severe, moisten the cloth with a solution of neutral detergent. Afterwards, wipe the cover with a dry cloth.
- Do not use petroleum distillates, alcohol or spray type cleaners.

Transportation

Remove the lens (install lens mount cap) and other attachments. Pack the camera carefully in its original or equivalent container. Use ample cushioning to protect the camera from physical shock.

CMOS properties

The following phenomena are inherent to a CMOS imaging sensor and do not indicate malfunction.

1) Fixed pattern noise

High ambient temperature can cause fixed pattern noise to appear throughout the scene.

2) Moire

Interaction between patterns can produce an additional "phantom" pattern to appear. The CMOS picture device (pixels) are arranged in a pattern, which can interact with a pattern in the scene (e.g., a performer wearing a finely striped necktie) to result in a Moire pattern. The effect should be considered when selecting costumes, props and other scene elements.

3) Ghosting

Strong direct or reflected light near an object of interest can cause ghosting of the object to appear in the picture. The effect is more obtrusive with certain iris settings and lens types. Select the scene layout and camera pointing direction carefully in order to avoid this effect.

4) The solution in the case of having changed into the output mode which the color monitor does not support.

Please look at page 70.

Name and function each section

MENU button

Press this button to display the camera setup menu. The buttons U, D, L and R provide different functions depending on whether the menu is displayed (MENU mode) or not (DIRECT mode).

SDI OUT connector

Outputs a SDI signal (800mVp-p-75 ohms).

Pilot lamp

Lights when power is supplied.

REMOTE connector

Used for connection with the remote control box RC-Z3 or personal computer.

DC IN connector

The 12V power supply is connected.

MULTI connector

Output for RGB or Y/R-Y/B-Y signals. Also used for sync signal I/O and external trigger signal input.

LENS connector

Lens iris control signal connector; connect the iris connector of an auto iris lens.

AWB/L button

DIRECT mode:

Holding down this button for more than two seconds carries out auto white balance (AWB).

MENU mode:

In this mode, it is allowed to change functional data or carry out each function.

U button

DIRECT mode:

While holding down this button for more than two seconds and press the D button carries out auto shading compensation (ASC).

MENU MODE:

Pressing this button moves the cursor up.

FILE/R button

DIRECT mode:

Selects the scene file. Press once to show the present file name for 1 second. During the display, press again to change the scene file.

MENU mode:

In this mode, it is allowed to change functional data or carry out each function.

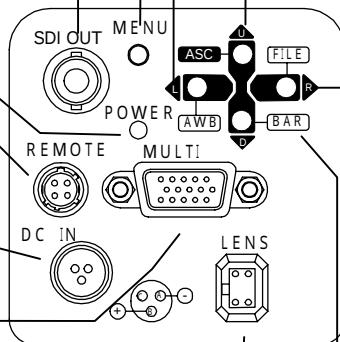
BAR/D button

DIRECT mode:

Press this button to turn on/off a color bar signal.

MENU mode:

Pressing this button moves the cursor up.

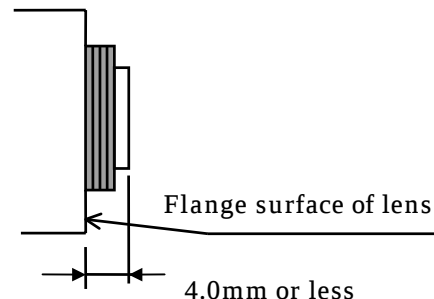


For details of each connector, refer to the description of connectors (page 62).

Lens

CAUTION:

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



Lens selection

1) Optical characteristics

The proper lens is vital for obtaining full performance from the camera. The exit pupil distance is particularly important for a 3-CMOS type camera. If too short, vertical color shading can appear in the picture. Also, as the lens iris approaches fully open, problems such as loss of resolution, shading and flare (overall image "white-out") can detract from picture quality. When using in applications that call for open iris, the lenses for 3-CMOS are recommended. If another lens is contemplated, check the performance beforehand.

2) Auto iris lens

Main types are Video (with self contained iris amplifier) and DC (DC voltage applied to open lens iris) and manual over-ride (e.g., Cosmimar). Lenses without self-contained iris amplifier are not compatible.

Camera settings differ according to the auto iris lens type (see page 43).

Note: The HV-HD30 uses lens connector wiring prescribed by the EIAJ (Electronic Industries Association of Japan). Refer to page 63.

3) Flangeback adjustment

If focus cannot be adjusted after replacing the lens or at the telephoto and wide angle extremes of a zoom lens, the flangeback can be adjusted. Open the lens iris and adjust as described below.

- Fixed focus lens

Set the lens focus ring to infinity and pickup an image more than 20 meters distant. While observing the picture, adjust the focus by turning the flangeback screw in the F or N direction. (Adjustment of a flangeback screw prepares a flat driver.)

- Zoom lens

- 1) Set the lens to telephoto and pickup an image more than 3 meters distant. Turn the focus ring to adjust the focus.

- 2) Set the lens to wide angle and while using care not to disturb the focus ring, turn the flangeback screw() to adjust the focus.

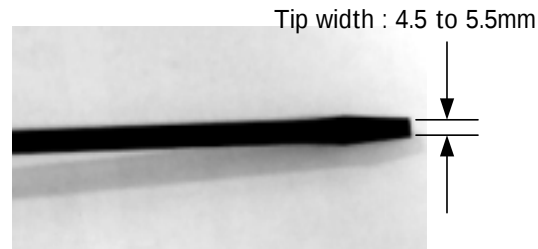
A flangeback screw can be adjusted at a flat driver.

Repeat the above steps until focus is obtained at both the telephoto and wide

angle ends.



The tool to prepare : Flat driver



Video signal type lens adjustment

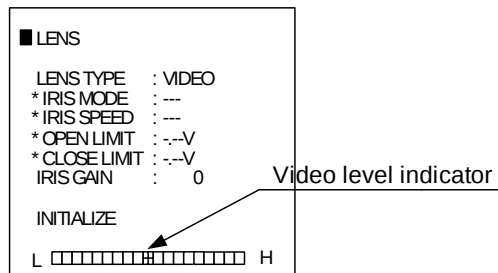
Adjustment is required after replacing the lens or if using the camera for the first time.

1) Preparation

- (1) Gain in the GAIN/SHT. manu is set to PRESET, and PRESET under that is set to +0dB.
- (2) If the light source has a flicker component (e.g., fluorescent or mercury lighting), change the electronic shutter mode (GAIN/SHT. menu Shutter or Variable) to reduce the flicker.
- (3) Adjust the white balance. (Page 22)

2) Adjustment

Hold the U button depressed and press Setup for about 2 seconds to display the Special Set menu. Change to the Lens screen and check the Lens Type setting. If DC, change this to Video.



- (1) Set the lens ALC control fully toward the average (Av) position.
- (2) If auto iris hunting occurs, reduce the Iris Gain setting.
- (3) Adjust the lens level control to where the center quadrangle is positioned at the video signal level indicator cross mark.
If the camera video signal detection level is optimum , the quadrangle mark is center. If larger than optimum , the quadrangle marker to the right of H is moved and if lower , the quadrangle mark to the left of L is moved.

3) Lens adjustment difficult or impossible

- (1) Video signal level indication unstable
Unstable indication can occur if the light source has a flicker component (e. g., fluorescent or mercury lighting) , change the electronic shutter mode (GAIN/SHT. menu shutter or Variable) to reduce the flicker.
- (2) Lens Level control fully at Hi, but auto iris inoperative Reduce the Iris Gain setting.
- (3) Lens Level control fully at Low, but auto iris inoperative Increase the Iris Gain setting.

(4) Auto iris operates, but scene is dark. Even if lens Level control is adjusted, the quadrangle mark to the left of the H mark is moved.

Boost the gain. Set GAIN/SHT. menu GAIN to 1 - 12 dB in order to raise the sensitivity.

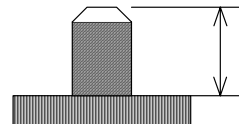
Note: The video signal level indicator sensitivity is high in order to increase lens adjustment accuracy. Operate the lens Level control slowly.

