

3 CCD High Detail Color Camera

DK-H3A

Operation Manual



Thank you very much for procuring this Hitachi CCD color camera. Please read this manual carefully before using the camera. As the manual contains useful information, it is recommended to keep the manual in an easily accessible place for ready reference in the future.

H i t a c h i K o k u s a i E l e c t r i c I n c .

SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and safety instructions on your equipment. Follow recommended precautions and safe operating practices.

SAFETY ALERT SYMBOL



This is the "Safety Alert Symbol." This symbol is used to call your attention to items or operations that could be dangerous to you or other persons using this equipment. Read these messages and follow these instructions carefully.

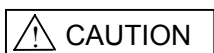
It is essential that you read the instructions and safety regulations before you attempt to assemble or use this equipment.

The definitions of signal words are as follows:



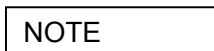
WARNING: Personal danger

Warning notes indicate any condition or practice, which if not strictly observed, could result in personal injury or possible death.



CAUTION: Possible damage to equipment

Caution notes indicate any condition or practice, which if not strictly observed or remedied, could result in damage or destruction of the equipment.



NOTE: Notes indicate an area or subject of special merit, emphasizing either the product's capabilities or common errors in operation or maintenance.



TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS COLOR CAMERA TO RAIN OR MOISTURE.

AVERTISSEMENT

Afin d'éviter tout risque d'incendie ou d'électrocution, ne pas exposer l'appareil à la pluie ou à l'humidité.

Afin d'écarter tout risque d'électrocution, garder le coffret fermé. Ne confier l'entretien de l'appareil qu'à un personnel qualifié.

VORSICHT

Um Feuergefahr und die Gefahr eines elektrischen Schlags zu vermeiden, darf das Gerät weder Regen noch Feuchtigkeit ausgesetzt werden.

Um einen elektrischen Schlag zu vermeiden, darf das Gehäuse nicht geöffnet werden. Überlassen Sie Wartungsarbeiten stets nur einem Fachmann.

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

Model No. _____

Serial No. _____

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 so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at 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 für den zukünftigen 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 instabilen 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 Netzspannungsstöße.

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. Entflammare und explosive Substanzen

Vermeiden Sie Verwendung dieses Erzeugnisses an Orten mit Gasen bzw. entflammaren 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 défectueuse 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. Vérification 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 tout 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 Denshi 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 édicté par le ministère des communications du Canada.

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Standard composition

Check for the following when first unpacking the camera.

Camera	1
Standard accessories	1
(Items)	
Lens mount cap	1
Operation manual	1
Service network list	1

Introduction

The Hitachi DK-H3A is a 3 CCD color camera built for high resolution and high stability. Each 2/3-inch CCD (charge coupled device) is comprised of 2.2 million pixels (picture elements), which are combined with a 1.8 million gate digital processor.

Long experience in both broadcast and demanding industrial television fields has enabled instilling 20 to 30 bit digital processing performance into a single LSI (large scale integration) chip. The result is a camera replete with automatic and picture quality optimizing functions.

Features

● Signal processor is 1 chip LSI device

Hitachi's renowned processing technology (0.35 μ m processing) has been organized into a single LSI chip that is both small and conserves power. The 10 bit analog to digital (A/D) converter and 20 to 30 bit processing deliver high signal to noise ratio (S/N) and wide dynamic range.

● High resolution

Horizontal resolution is 1000 TV lines (luminance channel) from the 2/3-inch 2.2 million pixel CCDs with microlenses that are precision matched.

● Optimized picture quality

- The wide array of adjustment functions includes auto knee, which varies the luminance signal compression points, dynamic chroma, alleviating color loss in highly luminous images, and variable detail boost frequency.
- The best performance can be selected according to the image site and circumstances.

● Versatile CCD drive functions

- Preset electronic shutter mode (7 steps)
- Lock scan mode for reduced flicker in images where the scanning frequency differs, such as pickup of a computer screen (not effective in all cases)
- Auto electronic shutter (AES) mode for a fixed video level
- Frame readout mode for improved vertical resolution

● **Varied selection of pickup functions**

- Real-time color temperature detection. White balance can be automatically adjusted in real-time. The detector positions are variable, thus preserving white balance in the subject of interest, despite changes in day/night, indoor/outdoor, natural/artificial, single/multiple light sources.
- Intelligent auto level (ALC)
Light measuring area divisions, size and positions are variable for driving the automatic gain control (AGC), lens iris, and auto electronic shutter. Response is in a very wide range of light intensity, while the setting level can be fine adjusted.
- 2 mode gain control (AGC and manual)
- Contrast adjustment
- Flare compensation
- Master black, R/B black, and variable R/B gain
- Color bar
- Title display

● **Bidirectional data communication**

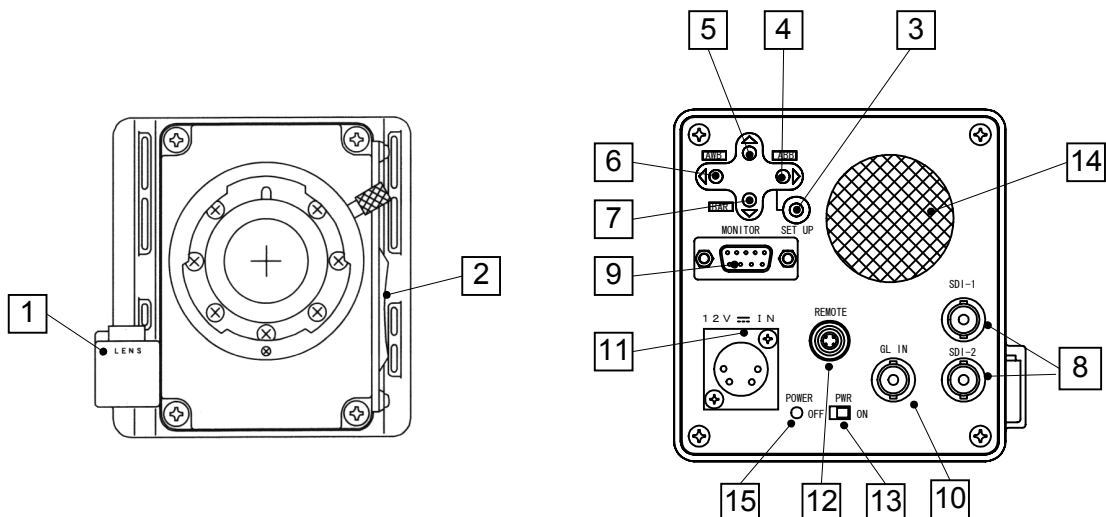
Connect directly to a personal computer (RS-232C) for remotely controlled function setting. Since the camera status data are sent to the computer, very detailed control is enabled. An identification (ID) number can be assigned to the camera to allow multiple cameras to be controlled from a single computer.

● **4 scene files**

Setting data according to applications and scene conditions can be stored in 4 scene files for ready access. These spare the need to readjust the camera each time the same scene is repeated.

● **HD SDI Two outputs**

Names and functions



1 Lens connector

Connection for lens plug

2 Filter disk

Changes according to lighting conditions (color temperature)

3 Set up button

The camera setting modes are Menu and Direct. In the Menu mode, use the U, D, L and R buttons to set the camera according to the on-screen menu. The menu is not shown in the Direct mode.

4 ABB/R button

Direct mode: Hold the button depressed for longer than 2 seconds for automatic black balance (ABB) adjustment.

Menu mode: Change the data or execute the functions.

5 U button

Direct mode: Not used

Menu mode: Press button to move the cursor upwards.

6 AWB/L button

Direct mode: Hold the button depressed for longer than 2 seconds for automatic white balance (AWB) adjustment.

Menu mode: Change the data or execute the functions.

7 BAR/D button

Direct mode: Press to toggle the color bar signal on/off.

Menu mode: Press button to move the cursor downwards.

8 HD SDI connector

HD SDI Two output signals are present

9 Monitor connector

RGB or Y, R-Y, B-Y and sync signals are present.

10 GL IN connector

External sync input signal. (3 value sync)

11 DC in connector

12 Remote connector

Connect a remote control box (RC-Z3 or equivalent) or a personal computer

13 Power switch

Sets the power supply input for DC in or multipin connector

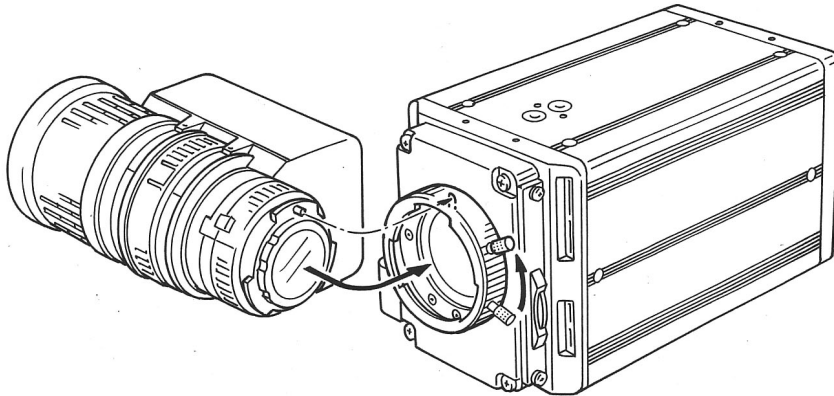
14 Ventilation fan

15 Pilot lamp

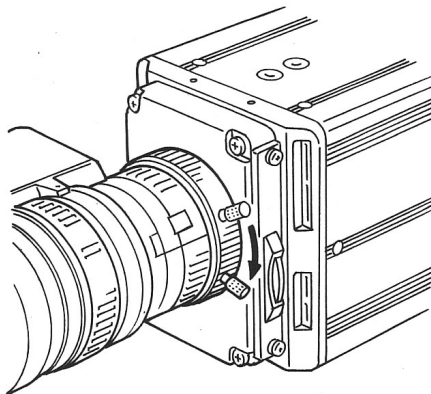
See page (36) for connector detailed description.