Camera mounting

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

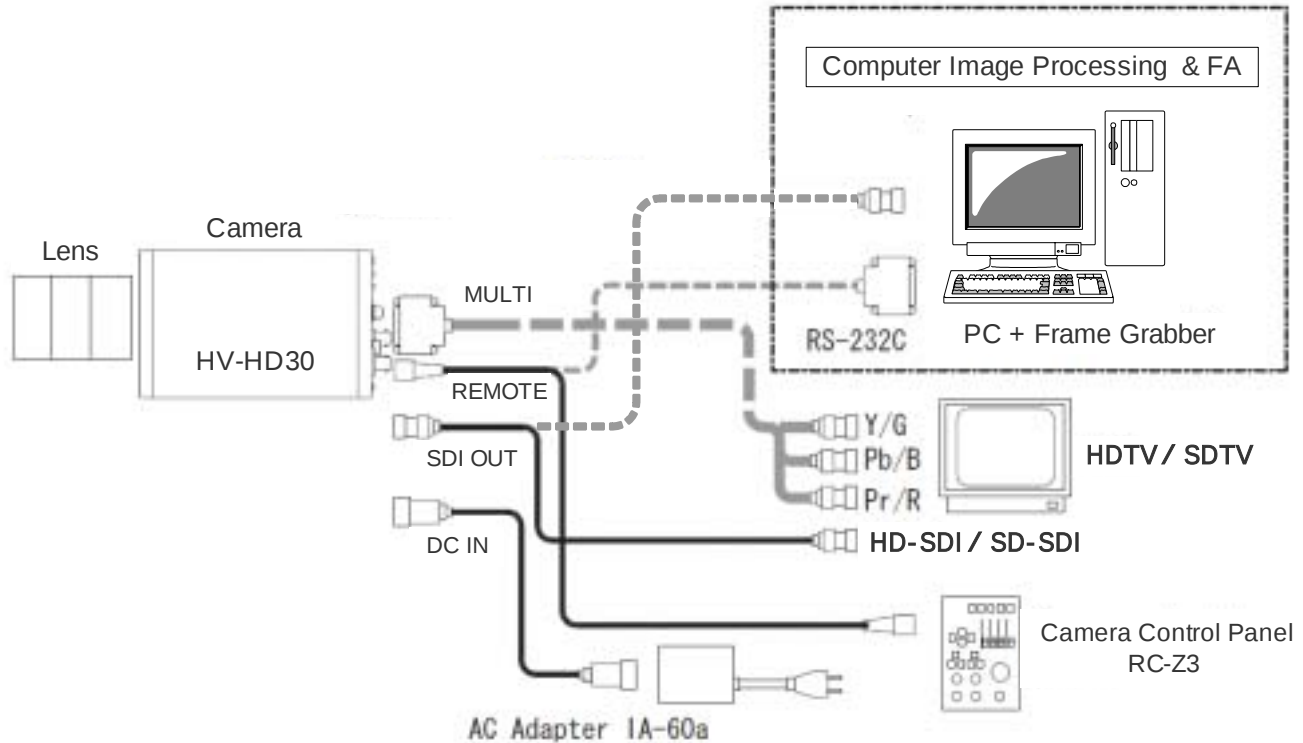
Screw type: U 1/4-20

Length: 4.5 to 6 mm



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

System examples



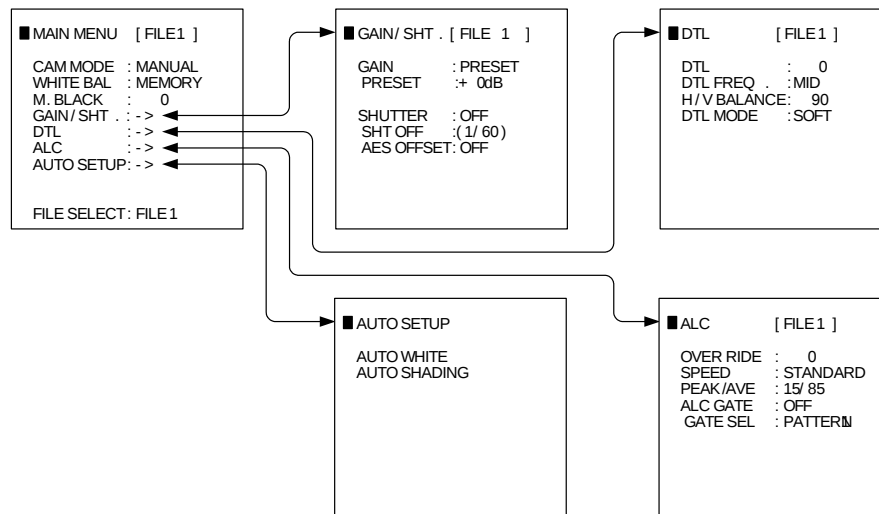
Menu Screen Operation

1. Menu Structure

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

1) MAIN Menu Structure

Press the MENU button and MAIN MENU appears on the screen to indicate the main menu mode. Again press the MENU button to extinguish the menu and enter the direct mode. There are a main function setup menu and four sub-menus, which are arranged hierarchically as shown below. On the MAIN MENU, bring the cursor to GAIN/SHT., DTL, ALC or AUTO SETUP and press the R button, and the desired subsidiary menu will come up. To return to the MAIN MENU from the GAIN/SHT., DTL, ALC or AUTO SETUP, bring the cursor to the top line (title line of GAIN/SHT., DTL, ALC or AUTO SETUP) and press the L button. On each menu screen, bring the cursor to any desired item using the U or D button. For mode change/data setting, use the L or R button.



2) SPECIAL Menu Structure

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

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

2. MAIN MENU

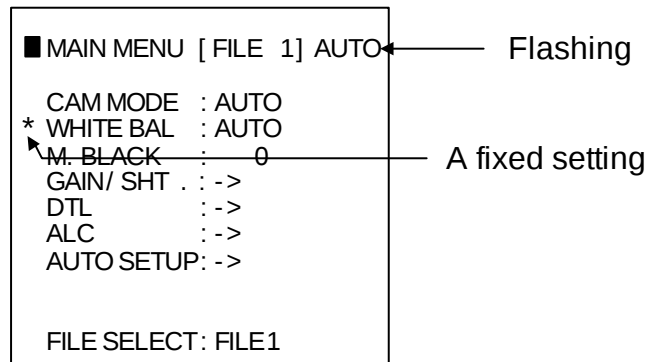
It is the menu of a function used most frequently.

1) CAM MODE : Camera mode

- **MANUAL** : Nearly all function modes can be set. Use for detailed settings.
- **AUTO** : Video level and white balance are automatic and a standard picture can be observed without detailed settings.

Asterisk (*) indicates a fixed setting and the cursor jumps to the next item. The Auto indication flashes when a function is related to the auto mode.

MENU	Function and Mode
WHITE BALANCE	AUTO
AGC	ON
SHUTTER	AES
KNEE	AUTO
GAMMA	ON



2) **WHITE BAL : White balance mode**

Hue adjustment according to the color temperature of illumination so that a white image is picked up when the subject is white.

- **PRST 3200K** : The white balance condition is optimized at a color temperature of 3200K.
- **PRST 5600K** : The white balance condition is optimized at a color temperature of 5600K.
- **MEMORY** : White balance is automatically adjusted by the direct mode AWB button.
- **AUTO** : The white balance condition is set through real time auto white balancing (automatic tracking white balance).

The adjustment speed can be selected with **SPEED** of **AUTO WHITE** menu.

3) **M. BLACK : Master black level setting**

Adjustment of black brightness.

Used when black portions are whitish or black saturations occur.

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

4) GAIN/SHT. : The GAIN/SHT. is brought up.

5) DTL : The DTL is brought up.

6) ALC : The ALC is brought up.

7) AUTO SETUP : The AUTO SETUP is brought up.

8) FILE SELECT : Select among scene files 1, 2, 3, and 4

Camera setting data can be stored in four scene files.

To shoot several scenes with different shooting conditions, it is needed to change settings suitable for each scene. To reduce such troublesome operations, various shooting conditions can be memorized previously to scene files, and the conditions most suitable for a scene can be read and set.

There is a FILE SELECT item in the following menu. The function, operation are same. It can memory each setting data of the following MENU as the scene file.

MAIN MENU
GAIN/SHT.
DTL
ALC
AUTO SETUP

SPECIAL SET LEVEL
SPECIAL SET MASKING
SPECIAL SET GAMMA/KNEE
SPECIAL SET DTL
SPECIAL SET COLOR DTL
SPECIAL SET AUTO WHITE

3. GAIN/SHT .

Scene brightness-related menu.

1) GAIN: Function to make the image brighter by electrically amplifying the image signal.

It is not preferable to raise the gain more than required because noise is also amplified.

- AUTO : Gain is adjusted automatically to compensate for scene brightness.
The adjustment range is set by Limit from +6 to +12 dB in 1 dB steps.
- PRESET : Gain is fixed and manually adjustable in 1 dB steps from 0 to +12 dB.

Note: In the CAM MODE:AUTO, GAIN is fixed at AGC.

2) SHUTTER : Electronic shutter mode

Used to reduce the amount of light to an appropriate level or reduce the degree of after-image by reducing the time of light reception per image. Using SHUTTER makes the image darker.

(Note) If a blinking light source such as a fluorescent lamp is used, flicker occurs. Setting a slower shutter speed improves immunity to flicker. In the case of inverter fluorescent lamps, their flickers are not like to give influence because they blink at high frequency although the flickers of some inverter fluorescent lamps include low frequency components.

- OFF : Electronic shutter does not operate.
- PRESET : Shutter operates at the Preset speed. Select speed from among 1/100 (FRAME FREQ:59.94Hz MODE), 1/60 (FRAME FREQ:50Hz MODE), 1/250, 1/500, 1/1000, 1/2000 and, 1/4000second.

- VARIABLE : The shutter speed is VARIABLE value under a line.

1/60.74 to 1/5619 : (FRAME FREQ : 59.94Hz MODE)

1/50.67 to 1/4687 : (FRAME FREQ : 50Hz MODE)

When an image of a subject display screen having a different scan frequency is taken, a bright or dark horizontal bar appears to roll up or down the screen. The shutter speed can be adjusted to where the horizontal bars are minimized in the display.

Note : If the display screen scanning frequency is less than 60.74Hz (50.64Hz in FRAME FREQ : 50Hz MODE), the rolling horizontal bars cannot be stopped. Not settable in the CAM MODE : AUTO mode.

```
■ GAIN/SHT. [FILE 1]

GAIN      :PRESET
PRESET    :+ 0dB

SHUTTER   :OFF
SHT OFF   : (1/60)
AES OFFSET :OFF
```

- AES : Auto electronic shutter

Auto electronic shutter (auto electronic mode) operates. Its shutter speed is limited by the limits set to AES LIMIT.

Appropriate image level is output even when the amount of light is excessively high. This function can be used effectively with a microscope having no automatic light adjustment or a system with a fixed lens iris.

Limit specification is setting possible in the range below. (AES OFFSET : OFF)

[59.94Hz mode] 1/60.74 to 1/2247

[50Hz mode] 1/50.67 to 1/1875

AES OFFSET

Where fluorescent lamps are driven at 50 Hz, it is sometimes possible to improve immunity to flicker by setting 1/100 as the slowest allowable shutter speed for AES.

If a value larger than 1/100 is set as the slowest allowable shutter speed, SHUTTER is turned off unless the amount of light into the camera is excessively high.

AES OFFSET : ON [59.94Hz mode] 1/100 to 1/2247

AES OFFSET : ON [50Hz mode] 1/60 to 1/1875

Note : In the CAM MODE : AUTO, SHUTTER is fixed at AES.

4 DTL : DTL level setup

Contours of the subject are emphasized to make the image easier to see.

1) DTL

The DTL level can be set to in a range of -128 to 127. The degree of contour correction increases in the positive value setting, and it decreases in the negative value setting. For zero (0) setting, hold down both the L and R buttons for approx. two seconds.

■ DTL	[FILE 1]
DTL	: 0
DTL FREQ.	: MID
H / V BALANCE	: 90
DTL MODE	: SOFT

2) DTL FREQ : Contours to be emphasized are biased in terms of fineness.

- LOW : DTL level decrease and a picture becomes soft.
- MID : DTL level is standard.
- HIGH: DTL level increase and a picture becomes sharp.