Installation of lens

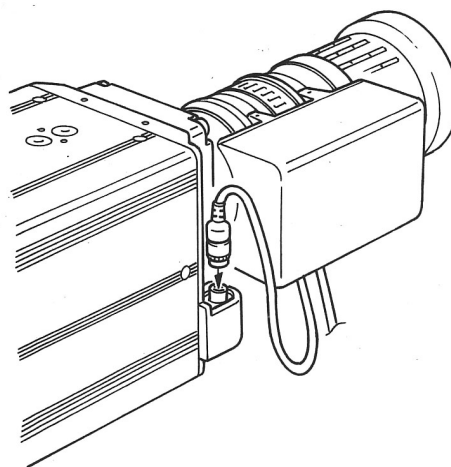
- Remote the mount clamp ring in the direction of arrow. Then, engage the pin of the lens with the recessed portion of the mount section, and insert the lens.



- Rotate the mount clamp ring in the direction of arrow, and fix the lens securely.



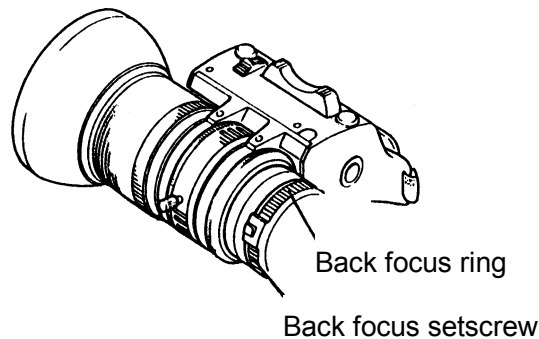
- Connect the lens connector to the LENS terminal.



Adjustment of back focus

When a lens is not properly focused in the telephoto or the wide angle mode during zooming, adjust the lens according to the following steps.

1. Open the iris of the lens fully. Illuminate an object so that the proper video output level can be obtained with the iris of the lens fully open.
2. Loosen the screw fixing the back focus ring.
3. Turn the manual zoom lever to get the telephoto mode.
4. Shoot an object 3m or more away, then turn the manual zoom lever to focus the lens on the object.
5. Turn the manual zoom lever to get the wide angle mode.
6. Turn the back focus ring, then focus the camera on the same object as that in step 4. At this point, use care not to move the focus ring.
7. Repeat steps 3 to 6 until the lens is properly focused both in the telephoto and the wide angle modes.
8. Secure the screw fixing the back focus ring.



Camera mounting

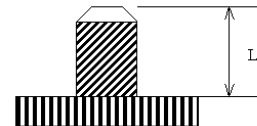
The camera is provided with threaded screw holes at the top and bottom. These allow mounting to either a tripod or a mounting bracket.

Screw type

U 1/4-20

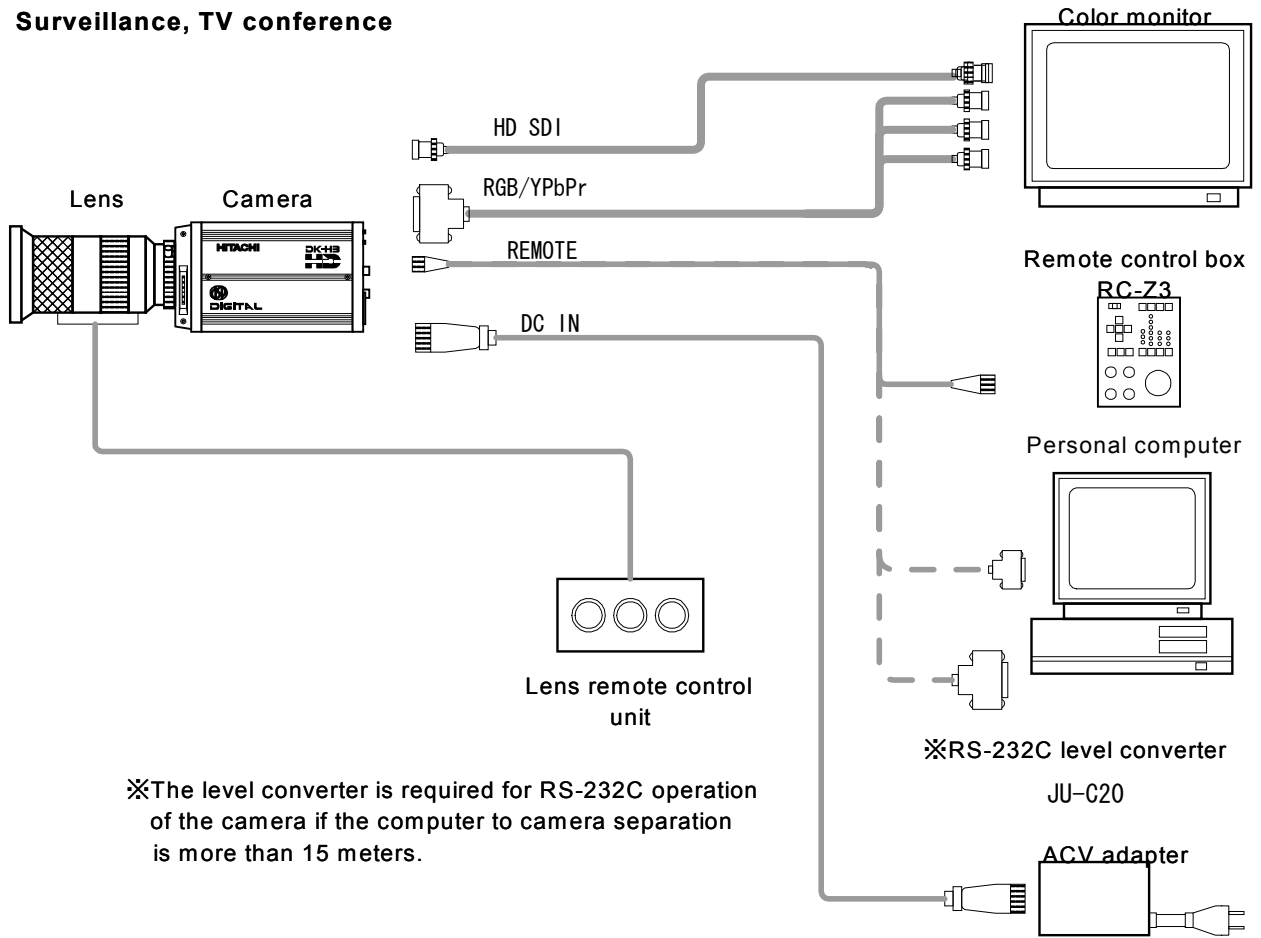
Length: 4.5 to 6 mm

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.



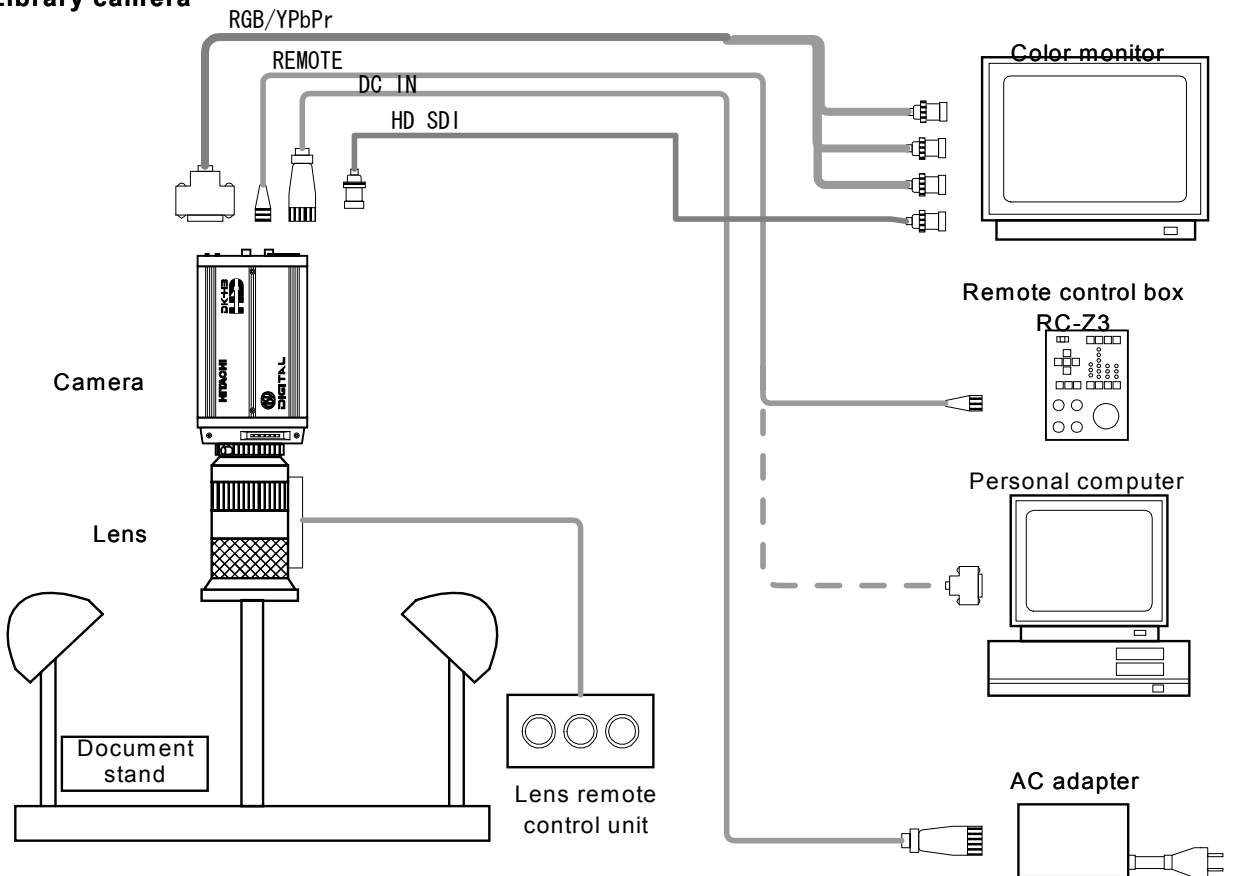
System composition examples

Surveillance, TV conference

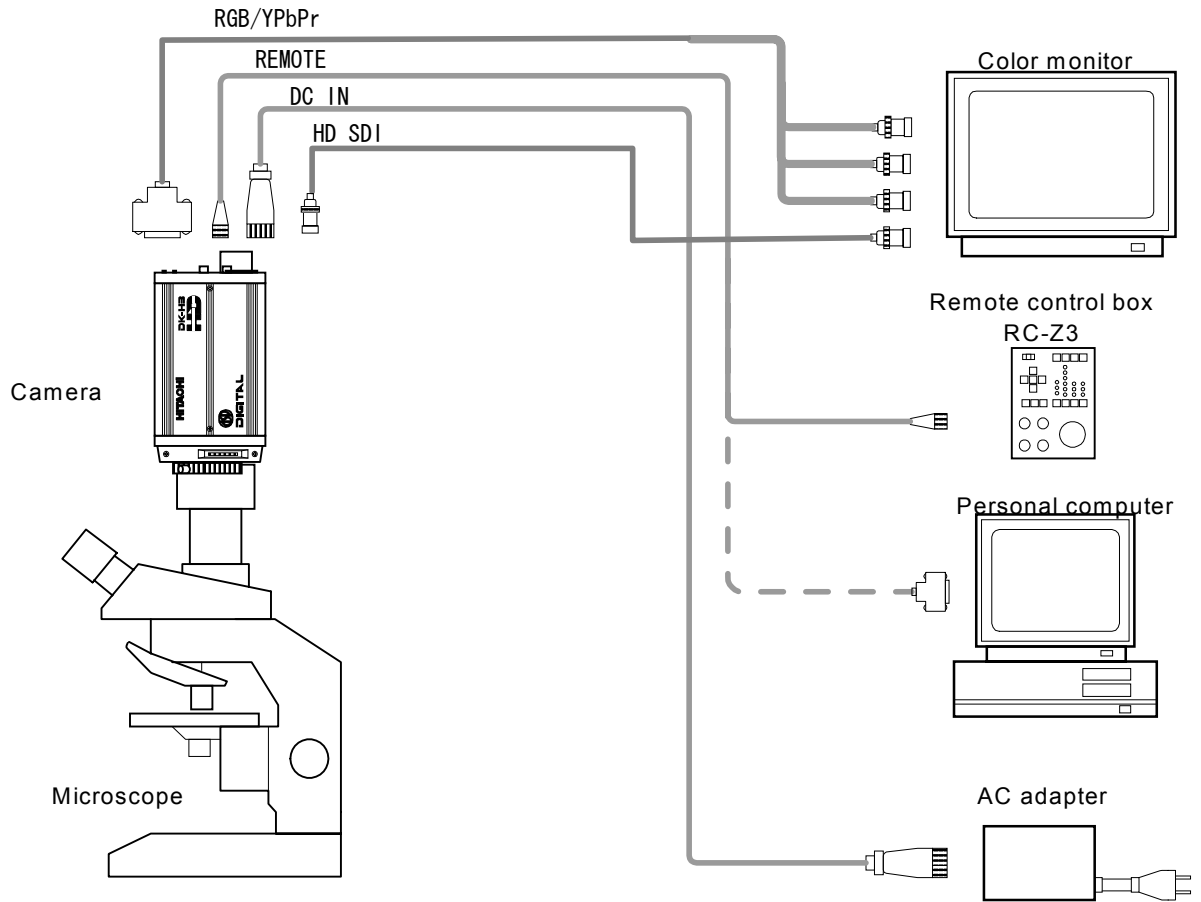


※The level converter is required for RS-232C operation of the camera if the computer to camera separation is more than 15 meters.

Library camera



Microscope laboratory



Menu screen operation

1. Menu composition

Camera settings can be customized from the menu screen.

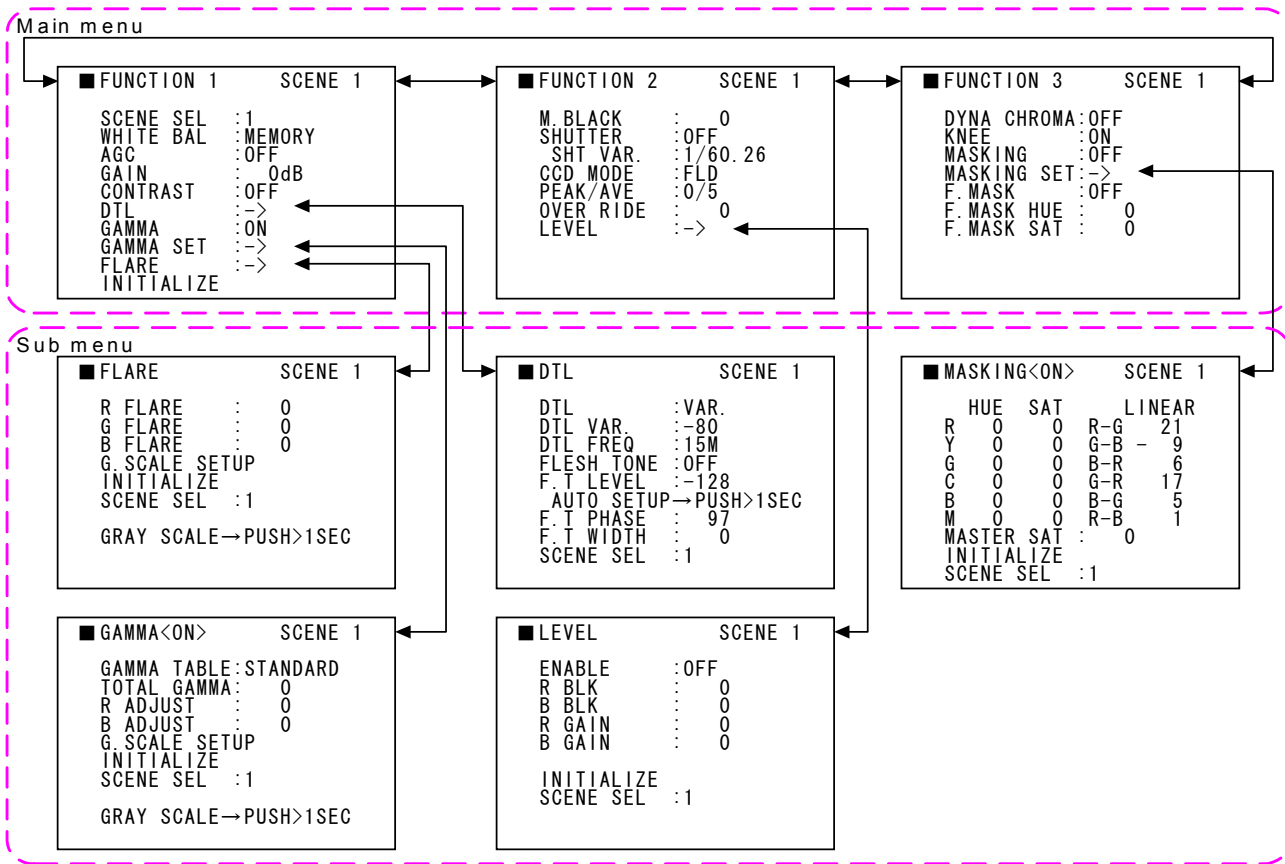
1.1 Composition

Press the Setup button. The menu appears to indicate the Menu mode. Again press Setup to extinguish the menu and return to the Direct mode. The Menu mode consists of main and sub menus in the following hierarchy.