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

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

4) DTL MODE : A standard balance setup of an contours ingredient.

- SOFT : Standard setup.
- SHARP : A vertical sharp feeling increases.

5. ALC

ALC is for brightness control functions Auto Iris, AGC and AES.

1) OVER RIDE : Auto iris level setting

ALC level setting in range of -128 to 127 (about ± 2 F stops). Press R and L for respectively higher or lower video level settings. Press both L and R for about 2 seconds to set to 0.

2) SPEED : AGC and AES response speed

- SLOW : Slow response to scene light variations. Allows a stable image when a strong light source, e.g., vehicle headlights, enters the scene.
- STANDARD : Normal setting
- FAST : Quick response to scene light variations. Use where variations are sudden, such as when changing a microscope magnification.

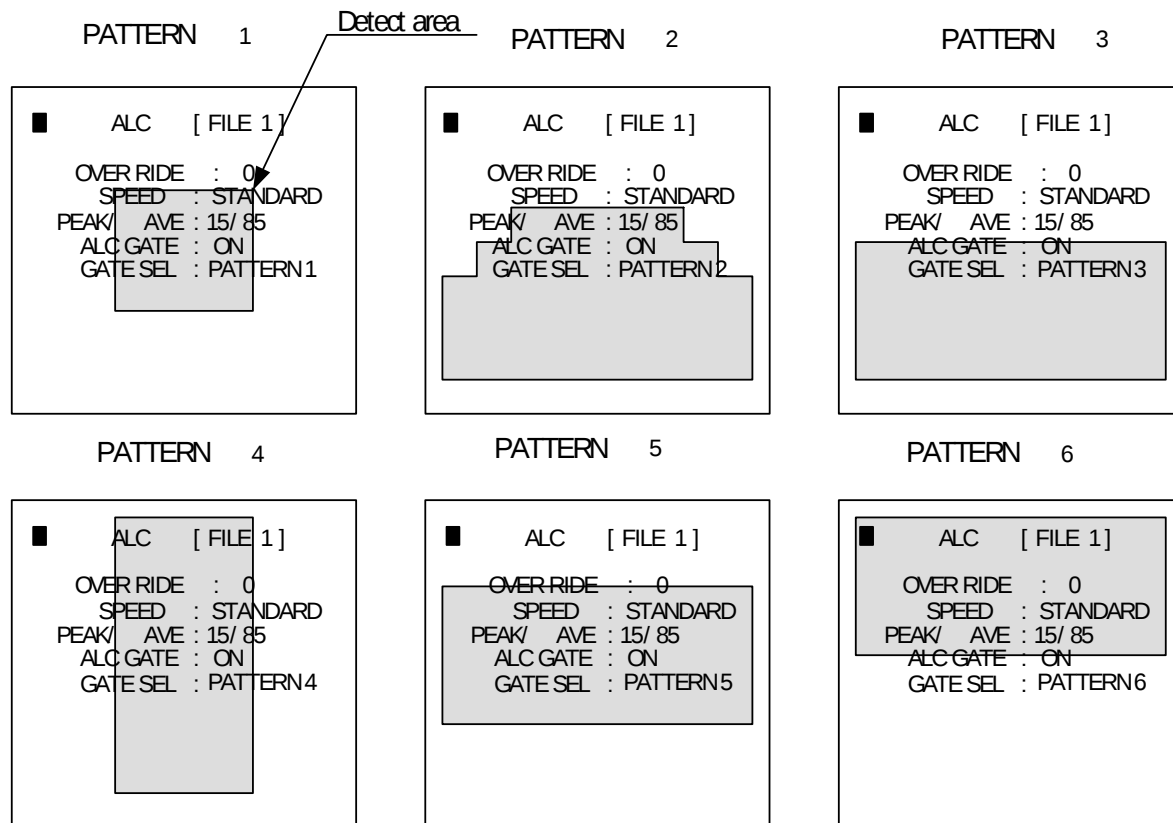
3) PEAK/AVE : Set auto level control for Peak or Average in 4 steps of 50/50, 25/75, 18/85 or 0/100. At high Average setting, background may be difficult to see in picture bright components. Increasing the Peak setting may render spotlighted components easier to see.

4) ALC GATE : ON/OFF toggle

- ON : Video signal is detected in the ALC Gate area for controlling AGC, lens and auto electronic shutter and ALC.
- OFF : The overall video signal is detected for ALC control

5) ALC GATE SEL : Select ALC gate pattern

Select pattern from among Modes 1, 2, 3, 4, 5 and 6. Use according to scene conditions.



6. AUTO SETUP

Menu for initial image adjustment

1) AUTO WHITE: Color drift due to illumination is corrected.

Move the cursor “■” to AUTO WHITE. Press both “L” and “R” switches on the camera’s rear face for 2 seconds or more and white balance adjustment will be done. The corrected balance continues to be effective until adjustment is made again.

The same function can also be executed by pressing the “AWB” button on the camera’s rear face for 2 seconds while the menu is not displayed.

This function can be used if WHITE BALANCE:MEMORY is set in MAIN MENU.

■ AUTO SETUP [FILE 1]

AUTO WHITE
AUTO SHADING

2) AUTO SHADING: Color shading in the vertical direction of the screen attributable to the coupling of the color separating prism with the lens is corrected.

To execute this function, the following arrangement must be done.

Subject: Fully white subject (copy paper or the like)

Illumination: Illuminate the subject with uniform luminance.

Camera: Set the camera so that the subject is displayed in the whole screen. Maximize the amount of light by using IRIS GAIN without causing saturation (white saturation).

Move the cursor “■” to AUTO SHADING. Press both “L” and “R” switches on the camera’s rear face for 2 seconds or more and the AUTO SHADING function will be executed.

During execution, the image is reversed in intensity. Upon completion, the image is displayed normally again.

7. SPECIAL SET

Special menu allows more detailed settings for the camera.

1) FILE SET : Change to FILE SET menu

File operations, such as copying settings between scene files.

2) LEVEL : hang to LEVEL menu.

Sets R and B black and signal levels.

3) MASKING : Change to Masking menu.

Sets 6 vector masking.

4) GAMMA : Change to GAMMA menu.

Gamma response, balance and other properties are set.

5) DTL : Change to DTL menu.

DTL boost frequency, color, crisp and other properties are set.

6) AUTO WHITE : Change to AUTO WHITE menu.

Sets color temperature range of AUTO WHITE, AUTO WHITE correct speed and correct area.

7) SYSTEM : Change to SYSTEM menu.

Selects the scan mode, MULTI output signals, external lock, remote control and so on.

8) ID/TITLE : Change to ID/TITLE menu.

ID and comment display setting. The ID can be used for several camera control from PC.

9) LENS : Change to LENS menu.

Set for optimum lens operation. Setting is required according to the lens type.

10) OTHER FUNC : Change to OTHER FUNC menu

Sets saturated portion color correction, flare correction, and noise reduction.

■ SPECIAL SET

FILE SET	: ->
LEVEL	: ->
MASKING	: ->
GAMMA/KNEE	: ->
DTL	: ->
AUTO WHITE	: ->
SYSTEM	: ->
ID / TITLE	: ->
LENS	: ->
OTHER FUNC	: ->

8. FILE SET

Use for transferring scene file data to another file or setting all data to preset values.

- 1) **FILE SELECT** : Selects scene file 1 - 4 or preset for copy data.
- 2) **STORE FILE** : Selects file for storing scene file data.
- 3) **STORE** : Press L and R for more than 1 second to transfer selected scene file data to store file.
- 4) **ALL INITIALIZE** : Press L and R for more than 1 second, to initialize all scene file data to preset values.

■ FILE SET

FILE SELECT : FILE 1
STORE FILE : FILE 2
STORE

ALL INITIALIZE

9. LEVEL

Of R(red), G(green) and B(blue), the black and peak levels of the red and blue image signals can be changed for color adjustment. Because the setting for the green signal is fixed, this menu can be used to adjust the color temperature of the image.

1) ENABLE : Level control ON/OFF setting.

2) R GAIN : R gain level setting

The allowable setting range is -128 to 127.

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

3) B GAIN : B gain level setting

The allowable setting range is -128 to 127.

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

4) R BLACK : R black level setting

The allowable setting range is -128 to 127.

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

■ LEVEL	[FILE 1]
ENABLE	: OFF
R GAIN	: 0
B GAIN	: 0
R BLACK	: 0
B BLACK	: 0
INITIALIZE	

5) B BLACK : B black level setting

The allowable setting range is -128 to 127.

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

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

6) **INITIALIZE** : Returns LEVEL menu settings to preset values. Simultaneously press L and R for about 2 seconds.

10. MASKING

Menu for adjustment selected color tone.

Available 6 vector color masking and linear masking that can correct color tone with keeping picture brightness.

1) MASKING: MASKING ON/OFF setting

Available (ON) or disable (OFF) toggle in this menu settings.

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

■ MASKING [FILE 1]			
MASKING : OFF			
(HUE)	(SAT)	(LINEAR)	
R: 0	R: 0	RG	0
Y: 0	Y: 0	GB:	0
G: 0	G: 0	BR:	0
C: 0	C: 0	GR:	0
B: 0	B: 0	BG:	0
M: 0	M: 0	RB:	0
MASTER SAT : 0			
INITILIZE			

7) M HUE : Change magenta color phase

The above items can be set in the range from -128 to +127. Respectively press the R button to increase and the L button to decrease the vector color hue as indicated in the figure. Each item can be set to 0 by simultaneously pressing the L and R buttons for about 2 seconds.

8) R SAT : Increase red color level

9) Y SAT : Increase yellow color level

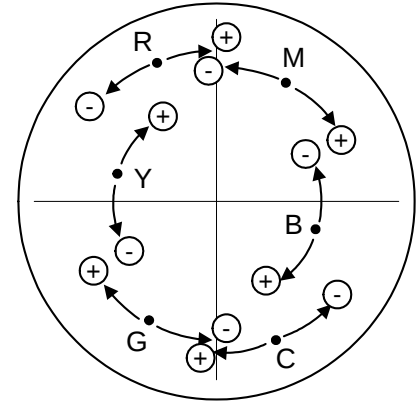
10) G SAT : Increase green color level

11) C SAT : Increase cyan color level

12) B SAT : Increase blue color level

13) M SAT : Increase magenta color level

The above items can be set in the range from -128 to 127. Respectively press the R button to increase and the L button to decrease the color level. Each item can be set to 0 by simultaneously pressing the L and R buttons for about 2 seconds.