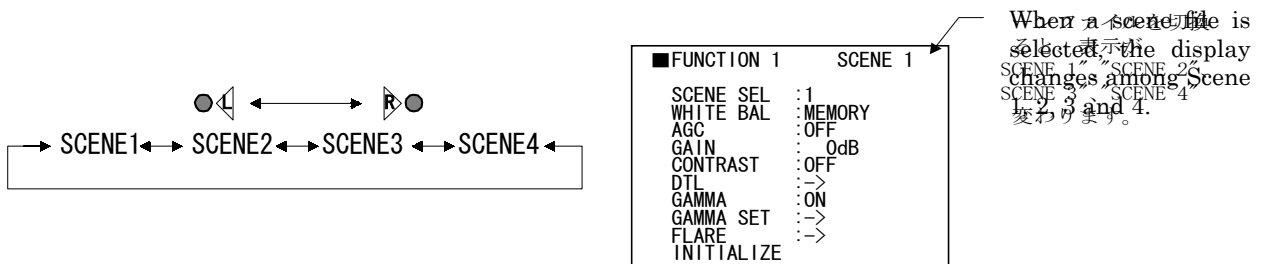
Set the cursor to the -> mark and press R to show the sub menu.

Position the cursor at the topmost t.itle line and press L to return to the main menu.

Use the U and D buttons to navigate within the menu, and the L and R buttons to change the data and set the mode.

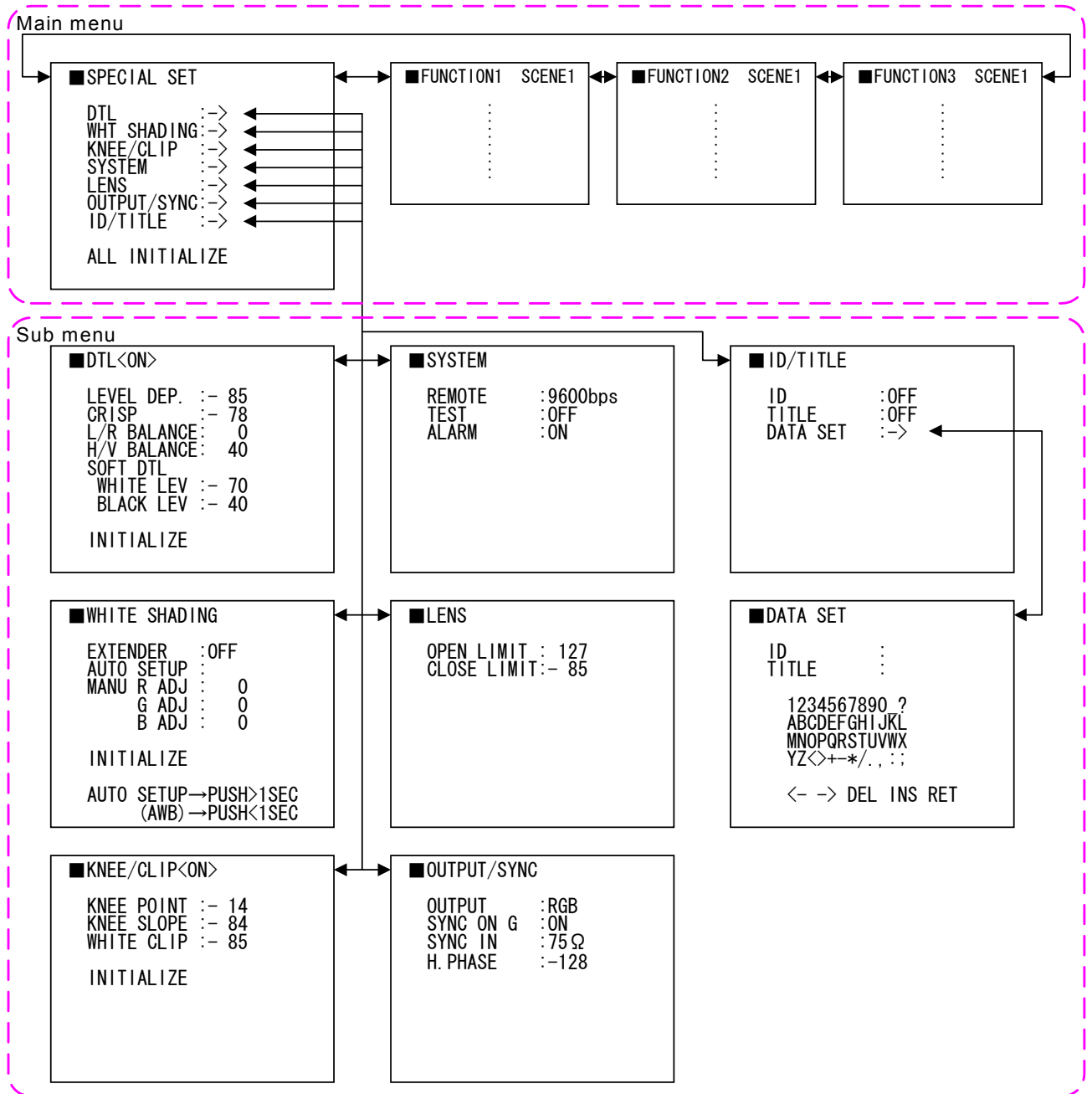


At the Scene SEL line, select the scene with the L and R buttons. The display changes to the selected scene.



1.2 Special menu

Hold the U button depressed and press Setup for 1 second to open the Special Set menu. Again press Setup to extinguish the menu and return to the Direct mode. At Special Set, set the cursor to -> and press R to open the selected sub menu. Navigate the sub menu with U and D; change the mode and set the data with L and R. Set the cursor to the first (title) line and press L to return to the Special Set menu.



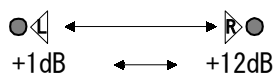
2. Menu functions

2.1 Function 1 menu

- 1) Scene SEL: Scene file
Scene files 1 to 4 are selected from memory. Settings for Function 1, 2 and 3 are stored in each scene file memory. The scene file can also be selected from a lower position function menu.
- 2) White BAL: White balance mode



- Preset: White balance to be taken as standard. Adjusted for optimum white balance corresponding to the color temperature at the filter disk setting.
 - Memory: In the Direct mode, press AWB to automatically adjust the white balance. The adjustments for filter disk positions 1, 2 and 3 are stored in memory.
Note: After changing the filter disk position, go to the Direct mode and press AWB to automatically adjust the white balance.
 - Auto: White balance is adjusted in real-time (automatic tracking).
- 3) AGC: Automatic gain control
 - On: Upper limit automatically controlled (see below).
 - Off: Gain is fixed at setting indicated below.
 - 4) AGC limit: Upper gain limit in AGC mode
Can be set from +1 to +12 dB



- 5) Gain
With 0 dB as reference, can be set in 3 dB steps to +12 dB.

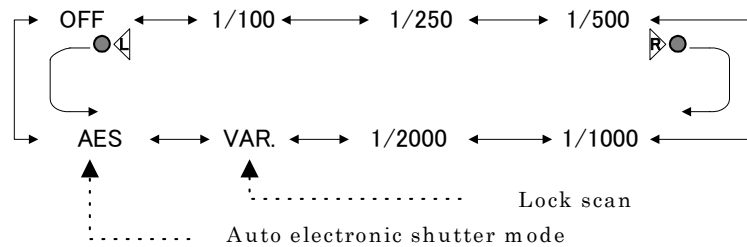


- 6) Contrast
When backlighting renders dark components difficult to see, select Normal or High for increased contrast.
 - Off: No correction
 - Normal: Slight enhancement
 - High: Strong enhancement
- 7) DTL: Opens detail sub menu
- 8) Gamma: Gamma correction on/off toggle
 - On: Standard gamma compensation
 - Off: Gamma response is 1

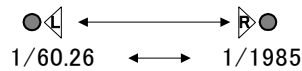
- 9) Gamma set: Changes gamma set sub menu screen
- 10) Flare: Changes flare sub menu screen
- 11) Initialize
Function 1, 2, 3 and associated sub menus are initialized for each scene file. Simultaneously press buttons L and R for about 2 seconds to initialize files to factory settings.

2.2 Function 2 menu

- 1) M Black: Master black level adjustment
Setting range is -128 to +127. Press R to increase and L to decrease the black level. Simultaneously press R and L for about 2 seconds to set to 0.
- 2) Shutter: Electronic shutter mode
Selects the mode sequentially as indicated below. At the VAR setting, the shutter speed operates as illustrated.



- 3) SHT VAR: Shutter speed is varied as indicated below.



- 1/60.26 to 1/1985

Lock scan mode is produced.

When the image of e.g., a computer screen having a different scanning frequency is viewed, a light or dark horizontal bar can be seen to move vertically. The shutter speed is adjusted to minimize the rolling bar.

Note: If the image scanning frequency is less than 60 Hz, the rolling bar cannot be stopped completely.

- 4) CCD mode
 - FLD: Field mode (normal applications)
 - FRM: Frame mode. Although vertical resolution is improved, there is a tradeoff in image lag. Recommended for still images.

- 5) Peak/ave: Auto iris operation in peak or average value mode.



The mode can be set in the range of 5/0 peak to 0/5 average.

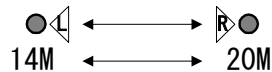
- 6) Over Ride: Video signal level fine adjustment during auto iris.
Setting range is -128 (minimum) to 0 (standard) to +127 (maximum).
- 7) Level: Open the Level sub menu.

2.3 Function 3 menu

- 1) Dyna chroma: Dynamic chroma
At Knee on or auto, setting dyna chroma to on improves coloration for bright images.
- 2) Knee
 - On: Natural gradation in bright components
 - Auto: Bright component gradation optimized even with scene changes.
- 3) Masking: On/off toggle
 - On: Color compensation according to Masking Set sub menu.
 - Off: Color compensation off.
- 4) Masking Set: Opens sub menu screen.
- 5) F Mask: Fleshtone masking on/off toggle
 - On: Color compensation of fleshtone components.
 - Off: Color compensation off.
- 6) F Mask Hue Fleshtone masking phase
Adjusts color phase range for fleshtone masking.
Range is -128 to +127.
Active at on setting.
- 7) F Mask Sat: Fleshtone masking saturation
Adjusts fleshtone masking color compensation amount.
Adjustment range is -128 to +127.
Active at on setting.

2.4 DTL sub menu

- 1) DTL: Sets detail amount
 - Off: Detail off setting
 - VAR: Produces the variable detail setting value.
 - Low: Produces a soft image
 - Norm: Standard
 - High: Enhances contours
- 2) DTL VAR
Detail amount is continuously variable.
Adjustment range is -128 (minimum) to 0 to +127 (maximum).
- 3) DTL FREQ: Select detail frequency



Setting range is 14 MHz to 20 MHz in 1 MHz steps.

- 4) Fleshtone
On: Fleshtone detail amount is suppressed. Adjusted by FT level.
- 5) FT Level: Sets fleshtone detail amount
Adjust to optimize appearance of talent, product or other subject of interest on screen.
Adjustment range is -128 (minimum) to 0 to +127 (maximum)
- 6) (Fleshtone) Auto Setup
Set mark to screen center and press R for about 1 second to automatically detect the fleshtone phase.
- 7) FT Phase
Setting range is -128 (minimum) to 0 to +127 (maximum).
- 8) FT width
Suppresses detail amount in proximity to fleshtone.
Setting range is -128 (minimum) to 0 to +127 (maximum).
- 9) Scene SEL
Select scene files 1 to 4.
(Same function as Function 1 Scene Select.)

2.5 Gamma Set sub menu

Sets the gamma parameters. Adjusting these can compensate for inadequate dark component contrast in more detail than Function 1 Contrast setting.

- 1) Gamma table: Adjusts gamma rising slope.



- Low: Reduces dark component gradation.
- Standard: Normal setting.
- High: Raises dark component gradation.

- 2) Total gamma: Sets RGB gamma point.
Setting range is -128 to +127.
Press R to raise and L to lower the RGB video signal gamma point.
- 3) R Adjust: Sets the red gamma point.
Setting range is -128 to +127.
Press R to raise and L to lower the red video signal gamma point.
- 4) B Adjust: Sets the blue gamma point.
Setting range is -128 to +127.
Press R to raise and L to lower the blue video signal gamma point.
- 5) G Scale Setup: Grayscale setup
Align the 6 flashing markers with the white, black and intermediate shades of a grayscale chart and press R for about 1 second for automatic setup.
- 6) Initialize
Initializes the gamma settings of each scene file to the factory values. Simultaneously press R and L for about 2 seconds to initialize the selected file settings.
- 7) Scene SEL
Selects scene file 1 to 4 stored in memory (same function as Function 1 Scene Sel).

2.6 Flare sub menu

- 1) R Flare: Red channel manual flare adjustment
Adjustment range is -64 to +127.
- 2) G Flare: Green channel manual flare adjustment
Adjustment range is -64 to +127.
- 3) B Flare: Blue channel manual flare adjustment
Adjustment range is -64 to +127.
- 4) G Scale Setup
Align the 6 flashing markers with the white, black and intermediate shades of a grayscale chart and press R for about 1 second for automatic setup

- 5) Initializes the flare settings of each scene file to the factory values. Simultaneously press R and L for about 2 seconds to initialize the selected file settings.
- 6) Scene SEL
Selects scene file 1 to 4 stored in memory (same function as Function 1 Scene Sel).

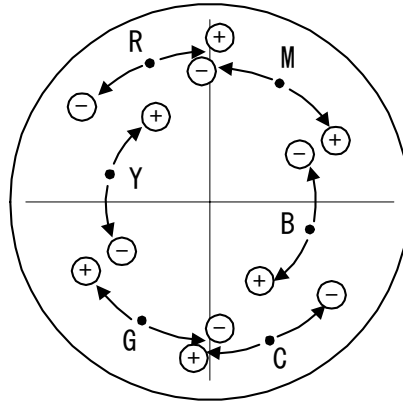
2.7 Level sub menu

Adjusts R and B video signal black level and gain.

- 1) Enable: On/off toggle
 - On: Enables settings 2 to 5 below.
 - Off: Inhibits settings 2 to 5 below.
- 2) R BLK: Red black level setting.
Setting range is -128 to +127.
Press R to raise and L to lower the red video signal black level by several values. Simultaneously press L and R for about 2 seconds to set to 0.
- 3) B BLK: Blue black level setting.
Setting range is -128 to +127.
Press R to raise and L to lower the blue video signal black level by several values. Simultaneously press L and R for about 2 seconds to set to 0.
- 4) R Gain: Red gain setting
Setting range is -128 to +127.
Press R to raise and L to lower the red video signal gain by several values. Simultaneously press L and R for about 2 seconds to set to 0.
- 5) B Gain: Blue gain setting
Setting range is -128 to +127.
Press R to raise and L to lower the blue video signal gain by several values. Simultaneously press L and R for about 2 seconds to set to 0.
Note: Red and blue gain settings are ineffective at white balance Auto mode.
- 6) Initialize:
Initializes the level settings of each scene file to the factory values. Simultaneously press R and L for about 2 seconds to initialize the selected file settings.
- 7) Scene SEL: Scene file select
Selects scene file 1 to 4 stored in memory (same function as Function 1 Scene Sel).

2.8 Masking sub menu

Masking operation settings



- 1) Hue: RYGCBM
Phase adjustments for red, yellow, green, cyan, blue and magenta.
Setting range is -128 to +127.
Press R to raise and L to lower the settings by several values.
- 2) SAT: RYGCBM
Saturation adjustments for red, yellow, green, cyan, blue and magenta.
Setting range is -128 to +127.
- 3) Linear: R-G, G-B, B-R, G-R, B-G, R-B
Sets linear matrix amount between each color.
Setting range is -128 to +127.
- 4) Master SAT: Total variation of all color levels
Setting range is -128 to +127.
- 5) Initialize:
Initializes the masking settings of each scene file to the factory values.
Simultaneously press R and L for about 2 seconds to initialize the selected file settings.
- 6) Scene SEL: Scene file select
Selects scene file 1 to 4 stored in memory (same function as Function 1 Scene Sel).

2.9 Special menu

- 1) DTL: Opens detail menu screen.
- 2) White Shading: Opens white shading menu screen
- 3) Knee/Clip: Opens knee/clip menu screen
- 4) System: Opens system menu screen
- 5) Lens: Opens lens menu screen
- 6) Output/Sync: Opens output/sync menu screen
- 7) ID/Title: Opens ID/title menu screen
- 8) All Initialize: Initializes Function 1, 2, 3 and Special menu items to factory settings.

2.9 Special menu

- 1) DTL: Opens detail menu screen.
- 2) White Shading: Opens white shading menu screen
- 3) Knee/Clip: Opens knee/clip menu screen
- 4) System: Opens system menu screen
- 5) Lens: Opens lens menu screen
- 6) Output/Sync: Opens output/sync menu screen
- 7) ID/Title: Opens ID/title menu screen
- 8) All Initialize: Initializes Function 1, 2, 3 and Special menu items to factory settings.

2.10 DTL sub menu

Detail parameter setting.

- 1) Level DEP: Detail level dependent
Dark component noise can be reduced by reducing the dark component detail.
Setting range is -128 to +127.
Press R to raise and L to lower the video signal level by several increments for adding detail (R - add to high level only, L - add to both high and low levels).
- 2) Crisp: Detail crisp level
Reduces noise when detail is used in the range of -128 to +127. High settings reduce sharpness in detailed components of the image. Setting range is -128 to +127.
Press R to raise (increase detail noise) and L to lower (decrease detail noise) the setting by several increments.
Simultaneously press L and R for about 2 seconds to set to 0.
- 3) L/R Balance: Adjusts left and right detail balance
Setting range is -128 to +127.
Press R to raise and L to lower the setting by several increments.
- 4) H/V Balance: Horizontal and vertical detail balance setting
Setting range is -128 to +127.
Press R to raise and L to lower the setting by several increments.
- 5) (Soft DTL) White LEV: Soft detail white level setting
Setting range is -128 to +127. Adjusts white direction detail signal.
- 6) (Soft DTL) Black LEV: Adjusts soft detail black level
Setting range is -128 to +127.
Adjusts black direction detail signal.
- 7) Initialize
Initializes the gamma settings of each scene file to the factory values.
Simultaneously press R and L for about 2 seconds to initialize the selected file settings.