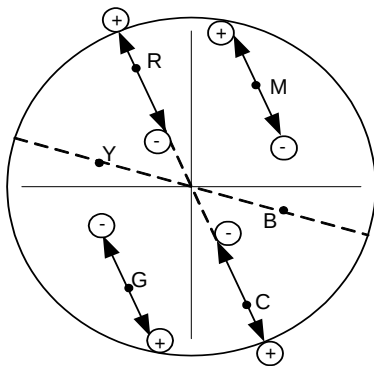


(Reference) The camera represents an image by combining R(red), G(green) and B(blue).

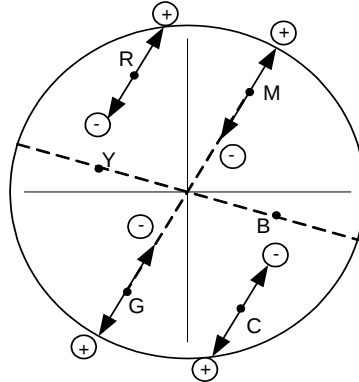
A circle diagram in the previous page illustrates operations of MASKING (HUE) (SAT). Colors are located around the center. The hue and density of a color are represented by the angle and the distance from the center, respectively. (The color becomes denser as the distance increases.) Red light and green light, if combined, turn yellow. In the diagram, yellow appears between red and green. Red, green and blue, if combined, turn white with the lowest density at the center of this diagram. In addition, yellow and blue, if combined, turn white as shown.

The following diagrams illustrate linear masking operations.

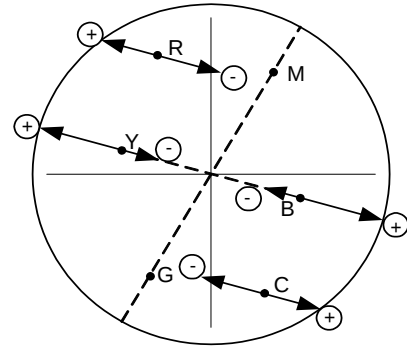
- 14) RG LINEAR:** Color density and hue are changed in the direction of red-cyan axis. Blue and yellow do not change.
- 15) GB LINEAR:** Color density and hue are changed in the direction of green-magenta axis. Blue and yellow do not change.
- 16) BR LINEAR:** Color density and hue are changed in the direction of blue-yellow axis. Green and magenta do not change.



RG LINEAR

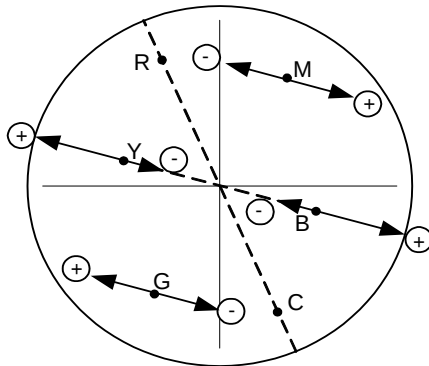


GB LINEAR

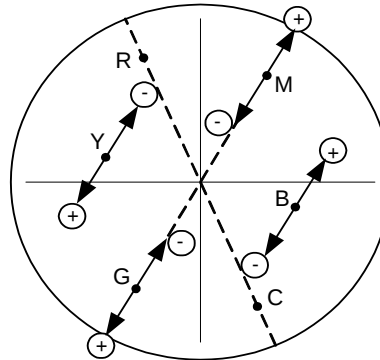


BR LINEAR

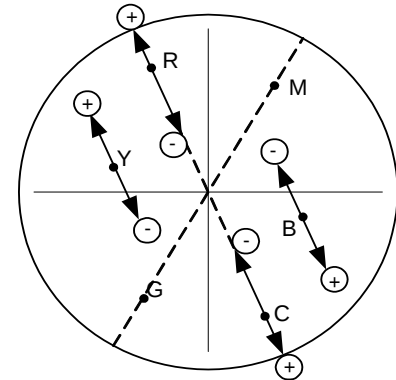
- 17) GR LINEAR:** Color density and hue are changed in the direction of green-magenta axis. Red and cyan do not change.
- 18) BG LINEAR:** Color density and hue are changed in the direction of blue-yellow axis. Red and cyan do not change.
- 19) RB LINEAR:** Color density and hue are changed in the direction of red-cyan axis. Green and magenta do not change.



GR LINEAR



B LINEAR



BR LINEAR

- 20) MASTER SAT :** The depth of the whole color is fluctuated.
- 21) INITIALIZE :** Returns MASKING menu settings to preset values. Simultaneously press L and R for about 2 seconds.

11. GAMMA/KNEE

1) **GAMMA** : Gamma ON/OFF

Gamma correction is turned on/off. If the camera is in the auto mode (CAM MODE: AUTO), ON is selected unconditionally.

2) **GAMMA TABLE** : Sets gamma rising slope.

Low : Dark component gradation reduced.
Standard : Standard setting
High : Dark component gradation increased.

3) **TOTAL GAMMA** : Sets total (R, G and B) gamma point

Setting range is from -128 to 127. Press R to raise and L to lower RGB video signal gamma point. Simultaneously press the L and R buttons for about 2 seconds to set to 0.

4) **R GAMMA** : Sets red gamma point.

Setting range is from -128 to 127. Press R to raise and L to lower red video signal gamma point. Simultaneously press the L and R buttons for about 2 seconds to set to 0.

5) **B GAMMA** : Sets blue gamma point.

Setting range is from -128 to 127. Press R to raise and L to lower blue video signal gamma point. Simultaneously press the L and R buttons for about 2 seconds to set to 0.

6) **KNEE** : Knee OFF/ON/AUTO

The on setting provides natural gradation in bright portions. At the auto setting, gradation in bright components is automatically optimized even with scene changes.

Knee is fixed to AUTO KNEE in the CAM MODE : AUTO.

■ GAMMA KNEE [FILE 1]

GAMMA : ON
GAMMA TABLE : STANDARD
TOTAL GAMMA : 0
R GAMMA : 0
B GAMMA : 0
KNEE : AUTO
KNEE POINT : 0
WHITE CLIP : 0

INITIALIZE

7) KNEE POINT : Use L and R to set in the range -128 (smaller) to 127 (larger). Normally set to where gradation appears above 100% video level.
(To accurately check the image level, measuring equipment such as an oscilloscope is necessary.)

8) WHITE CLIP : Sets white clip level
Use L and R to set in the range of -128 (lower) to 127 (higher) clip level. Normally set for clip at about 110% video level. Adjust when there is excess video level from the equipment interface.

9) INITIALIZE : Returns GANNA/KNEE menu settings to preset values. Simultaneously press L and R for about 2 seconds.

12. DTL

Various settings of contour correction.

1) DTL

The DTL level can be set to in a range of -128 to 127. The degree of contour correction increases in the positive value setting, and it decreases in the negative value setting. For zero (0) setting, hold down both the L and R buttons for approx. two seconds.

2) DTL FREQUENCY : DTL amplifying frequency changeover.

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

■ DTL [FILE 1]

DTL : 0
DTL FREQ. : MID
HIGH CHROMA: OFF
LEVEL DEP. : -110
CLISP : -110
SOFT DTL W. : -118
SOFT DTL B. : -118
H/ V BALANCE: 90
COLOR DTL : ->
INITIALIZE

3) **HI CHROMA DTL** : High chroma detail on/off

At on setting, contours are enhanced in highly colored components of the scene.

DTL is less effective in high chroma portions. HI CHROMA DTL can be used to raise the DTL level in high chroma portions.

4) **LEVEL DEP** : Dependent level setting

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

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

5) **CRISP** : Crispness level setting

Reduces noise when DTL setting is in the range of -128 to 127. However, at high settings, some loss of sharpness occurs in detailed scene components. Press the R button to increase the value and the detail noise. Press the L button to decrease the value and reduce detail noise. Set to 0 by simultaneously pressing the L and R buttons for about 2 seconds.

6) **SOFT DTL W.** : Limits the maximum DTL level in bright image portions.

DTL may be excessively effective where changes in brightness are large. In this case, it may be possible to make the image natural by limiting the maximum DTL level. SOFT DTL W. allows you to set the maximum DTL level on the bright side (white).

7) SOFT DTL B. : Limits the maximum DTL level in bright image portions.

DTL may be excessively effective where changes in brightness are large. In this case, it may be possible to make the image natural by limiting the maximum DTL level. SOFT DTL B. allows you to set the maximum DTL level on the dark side (black).

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

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

9) COLOR DTL : Change to COLOR DTL menu.

10) INITIALIZE : Returns DTL menu settings to preset values. Simultaneously press L and R for about 2 seconds.

13. COLOR DTL

The amount of an outline emphasis in a specific color part can be set. It can set to 2 colors.

1) COLOR DTL : Selects color detail mode

- CH1, CH2 : Color detail is effective at the either selection. Sets the detail level of two color phase ranges. Select each color phase setting with CH1 and CH2.
- Off : Color detail is ineffective.

■ COLOR DTL [FILE 1]

COLOR DTL : OFF
CH1 A PHASE: PUSH > 1SEC
PHASE : 0 Ye-R
WIDTH : 0
LEVEL : - 128
CH2 A PHASE: PUSH > 1SEC
PHASE : 0 Ye-R
WIDTH : 0
LEVEL : - 128
INITIALIZE

2) CH1, CH2 A. PHASE :

Automatic detection of CH1 hue portions for color detail

If COOR DTL is ON, moving the cursor to this row displays a marker on the screen. Move this mark to a portion of the subject in your target color. Then, press the R (right) button and the corresponding portions are automatically detected.

3) PHASE : Sets color detail phase

Present phase is indicated beside the setting values. At Auto setup, the automatically detected phase setting is indicated.

Note : At RGB or R-Y, B-Y output, the detected phase range is not shown on the monitor.