2.11 WHT Shading sub menu

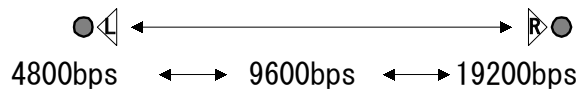
- 1) Extender: On/off toggle
Set to on (on indicated) when using a lens that has an extender.
- 2) Auto Setup: Automatic white shading adjustment
Pickup a completely white evenly reflecting screen for adjustment. First, adjust G channel shading with Manual G ADJ. Next, press L for 1 second for automatic white adjustment, then press R for 1 second for automatic shading adjustment.
- 3) MNL R ADJ: Red channel white shading adjustment
Setting range is -128 to +127.
Use for adjusting red channel white shading manually.
- 4) MNL G ADJ: Green channel white shading adjustment
Setting range is -128 to +127.
Use for adjusting green channel white shading manually.
- 5) MNL B ADJ: Blue channel white shading adjustment
Setting range is -128 to +127.
Use for adjusting blue channel white shading manually.
- 6) Initialize
Initializes the white shading settings of each scene file to the factory values. Simultaneously press R and L for about 2 seconds to initialize the selected file settings.

2.12 Knee/clip sub menu

- 1) Knee point
Setting range is -128 to +127.
Sets the video signal level for knee function start.
- 2) Knee slope
Setting range is -128 to +127.
Sets the knee response slope.
- 3) White clip
Setting range is -128 to +127.
Sets the white clip level.
- 4) Initialize
Initializes the knee/clip settings of each scene file to the factory values. Simultaneously press R and L for about 2 seconds to initialize the selected file settings.

2.13 System sub menu

- 1) Remote: Set the remote control comms rate with L and R.
Note: Set the rate while a cable is not connected to the Remote connector.



- 4800bps: Not used
 - 9600bps: Used by some equipment (e.g., RC-Z3 remote control box)
 - 9600bps ,19200bps: Setting when controlling the camera by computer via RS-232C interface. See switch settings (page 36). Consult dealer regarding control by personal computer.
- 2) Test: On/off toggle
Test signal on/off.
 - 3) Alarm: On/off toggle
Alarm on/off.

2.14 Lens sub menu

- 1) Open limit
Sets open position of auto iris control lens.
Setting range is 0 (closed) to +127 (open) Due to optical properties, the image quality is impaired at the nearly full open iris setting of some lenses. This adjustment limits the maximum open position. Observe the iris and set to where it is precisely open.

Note: Be sure to set Gain to 0 dB and shutter to off before this adjustment. The settings can be returned to former status after adjusting.

- 2) Close limit
Sets maximum iris position of an auto iris lens. Observe the iris and set to precisely maximum iris value (e.g., F16, F32). Setting range is -128 (closed direction) to -1 (open direction).

Notes: 1. Be sure to set Gain to 0 dB and shutter to off before this adjustment. The settings can be returned to former status after adjusting.
2. Unless Close limit is properly set, hunting phenomena may occur and AES may not operate correctly.

2.15 Output/sync sub menu

Switches Video connector output signal and adjusts phase during external sync.

- 1) Output
Sets multipin connector output signal for RGB or YPb.
- 2) Sync on G
G/Y signal sync on/off.
- 3) Sync in
Selects sync signal 75 Ω termination.
- 4) H phase
Adjusts horizontal sync signal phase when using external sync.
Adjustment range is -128 to +127.

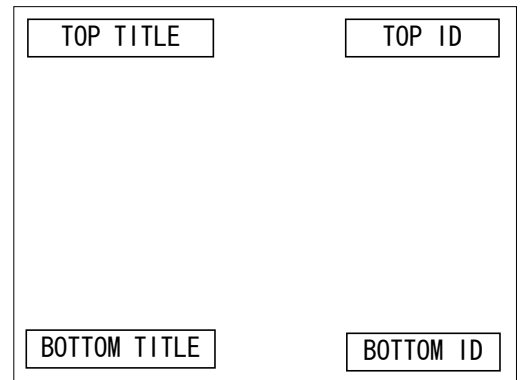
2.16 ID/title sub menu

Sets ID and title display position and data.

- 1) ID: ID display position
Sets ID on/off and position.
 - Off: No display
 - Top: Top right of screen
 - Bottom: Bottom right of screen

ID is used when controlling multiple cameras from a single personal computer. Only the camera ID addressed from the computer is controlled.

- 2) Title
Title on/off and display position
 - Off: No display
 - Top: Top left of screen
 - Bottom: Bottom left of screen
- 3) Data Set: Opens data set screen




ID/TITLE position

2.17 Data set sub menu

ID: 3 alphanumeric characters and space

Title: 12 alphanumeric, symbols and space characters

Note: Space is indicated by “” but does not appear on screen.

<ID and title setting>

- (1) Position the cursor at **Data Set** and press **D**. The cursor shifts to the ID data set line and the first character flashes.
 - (2) Select input characters with **L**, **R**, **U** and **D**.
 - (3) Press **Setup** to choose a character for input. The cursor shifts to the next character position.
 - (4) In the same manner, repeat steps (2) and (3) for each character of ID and title.
 - (5) After completing character insertion, use **L**, **R**, **U** and **D** to move the cursor to **RET**, then press **Setup**. The cursor shifts to **Data Set**.
 - (6) Again press **Setup** to exit the **Special set mode**.
- ← : Flashes 1 character toward the left.
→ : Flashes 1 character toward the right.
Del :Deletes the flashing character and closes the vacated gap.
INS :Opens gap at flashing position and shifts other characters.
RET :Shifts cursor to **Data Set**.

RC-Z3 Remote Control Box

The RC-Z3 allows all camera menu items to be operated remotely. Before connecting, set the camera internal switches to factory positions (see page 36).

At the Special set menu, set the comms rate to 9600 bps (factory setting). See page 19.

<Operation>

1) Direct control

Following items can be operated by buttons of the remote control panel.

Item	Setting
Shutter	On/off
Contrast	On/off
DTL	Var, Low, Norm, High
White BAL	Preset, Mem, Auto
Gain	0 to 12 dB (3 dB steps)
Iris	Auto, Remote, Manual
Scene	1, 2, 3, 4
Enable	On/off
R Gain	Control
B Gain	Control
R Black	Control
B Black	Control
M BLK	Control
Iris	Control
Preset	Preset data output
Store	Scene file store in memory

2) Other control

Additional control items are set by menu. Press the Function button of the remote control panel to show the Function 1 menu and engage the menu mode. Again press Function to extinguish the menu and return to the Direct mode. Use U, D, L and R to navigate the menu. See page (8).

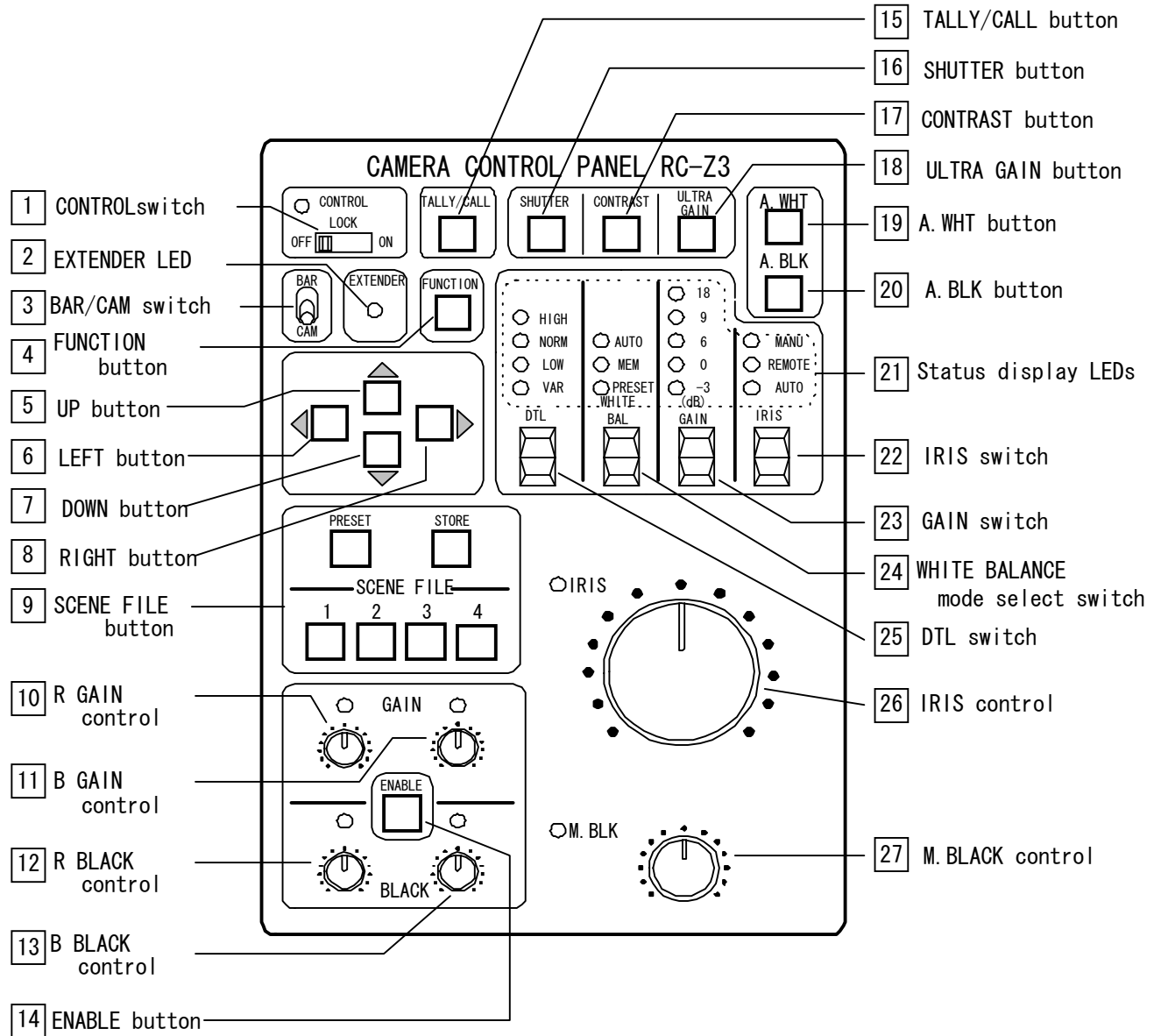
Note: Hold U depressed and press Function to enter the Special Set mode and show the Special menu screen.

3) Saving setting data

The RC-Z3 setting data are not saved automatically. To save the data, be sure to press the Store button, then the Scene file.

Note: Unless Stored, the data are lost if the scene file is changed or the power is cut off.

1. RC-Z3 description



1 CONTROL switch

- On (red LED lights) : RC-Z3 operation normal and camera control enabled.
- Lock (red LED lights) :Except for Iris **26** and M BLK **27**, all operations locked at present settings to prevent operating error.
- Off (green LED lights) :Control from RC-Z3 inhibited and control from camera itself enabled.

2 EXTENDER LED

Set to on (lights) when using a lens having an extender.

3 BAR/CAM switch

Selects camera output signal.

- Bar :Color bar output
- Cam :Camera video signal output

4 FUNCTION buttons

Camera setting menu display. See page 8.

5 - 8 UP, LEFT, DOWN, RIGHT buttons

Menu navigating buttons

9 SCENE FILE buttons

Select among 4 scene files for storage.

Scene files

This convenient function allows the setting data according to applications and scene conditions to be stored in 4 scene files for ready access. These spare the need to readjust the camera each time the same scene is repeated.

(1) File selection

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

- Preset button: Standard type setting state
- Scene file 1: Scene 1 settings
- Scene file 2: Scene 2 settings
- Scene file 3: Scene 3 settings
- Scene file 4: Scene 4 settings

Note: A scene file button lights when pressed and related items can be adjusted. Change the data and the button flashes. Once the data are changed, the previous settings are not returned and the flashing continues. Again press a scene file button to change to lighted.

(2) Setting data save

Use the Store operation to save the data to memory.

- Store:
After completing the menu and RC-Z3 settings, press Store (button flashes). During the flashing, press the desired Scene file button to save the settings and extinguish the Store button.
- Store release:
While the Store button is flashing, again press the Store button. This deletes the settings and extinguishes the button.
- Copy file data:
Press the file to be copied (Preset, Scene file 1 - 4), then press the Store button. While the Store button is flashing, select the destination file (Scene file 1 - 4). The settings will be copied to the selected file.

Notes:

1. RC-Z3 setting data are lost if a file button (Preset, Scene file 1 - 4) is pressed without storing to memory. The data for each scene file are deleted and only the previous data of the designated file are obtained.
2. Setting data are lost if the power is cut without storing. The data prior to the power loss are obtained at return of power. Be sure to Store the setting data when these are important.
The previous data are deleted by the Store operation.

10 and 11 R and B gain controls

Adjust the red and blue gain. Adjustment is possible when the Enable button is pressed (lights).

Change is large when the White Balance mode select switch 24 is Preset.

Fine adjust when the White Balance mode select switch 24 is set to Memory.

Note: Adjustment is ineffective when White Balance is Auto.

12 and 13 R and B black controls

Fine adjust red and blue video signal black levels. Adjustments are effective when Enable 14 is pressed (lighted).

14 ENABLE button

- On (lighted): R & B Gain and R & B Black adjustments are effective.
- Off (extinguished): Above adjustments are ineffective.

15 TALLY/CALL button

Not functional with DK-H3 camera, although button lights when pressed.

16 SHUTTER button

Shutter on/off toggle; lights when on.

17 CONTRAST button

Contrast on/off toggle; lights when on.

Note: Inoperative at gamma off (Function 1 set to gamma off in menu mode).

18 ULTRA GAIN button

Not functional with DK-H3 camera.

19 A.WHT button

Direct mode: In Mem white balance mode, press button (lights) for automatic white balance.

Menu mode: Operation inhibited.

20 A.BLK button

Direct mode: Press button (lights) for automatic black balance.

Menu mode: Operation inhibited.

21 Status indicator LEDs (dotted outline)

Light when selected switch is active.

22 IRIS switch

Sets lens iris mode in sequence Auto, Remote, Manual.

- Auto: Auto iris operates
- Remote: Adjust iris with control 26 .
- Manual: Manually adjust lens iris ring.

23 GAIN switch

Adjusts camera sensitivity. Press the switch upwards to change the sensitivity in the sequence 0, 3, 6, 9, 12 dB. The setting is shown by the Gain LED combination.

Note: At AGC on, the indication is 18 dB.

24 WHITE BALANCE mode select switch

Press the switch upward to set the mode in the sequence Preset, Mem, Auto.

- Preset: White balance according to preset data.
- Mem: In Direct mode, press A WHT 19 for automatic white balance adjustment.
- Auto: White balance adjusted in real-time (auto tracking).

25 DTL switch

Sets camera detail amount.

Press the switch upward to set in the sequence Var, Low, Normal, High. The status LEDs show the detail amount set at DTL VAR of the DTL menu set in the menu mode.

26 IRIS control

Adjusts the lens iris.

- Auto: Over ride, fine adjustment of about ± 2 F stops.
- Remote: Adjustment from open to close
- Manual: Iris not adjusted from RC-Z3. Manually adjust the lens iris ring.

27 M BLK control

Adjusts the master black level.

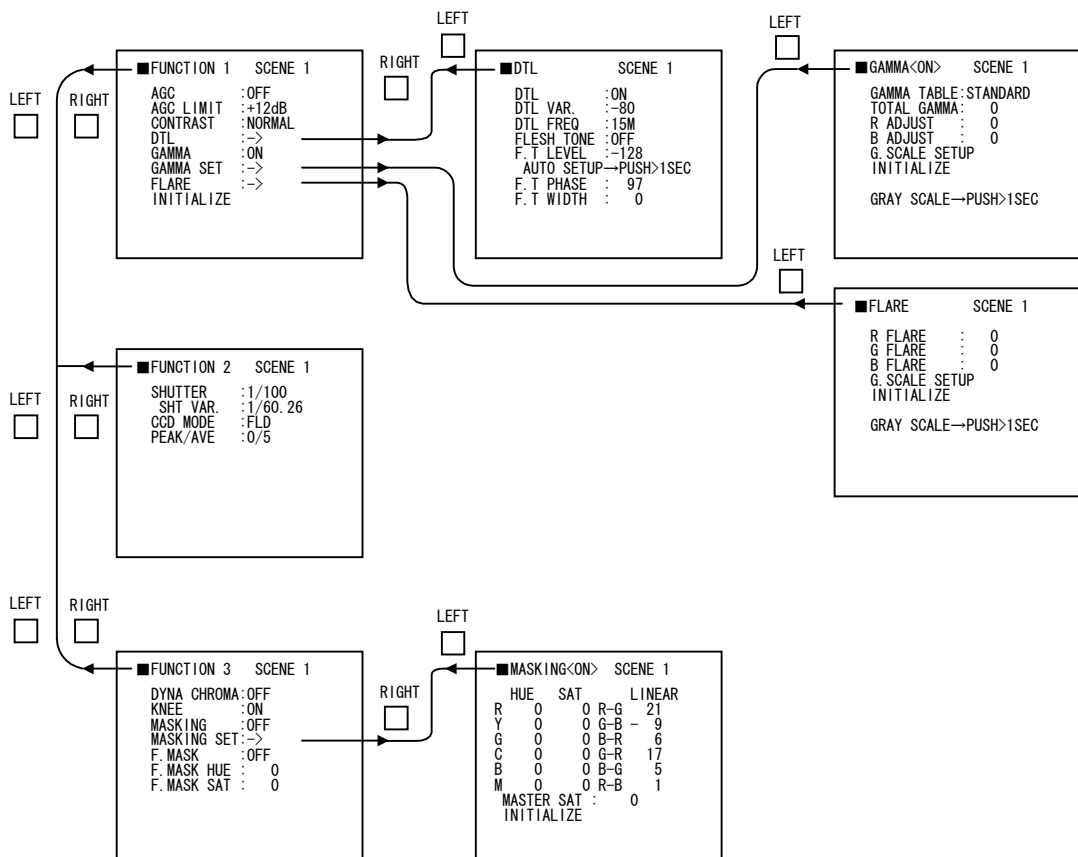
2. Menu screen composition and operation

Except for the RC-Z3 adjustment and operation items, the camera settings can be customized with the Function 1, 2, 3 and Special Set menu screens.