4) WIDTH : Sets color phase range for setting

Setting range is -128 (narrow) to 127 (wide). Press both L and R for about 2 seconds to set to 0.

Note : At RGB or R-Y, B-Y output, the detected phase range is not shown on the monitor.

5) LEVEL : Sets color detail level

Range is -128 (soft) to 127 (sharp). Press both L and R for about 2 seconds to set to 0.

6) INITIALIZE : Returns COLOR DTL menu settings to preset values. Simultaneously press L and R for about 2 seconds.

14. AUTO WHITE

Detailed setting concerning white balance correction.

1) **SPEED** : Sets real-time auto white balance response speed.

- Standard : Usual setting
- Slow : Slows white balance response. Although usable for general purpose, intended to reduce disturbance with flashing lights of different color temperatures or moving vehicle headlights.

2) **HIGH LIMIT** : Sets the upper limit (blue side) of a color temperature range within which white balance is to be applied.
For example, if a blue sky is corrected to white, narrow the color temperature range. Initially, this limit is set to 10000K.

- Range of Setting : LOW LIMIT ~ 15000K (Kelvin)
- Unit of Setting : 100K

3) **LOW LIMIT** : Sets the lower limit (red side) of a color temperature range within which white balance is to be applied.

For example, if a sunset is corrected to white, narrow the color temperature range.
Initially, this limit is set to 2500K.

- Range of Setting : 2000K ~ HIGH LIMIT
- Unit of Setting : 100K

■ AUTO WHITE [FILE 1]

SPEED : STANDARD
HIGH LIMIT : 10000 K
LOW LIMIT : 2500 K

WHITE GATE : OFF
GATE AREA H : 4
GATE AREA V : 2

INITIALIZE

4) WHITE GATE : When WHITE GATE is ON, a detection gate is displayed dimly in white on the screen.

- **ON** : In real time auto white balance operation or execution of memory auto white balance, a video signal appearing in the window on screen is detected for white balancing. In the MENU mode, the window is presented over the video signal. In the DIRECT mode, the window is not displayed but white balance control is conducted by the white gate function.
- **OFF** : A video signal of the entire image is detected for carrying out white balance control.

5) GATE AREA H : Setting of detection width of horizontal.

WHITE GATE : ON and the detection gate are displayed, and set.

- Width of setting : 0 to 8

6) GATE AREA V : Setting of detection width of vertical.

WHITE GATE : ON and the detection gate are displayed, and set.

- Width of setting : 0 to 4

7) INITIALIZE : The setting value of a AUTO WHITE menu is initialized.

Returns level menu settings to preset values. Simultaneously press L and R for about 2 seconds.

15. SYSTEM

Is settings of image output mode, an external synchronization, and camera control communication.

1) **TV SYSTEM** : Change to TV SYSTEM menu.

2) **RGB/YPbPr** : Output mode changeover.

- R, G, B : The R, G and B video signals are output to the MULTI connector.
- Y, R-Y, B-Y : The Y, R-Y and B-Y signals are output to the MULTI connector.

3) **OUTPUT SYNC** : The sync signal outputted from MULTI connector 13 pin is chosen.

(When the camera's internal SW is set to OUTPUT)

- SYNC : The SYNC signal is output as on external sync signal.
- HD : The HD signal is output as an external sync signal.
(VD signal is outputted from MULTI connector 14 pin.)

4) **H.PHASE** : Adjustment of horizontal synchronization phase.

The allowable setting range is -128 to 127.

5) **GL MODE** : Switches the external synchronization signal. (When the camera's internal SW is set to INPUT)

- SYNC : SYNC signal is received as the external sync signal.
- HD/VD : HD or VD signal is received as the external sync signal.

Note: An external synchronization is not performed if the external synchronization signal corresponding to Television System is not inputted.

■ SYSTEM

```
TV SYSTEM  : ->
HD         : 720p,59.94Hz
RGB/YPbPr  : RGB
OUTPUT SYNC: SYNC
H PHASE    : 0
GL MODE    : SYNC
GL IN      : 75ohm
REMOTE TYPE: PC
REMOTE     : 9600bps
MESSAGE RTN: ON
```

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

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

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

7) REMOTE TYPE : Switches the communication mode.

- **PC** : Communication signal level is set to the RS-232C level. This allows direction connection between the camera's REMOTE connector and a PC's serial port.
- **RC-Z3** : Default. Select this for remote control with the RC-Z3.

8) REMOTE : Set the remote control baud rate.

9600bps or 19200bps. (RC-Z3 allows 9600bps only.)

Note: A setup cannot be changed in the remote state, please remove a cable from a REMOTE connector.

9) MESSAGE RTN : Message display ON/OFF

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

16. TV SYSTEM SELECT

It is the setup of image output mode and an output frame.

1) HD : 1080i, 59.94Hz : Change to TV SYSTEM menu.

An image is outputted by 1080line, the intarace scan and 59.94 frames.

2) HD : 1080i, 50Hz : Change to TV SYSTEM menu.

An image is outputted by 1080line, the intarace scan and 50 frames.

3) HD : 720p, 59.94Hz : Change to TV SYSTEM menu.

An image is outputted by 720line, the progressive scan and 59.94 frames.

4) HD : 720p, 50Hz : Change to TV SYSTEM menu.

An image is outputted by 720line, the progressive scan and 50 frames.

5) SD : 576i, 50Hz(4:3) : Change to TV SYSTEM menu.

An image is outputted by 576line, the intarace scan, 50 frames and the aspect ratio 4:3.

6) SD : 576i, 50Hz(16:9) : Change to TV SYSTEM menu.

An image is outputted by 576line, the intarace scan, 50 frames and the aspect ratio 16:9.

7) SD : 480i, 59.94Hz(4:3) : Change to TV SYSTEM menu.

An image is outputted by 480line, the intarace scan, 59.94 frames and the aspect ratio 4:3.

8) SD : 480i, 59.94Hz(16:9) : Change to TV SYSTEM menu.

An image is outputted by 480line, the intarace scan, 59.94 frames and the aspect ratio 16:9.

Note: The solution in the case of having changed into the output mode which the color monitor does not support.

Please look at page 69.

■ TV SYSTEM SELECT

- ☐ HD:1080i,59.94Hz
- ☐ HD:1080i,50 Hz
- ☒ HD: 720p,59.94Hz
- ☐ HD: 720p,50 Hz
- ☐ SD: 576i,50 Hz(4:3)
- ☐ SD: 576i,50 Hz(16:9)
- ☐ SD: 480i,59.94Hz(4:3)
- ☐ SD: 480i,59.94Hz(16:9)

<Switch procedure of TV SYSTEM>

Please switch TV SYSTEM according to the following procedures.

- i) The connection of an external signal is removed.
(When you connect external synchronization with the camera.)
- ii) It switches to TV SYSTEM that wants to change with
SPECIAL SET SYSTEM TV SYSTEM SELECT of the menu.
- iii) After the power supply of the camera is turned off, the power supply is turned on again.
- iv) It is waited that the image is steady, and connects external synchronization for a few seconds.
(When you connect external synchronization with the camera.)
- v) Please adjust horizontal phase (H PHASE).

Note: In external Synchronous pulse other than TV SYSTEM set to the camera, the camera doesn't synchronize.

17. ID/TITLE

ID and title display position and data setting menu.

1) ID : ID display position setting

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

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

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

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

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

■ ID / TITLE

ID	: OFF
TITLE	: OFF
DATA SET	: - >

TOP TITLE	TOP ID
BOTTOM TITLE	BOTTOM ID

ID/TITLE Display Position

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

ID : Enter an ID code consisting of three characters.

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

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

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

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

<ID/TITLE Setup Procedure>

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

■ DATA SET

ID :
TITLE :

1234567890 _?
ABCDEFGHIJKL
MNOPQRSTUVWXYZ
YZ <>+-%/.,:;

< - -> DEL INS RET

--

-> : Flashing shifts one character toward the right.

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

RET : The cursor is returned to DATA SET.

18. LENS

Menu for setting the lens functions

1) LENS Type : Sets type of auto iris.

- **DC** : Iris opens in proportion to a DC control voltage. Also set to DC when not using an automatic iris.
- **Video** : Lens iris is controlled by the video signal.

2) IRIS MODE : Sets lens iris mode (Lens Type is DC mode).

- **Auto** : Setting for using auto iris.

Note: Be sure to set the Open Limit and Close Limit when using the camera for the first time or after replacing the lens.

- **Manual** : Setting for manual iris and special optics, e.g., microscope.

Note: Be sure to set the Iris Mode when combining AGC and AES.

```

■ LENS

LENS TYPE       : VIDEO
* IRIS MODE     : ---
* IRIS SPEED    : ---
* OPEN LIMIT    : --V
* CLOSE LIMIT   : --V
IRIS GAIN      :    0


INITIALIZE

L [ ] [ ] [ ] [ ] [ ] [ ] # [ ] [ ] [ ] [ ] [ ] [ ] H

```

3) IRIS SPEED : Sets auto iris speed (Lens Type is DC mode).

Set in a range of 1 to 15 where hunting is not produced. Press R to increase and L to decrease the setting. Hold button depressed for continuous change. Simultaneously press R and L for about 2 seconds to set to 8.

4) OPEN Limit : (Lens Type is DC mode.)

Set to where the camera recognizes the iris is fully open. Observe the iris and adjust in the range from 1 to 127 to precisely where the iris is fully open. Press R to increase and L to decrease the setting. Press the L and R buttons simultaneously for about 2 seconds to set to 127 for Others.

Since picture quality deteriorates as the iris approaches fully open, Open Limit can be set to where this does not occur.

Notes: 1) Before this adjustment, set AGC to OFF and Shutter to Off. Return the previous settings after adjusting.

2) Open Limit needs to be set properly for normal AGC coupled operation.

5) CLOSE Limit : (Lens Type is DC mode.)

Observe the iris and adjust to precisely the largest value (smallest diameter). The setting range is from -128 to -1. Press R to increase and L to decrease the setting. Press L and R buttons simultaneously for about 2 seconds to set to -85 for Cosmicar or to -65 for Others.

Notes:

1. Before this adjustment, set AGC to OFF and Shutter to Off. Return the previous settings after adjusting.

2. Close Limit needs to be set properly for normal AES coupled operation.

6) IRIS GAIN : Iris control voltage gain adjustment (Lens Type is Video mode).

Adjustment is required when replacing a Video type lens or if using the camera for the first time. The setting range is from -10 to 10. Press R to increase and L to decrease the setting. Simultaneously press the L and R buttons for about 2 seconds to set to 0.

Next adjust the lens Level control to highlight the central marker of the video signal level indicator. Adjust the lens level control to where the quadrangle is positioned at the video signal level indicator cross mark. Refer to description of video signal type lens adjustment (page 8).

If auto iris does not operate even at the Hi or Low extremes of the Level setting, adjust the Iris Gain setting.

Note: Before adjusting Iris Gain, be sure to set the AGC to OFF, and Over-ride to 0. Adjustment is incorrect in the AGC mode. After adjusting, return the previous settings.

7) INITIALIZE : Returns LENS menu settings to preset values. Simultaneously press L and R for about 2 seconds.

19. OTHER FUNC

1) DYNA CHROMA : Dynamic chroma ON/OFF

On setting improves coloration in bright scene components.

2) FLARE : Flare compensation on/off

Corrects for extraneous reflections in the optical and CMOS systems which end to weaken bright image components. Normally set to on.

■ OTHER FUNC

DYNA CHROMA: OFF
FLARE : ON
FLARE LEVEL : 0
DNR : OFF

INITIALIZE

3) FLARE LEVEL: Setting range is -128 (smaller) to 127 (larger compensation).

4) DNR : Digital noise reduction

It can choose from OFF, MODE1, MODE2, and MODE3. Although MODE2 provides greater noise reduction than MODE1, image resolution is slightly reduced. When operating MODE3 at high temperature, it is effective in the reduction which seems to have a fixed pattern.

5) INITIALIZE : Returns OTHER FUNC menu settings to preset values. Simultaneously press L and R for about 2 seconds.

How to Attain Better Images

White Balance Adjustment

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

Adjust the white balance when using the camera for the first time or after replacing the lens.

1. In the MENU mode, set up WHITE BAL: MEM.
2. Turn off the MENU screen to select the DIRECT mode.
3. Provide a proper aperture value of lens using the auto iris function or manually.
4. Put an white object in the subject image, and zoom it up.
5. Hold the AWB button pressed for about 2 seconds for automatic white balance adjustment. With MESSAGE RTN:ON, AUTO WHITE appears. At the end of successful adjustment AUTO WHITE:OK appears.
6. If white balance adjustment cannot be made, any of the following messages will appear. Take a proper procedure according to the error message, and then try white balance adjustment again.

Error message	Procedure
AUTO WHITE : NG CHANGE TO CAM TRY AGAIN	• Turn off the color bar.
AUTO WHITE : NG CHANGE WHITE BAL TO MEM TRY AGAIN	• Set up WHITE BAL:MEM.
AUTO WHITE : NG LOW LIGHT TRY AGAIN	• White balance cannot be made due to insufficient illumination. • Increase the intensity of illumination, turn lens iris toward open direction, or increase the gain to provide a proper video level. • Press the AWB switch again.
AUTO WHITE : NG HIGH LIGHT TRY AGAIN	• White balance cannot be made due to excess illumination. • Increase the intensity of illumination, turn lens iris toward closed direction, or increase the gain to provide a proper video level. • Press the AWB switch again.
AUTO WHITE : NG C.TEMP HIGH TRY AGAIN	• The color temperature is too high, making it impossible to reach the optimum value in adjustment. (If there is no problem in practical application, use the camera under the current condition.) • Add a filter to the lens or illumination to decrease the color temperature.
AUTO WHITE : NG C.TEMP LOW TRY AGAIN	• The color temperature is too low, making it impossible to reach the optimum value. (If there is no problem in practical application, use the camera under the current condition.) • Add a filter to the lens or illumination to increase the color temperature.
CAM MODE : AUTO CHANGE TO MANUAL	• Set camera mode to manual.

Realtime Auto White

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

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

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

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

For details of the WHITE GATE function, refer to p. 36. Be sure to set the WHITE GATE window to a white or gray part in the image. Do not set it to a colored part.

Auto Shading Correction

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

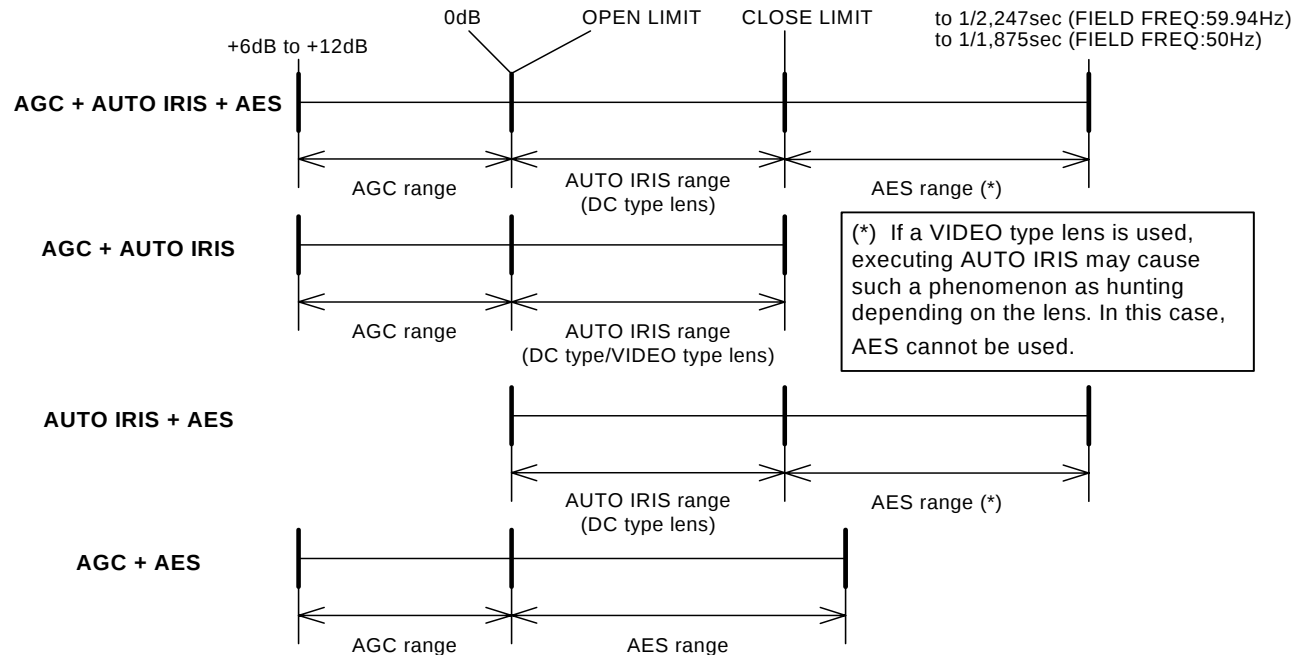
1. Provide a proper aperture value of lens using the auto iris function or manually.
2. Take an white image fully on screen. At this step, take care so that uneven brightness will not occur in the vertical direction.
3. In the DIRECT mode, press the AWB button. White balance is adjusted automatically.

-
4. In the DIRECT mode, while holding down U button and D button for more than two seconds and press the D button or in the MENU mode, carry out AUTO SHADING. Thus, color shading in the image is corrected automatically.

Notes 1) When using the camera for the first time or after replacing the lens, just be sure above instructions.
2) If adjusted under a light source that has a flicker component, such as fluorescent or mercury, the white balance accuracy can be impaired. Change the electronic shutter mode (GAIN/SHT. menu Shutter or Variable) setting to reduce flicker before engaging the auto white balance adjustment.

ALC

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



RC-Z3 Remote Control Panel

All camera menu items can be operated remotely by connecting the RC-Z3 Remote Control Panel. Connect the panel as follows.

- (1) Set camera internal switch SW806 to RC-Z3.
See internal switch selection on page 61 .
- (2) Open the SPECIAL SET menu and set the camera communications rate to 9600 bps (see page 38, factory setting).

Operation

(1) Direct control

The following items can be controlled directly as well as from the control panel.

- | | | |
|-------------------|------------------|---------------|
| • BAR/CAM | • ENABLE(ON/OFF) | • M.BLK |
| • WHITE BAL | • R GAIN | • A.WHT |
| • GAIN | • B GAIN | • A.BLK |
| • DTL | • R BLK | • SCENTE FILE |
| • IRIS MODE | • B BLK | |
| • SHUTTE(ON/OFF) | • IRIS | |
| • CONTRST(ON/OFF) | | |

(2) MENU controls

All control items are set from menu. Press the FUNCTION button of the remote control panel to produce the menu mode and display the MAIN MENU screen. Again press the FUNCTION button to extinguish the menu screen and return to the direct mode.

Operate the menu with the UP, DOWN, LEFT and RIGHT buttons.

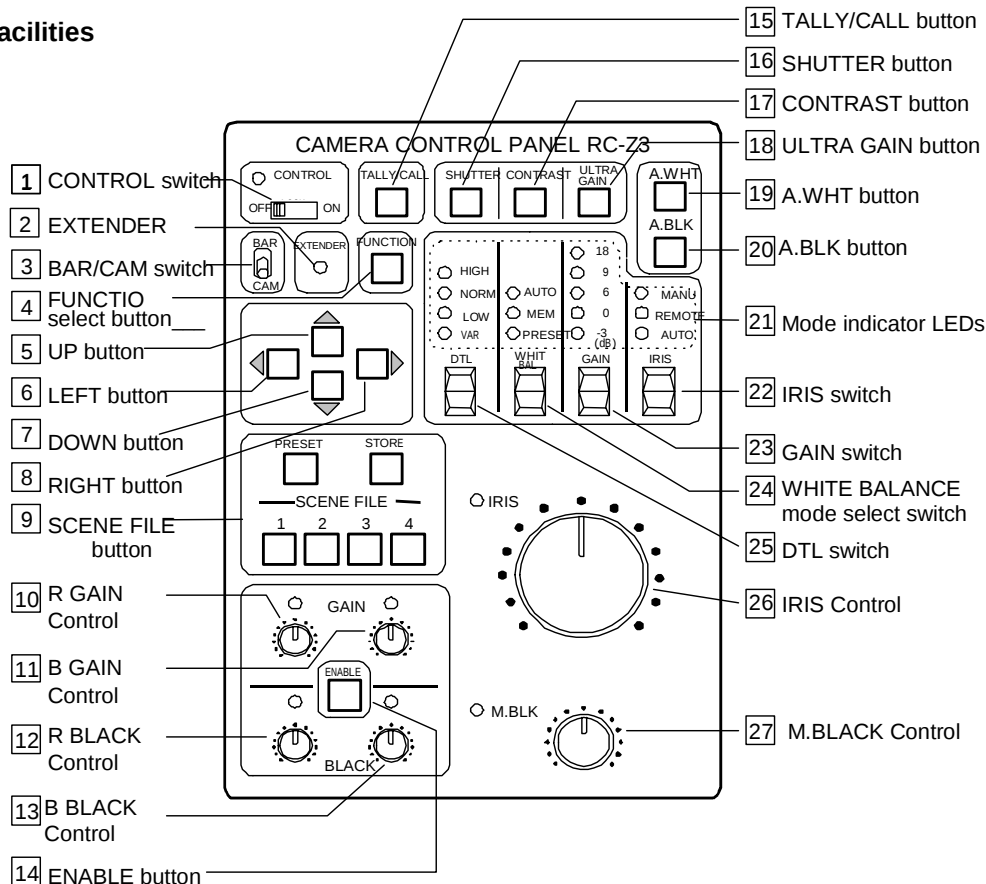
Note: While pressing the UP button presses the FUNCTION button for 2 seconds to produce the special set mode. The SPECIAL SET menu appears.

(3) Setting data store

Setting data (menu and direct control items) are not automatically stored when using the RC-Z3. Press the RC-Z3 STORE button and the SCENE FILE button of the location for storing the data.

Note: Use care since the data are lost if the application is changed or the power cut off without storing.

1. RC-Z3 panel facilities



1 CONTROL switch

- ON (red LED) : Normal camera control from.
- LOCK (red LED): All controls and switch RC-Z3 has locked at present settings, except IRIS **26** and M. BLK **27**. Prevents accidental or unauthorized operation.
- OFF (green LED): Operation inhibited from RC-Z3. Operate from camera controls and switches.

2 EXTENDER LED

This Extender LED is always extinguished using with the HV-HD30 camera.

3 BAR/CAM switch

Selects the camera output signal.

- BAR: Color bar signal output
- CAM: Camera video signal output

4 FUNCTION select button

Camera setting menu display button.

5 UP, 6 LEFT, 7 DOWN and 8 RIGHT buttons

Menu screen operating buttons.

9 SCENE FILE buttons

Select camera application files and stores scene file data. Four application files can be used as scene files.

Scene files:

To shoot several scenes with different shooting conditions, it is needed to change settings suitable for each scene. To reduce such troublesome operations, various shooting conditions can be memorized previously to scene files, and the conditions most suitable for a scene can be read and set. The RC-Z3 is provided with four files, and four different shooting conditions can be memorized.

(1) File selection

Press the following buttons to change the camera and RC-Z3 settings.

- **PRESET:** Produces the standard setting mode
- **SCENE FILE 1:** FILE-1 (scene file 1) setting mode
- **SCENE FILE 2:** FILE-2 setting mode
- **SCENE FILE 3:** FILE-3 setting mode
- **SCENE FILE 4:** FILE-4 setting mode

Note: The pressed SCENE FILE button lights, then flashes when the application file data are changed. Flashing continues if the data are changed or the original value is returned. When again pressed, the button lights steadily.

(2) Setting data store

The Store function is used to save the application file item data. The common file item data are saved during adjustment and operation.

- **Store operation**
After entering the settings with the menu screen and RC-Z3, press the STORE button (the STORE button flashes). Then press the desired SCENE FILE button for storing the settings (STORE button extinguishes).
- **Store release**
While the STORE button is flashing, again press the button. The STORE button extinguishes and the mode is released.
- **File data copy**
Press the Preset or SCENE FILE button of the source, then press the STORE button (flashes). Next press the SCENE FILE button of the destination file. The settings are copied and stored in the designated file.

Store operation notes:

1. After adjustment and operation with the RC-Z3, neglecting the Store operation before pressing a file button loses the adjustment and setting item data. The output is the designated file data prior to adjustment and operation.
2. After adjustment and operation with the RC-Z3, neglecting the Store operation before cutting off the power loses the adjustment and setting item data. The output is the designated file data prior to adjustment and operation.

Be sure to conduct the Store operation when desiring to save the data after adjustment and operation.
In this case, the data prior to Store are deleted.

10 R GAIN and 11 B GAIN control

Red and blue video signal gain can be adjusted. Press the ENABLE **14** button (lights) to allow adjusting.

Adjustment is coarse when the WHITE BALANCE mode select switch **24** is set to Preset and fine when set to Memory.

12 R BLACK and 13 B BLACK control

Red and blue video signal black level can be adjusted. Press the ENABLE **14** button (lights) to allow adjusting.

Note: When CAM MODE AUTO, R & B black cannot be adjusted.

14 ENABLE button

- ON : Button lights to indicate R & B gain and R & B black adjustments are effective.
- OFF: Adjustments are ineffective when the ENABLE button is extinguished.

Note: When CAM MODE AUTO, the ENABLE button is ineffective.

15 TALLY/CALL button

TALLY/CALL button lights when pressed. However, function is ineffective in the HV-HD30 camera.

16 SHUTTER button

Shutter on/off. Lights when on.

Note: When CAM MODE AUTO, the Shutter button is ineffective.

17 CONTRAST button

Contrast on/off. However, function is ineffective in the HV-HD30 camera.

18 ULTRA GAIN button

Ultra gain on/off. However, function is ineffective in the HV-HD30 camera.

19 A WHT button

Direct mode: At White balance mode MEM, press A.WHT to conduct automatic white balance (button lights). The resulting data are stored in application file memory.

Menu mode : A.WHT button operation is inhibited.

20 A.BLK button

Because the HV-HD30 is not provided with the auto black function, pressing this causes no change.

(In the HV-HD30, digital signals are directly output from the C-MOS image pickup devices without via analog process. Therefore, inappropriate black balance does not occur almost at all.)

21 Mode indicator LEDs

Indicate status of switches below LEDs.

22 IRIS switch

Sets lens iris mode.

Press the switch upward to set the mode in the sequence AUTO→REMOTE→MANUAL.

- AUTO : Automatic iris operation
- REMOTE: Iris is adjusted by the iris control [26](#)
- MANUAL: Set the lens A/M switch to M and adjust the lens iris ring manually.

Note: When using the video type lens, REMOTE and MANUAL function is ineffective in the HV-HD30 camera.

23 GAIN switch

Sets the camera sensitivity. Press the switch upward to select the sensitivity in the sequence 0→3→6→9→12 dB. The sensitivity setting is indicated by the combined GAIN LED indication.

Note: When CAM MODE AUTO or AGC ON, the -3dB GAIN LED indicated all the time.

24 WHITE BALANCE mode select switch

The white balance mode can be selected in the sequence PRESET → MEM → AUTO.

- PRESET: Optimum white balance at 3200 K and 5600 K color temperature. Select between 3200 K and 5600 K in the menu mode at W. PRST MODE of the MAIN MENU screen.
- MEM : Press the A.WHT button [19](#) for automatic white balance adjustment. Select between 3200 K and 5600 K in the menu mode at W. MEM MODE of the MAIN MENU screen.
- AUTO : White balance is automatically adjusted in real time (ATW)

When the RC-Z3 white balance mode is set to MEM and AUTO, at the MAIN MENU, W. MEM MODE is indicated and at PRESET, W.PRST MODE is indicated.

Note: When CAM MODE AUTO, camera white balance is automatic.
Selection from the RC-Z3 select switch is ineffective.

25 DTL switch

Camera detail setting.

Press the switch to select in the sequence VARIABLE→LOW→NORMAL→HIGH. During VAR, the mode indicator LEDs show the detail amount; in the menu mode, the MAIN MENU screen DTL setting is OFF or VAR.

26 IRIS control

Adjusts the lens iris as follows.

- AUTO : OVER-RIDE (fine adjustment about ± 2 F-stops) can be adjusted
- REMOTE: Adjustable in the range from fully open to fully closed
- MANUAL: Iris is not adjustable from the RC-Z3 (adjust by manually turning the lens iris ring).

27 M. BLK control

Adjusts the master black level

2. Menu screen composition

Camera settings other than the RC-Z3 items can be customized using the main and special set menus. The menu structure is same as one of camera.

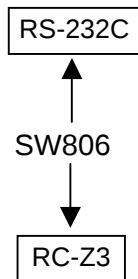
Function Selection by Internal Switch Setting

1. SW806

For connection with the remote control box RC-Z3, set SW806 to the RC-Z3 position.

For connection with the personal computer, set SW806 to the RS-232C position.

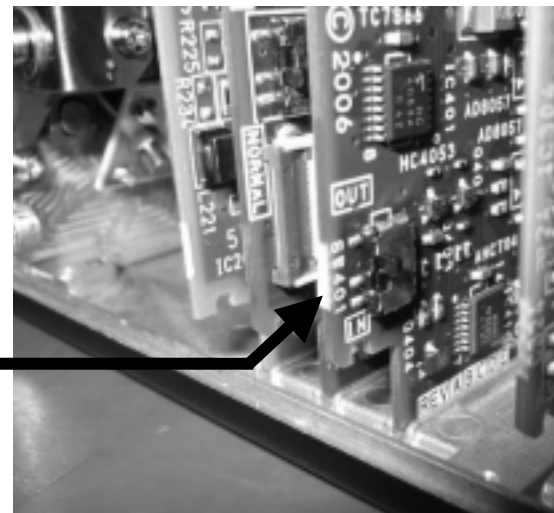
At shipment from factory, SW806 is set at the RS-232C position.



2. SW401

For selection SYNC or HD/VD output and GL or HD/VD input of multi connector .

At shipment from factory, SW401 is set at the OUT position.



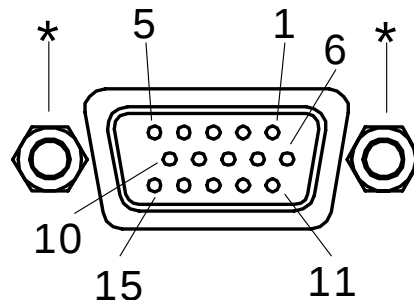
Connectors

MULTI connector (DMSH-15S)

Pin No.	Signal designation
1	R/R-Y OUT
2	G/Y OUT
3	B/B-Y
4	
5	GND
6	GND
7	GND
8	GND
9	UNREG +12V IN
10	
11	GND
12	RXD
13	HD IN/HD OUT/ SYNC OUT
14	VD IN/GL IN /VD OUT
15	TXD

PLAG : Housing KEC-15P
Pin contact JK-SP2140
Cover JK-C151C

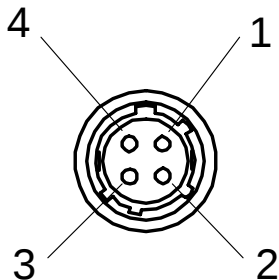
* Use No.4-40UNC plug retaining screws.



REMOTE connector (HR10A-7R-4S)

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

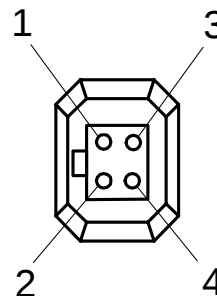
Plug: HR10A-7P-4P



LENS connector (D4-151N-100)

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

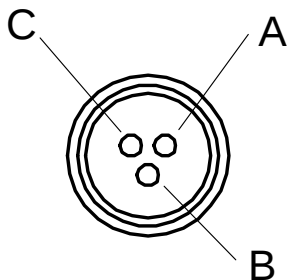
Plug: E4-191J-100



DC IN connector (R03-R3M2)

Pin No.	Signal designation
A	GND
B	+12V input
C	NC

Plug:R03-P3F



Specifications

- 1) System
 - HDTV system 4 mode
 - 1080/59.94i, 1080/50i, 720/59.94p, 720/50p
 - SDTV system 4 mode
 - 576/50i(4:3), 576/50i(16:9), 480/59.94i(4:3), 480/59.94i(16:9)
- 2) Picture elements
 - 1/2.8-inch C-MOS image sensor (Image size are 1/3-inch)
 - Total pixels 1312 (H) × 1032 (V)
 - Effective pixels 1280 (H) × 720 (V)
 - Effective image area 4.99mm (H) × 2.81mm (V)
- 3) Imaging system
 - R, G, B 3-CMOS
- 4) Optical system
 - 1/2-inch, F1.6 prism
- 5) Lens mount
 - C mount (flangeback 17.526 mm in air)
- 6) Horizontal resolution
 - 720 TV lines, luminance signal center
 - (Y out and DTL off)
- 7) Standard sensitivity
 - F5.6 (2000lx, 3200K, reflection ratio 89.9%)
- 8) S/N
 - 50dB (Y out, $\gamma=1$, DTL off, GAIN 0 dB)
- 9) Minimum illumination
 - 20 lx (F1.6, GAIN+12dB, Video level 350mV)
- 10) Geometric distortion
 - Full screen 0% (not including lens characteristics)
- 11) Registration
 - Full screen 0.05% (not including lens characteristics)
- 12) Gain
 - 0dB to +12dB, 1dB step
- 13) Shutter
 - Preset: 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000 second
 - Variable: 1/60 to 1/5600 (59.94i/p mode, 4H(approx. 90ms) step)
 - 1/50 to 1/4600 (50i/p mode, 4H(approx. 100ms) step)

14)	Gamma correction	0.45/1.0 (on/off)
15)	Detail control	DTL level, DTL frequency, Level dependent, Crisp, Balance, Flesh tone, Hi chroma DTL, Color DTL
16)	Scene files	4 Scene files
17)	Color bar	ARIB bar
18)	Power supply voltage	12 V rated (Stable operation at 10.5 to 15 VDC (ripple and noise absent))
19)	Power consumption	Approx. 8 W
20)	Dimensions	65mm (W) × 65mm (H) × 125mm (D)
21)	Mass	Approx. 550 g (not including lens)
22)	Ambient temperature	Operating -10 to 40 Storage -20 to 60

Input/Output Signals

1. Input signal conditions

1) Genlock input (MULTI connector)

- SYNC $0.3 \text{ Vp-p} \pm 0.1 \text{ Vp-p}$
- HD/VD $2 \text{ to } 5 \text{ Vp-p}$, negative (MULTI connector)

Note: Genlock input and Sync output are selected by internal input/output switch.

External synchronization can synchronize only in the same TV SYSTEM mode as the image output.

2) Serial data (REMOTE connector)

$1.5 \text{ Vp-p} \pm 3 \text{ dB/High}$ (when connected to RC-Z3, JU-C20, JU-Z2)

RS-232C level (when connected to personal computer)

Note: Set internal switches according to connected equipment.

A level converter JU-C20 is required if controlling the camera from a personal computer via RS-232C interface over a distance more than approx.15 meter.

2. Output signal ratings

1) HDSDI output (SDI OUT connector)

$0.8 \text{ Vp-p}/75\Omega$

2) Component output (MULTI connector)

Y : $1.0 \text{ Vp-p}/75\Omega$

R-Y: $0.7 \text{ Vp-p}/75\Omega$

B-Y: $0.7 \text{ Vp-p}/75\Omega$

3) RGB output (MULTI connector)

R: 0.7 V_{p-p}/75 Ω

G: 0.7 V_{p-p}/75 Ω

B: 0.7 V_{p-p}/75 Ω

Note: Component and RGB MULTI connector outputs are selected by menu.

4) Sync outputs (MULTI connector)

HD: 2 V_{p-p}/75 Ω

VD: 2 V_{p-p}/75 Ω

Sync: 0.3 V_{p-p}/75 Ω

Note: Genlock input and Sync output are selected by internal input/output switch.

5) Serial data output (REMOTE connector)

1.5 V_{p-p}/Low (when connected to RC-Z3, JU-C20, JU-Z2)

RS-232C level (when connected to personal computer)

Note: Set internal switches according to connected equipment.)

6) Lens iris control output (Lens connector, manual override)

IRIS CONT : 1.5 V (closed) to 7.5 V (open)

Selectable

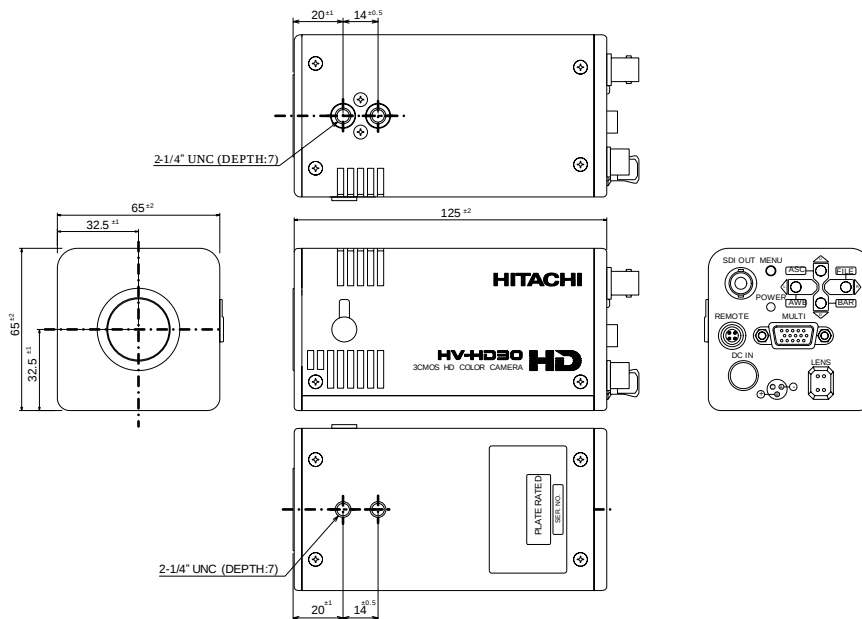
Major accessories

Camera control panel, RC-Z3

Camera Junction box, JU-Z2

RS-232C level converter JU-C20

Dimensions



The solution in the case of having changed into the output mode which the color monitor does not support

When it changes to the output mode which the connected color monitor does not support, an image does not appear. And the output mode change by a menu is difficult. Change of the output mode of a camera is in the **state which stopped the camera power supply and pushed the rear button, and is possible by switching on a power supply.** (Output mode is memorized by the memory.)

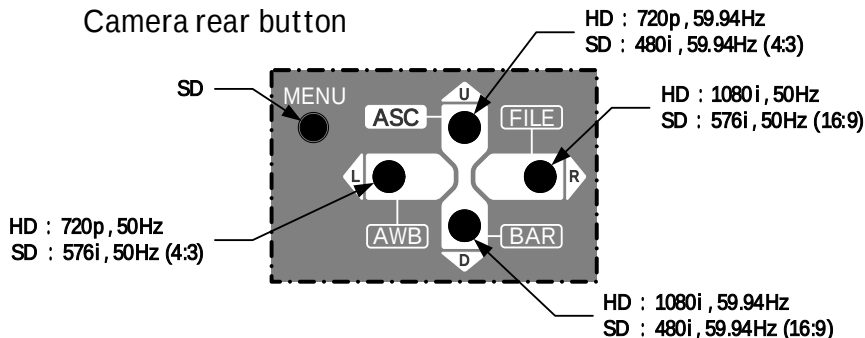
Please use it, changing the output mode of HV-HD30 to the output mode to which a color monitor corresponds.

- 1) HD : 720p, 59.94Hz
- 2) HD : 1080i, 59.94Hz
- 1) HD : 720p, 50Hz
- 4) HD : 1080i, 50Hz

U button
D button
L button
R button

- 5) SD : 480i, 59.94Hz
- 6) SD : 480i, 59.94Hz
- 7) SD : 576i, 50Hz
- 8) SD : 576i, 50Hz

U button + MENU button
D button + MENU button
L button + MENU button
R button + MENU button



Note: In the remote control from camera control panel RC-Z3, an output mode change by the above-mentioned method cannot be made.