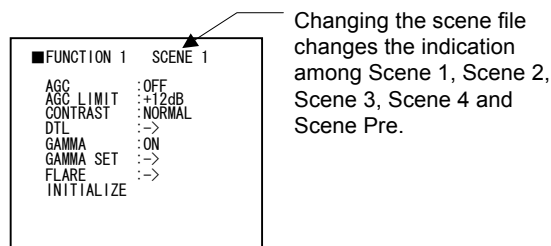
2-1 Function menu composition and operation

Press the Function 4 button to product the Function 1 menu and enter the Menu mode. Again press Function to extinguish the menu and enter the Direct mode.

Main and sub menus are arranged in the following hierarchy. Align the cursor with the -> symbol of the menu and press R to change to a lower menu. Return to the upper menu by setting the cursor to the first (title) line and pressing L. Navigate within a menu with U and D, and change mode and data with L and R.

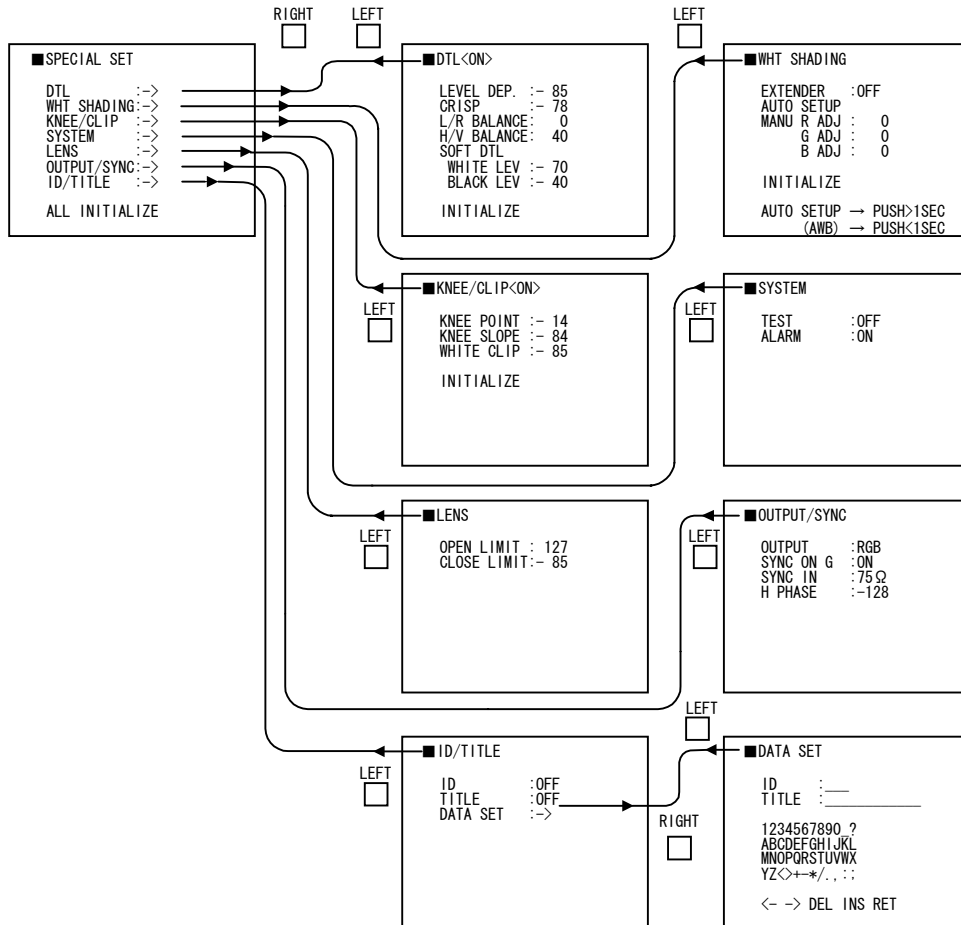


Press Scene File 9 to select the scene file.



2-2 Special menu composition

Hold U depressed and press Function for 1 second to open the Special Set menu and enter the menu mode. The menu hierarchy is indicated below. Position “->” symbol to the desired item and press R to open the settings for that item. Navigate within a menu with U and D to set the cursor to an item for changing. Change the mode or data with L and R. Set the cursor to the first (title) line and press L to return to the Special Set menu. Set the cursor to the Special Set title line and press L or R to shift to the Function menu.



Menu setting items can also be operated from the camera rear panel buttons. See page 8.

Initialize

There are 3 types of initializing for local (camera) and remote (RC-Z3) menu items.

- 1) All initialize of Special Set menu items
- 2) Scene file item initialize of Function 1 menu items
- 3) Initialize each open menu

<Settings>

- 1) Menu initialize values

Menu items	Special Set ALL INITIALIZE		Function 1 INITIALIZE		Each menu INITIALIZE	
	Local	Remote	Local	Remote	Local	Remote
FUNCTION 1						
SCENE SEL	1					
WHITE BAL	MEMORY		MEMORY			
AGC	OFF	OFF	OFF	OFF		
GAIN	0dB		0dB			
AGC LIMIT		+12dB		+12dB		
CONTRAST	OFF	NORMAL	OFF	NORMAL		
GAMMA	ON	ON	ON	ON		
DTL						
DTL	VAR	ON	VAR	ON		
DTL VAR.	0	0	0	0		
DTL FREQ	15M	15M	15M	15M		
FLESH TONE	OFF	OFF	OFF	OFF		
F. T LEVEL	-128	-128	-128	-128		
F. T PHASE	97	97	97	97		
F. T WIDTH	0	0	0	0		
SCENE SEL	1					
GAMMA<ON>						
GAMMA TABLE	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD	STANDARD
TOTAL GAMMA	0	0	0	0	0	0
R ADJUST	0	0	0	0	0	0
B ADJUST	0	0	0	0	0	0
SCENE SEL	1					
FLARE						
R FLARE	0	0	0	0	0	0
G FLARE	0	0	0	0	0	0
B FLARE	0	0	0	0	0	0
SCENE SEL	1					

Menu items	Special Set ALL INITIALIZE		Function 1 INITIALIZE		Each menu INITIALIZE	
	Local	Remote	Local	Remote	Local	Remote
FUNCTION 2						
M. BLACK	0		0			
SHUTTER	OFF	1/100	OFF	1/100		
SHT VAR.	1/60.26	1/60.26	1/60.26	1/60.26		
CCD MODE	FLD	FLD	FLD	FLD		
PEAK/AVE	0/5	0/5	0/5	0/5		
OVER RIDE	0		0			
LEVEL						
ENABLE	OFF		OFF		OFF	
R BLK	0		0		0	
B BLK	0		0		0	
R GAIN	0		0		0	
B GAIN	0		0		0	
SCENE SEL	1					
FUNCTION 3						
DYNA CHROMA	OFF	OFF	OFF	OFF		
KNEE	ON	ON	ON	ON		
MASKING	OFF	OFF	OFF	OFF		
F. MASK	OFF	OFF	OFF	OFF		
F. MASK HUE	0	0	0	0		
F. MASK SAT	0	0	0	0		
MASKING<ON>						
R HUE	0	0	0	0	0	0
Y HUE	0	0	0	0	0	0
G HUE	0	0	0	0	0	0
C HUE	0	0	0	0	0	0
B HUE	0	0	0	0	0	0
M HUE	0	0	0	0	0	0
R SAT	0	0	0	0	0	0
Y SAT	0	0	0	0	0	0
G SAT	0	0	0	0	0	0
C SAT	0	0	0	0	0	0
B SAT	0	0	0	0	0	0
M SAT	0	0	0	0	0	0
R-G LINEAR	21	21	21	21	21	21
G-B LINEAR	-9	-9	-9	-9	-9	-9
B-R LINEAR	6	6	6	6	6	6

Menu items	Special Set ALL INITIALIZE		Function 1 INITIALIZE		Each menu INITIALIZE	
	Local	Remote	Local	Remote	Local	Remote
G-R LINEAR	17	17	17	17	17	17
B-G LINEAR	5	5	5	5	5	5
R-B LINEAR	1	1	1	1	1	1
MASTER SAT	0	0	0	0	0	0
SCENE SEL	1					
DTL<ON>						
LEVEL DEP	-85	-85			-85	-85
CRISP	-78	-78			-78	-78
L/R BALANCE	0	0			0	0
H/V BALANCE	40	40			40	40
WHITE LEV	-70	-70			-70	-70
BLACK LEV	-40	-40			-40	-40
WHT SHADING						
MANU R ADJ	0	0			0	0
MANU G ADJ	0	0			0	0
MANU B ADJ	0	0			0	0
KNEE/CLIP						
KNEE POINT	0	0			0	0
KNEE SLOPE	-76	-76			-76	-76
WHITE CLIP	-65	-65			-65	-65
ID/TITLE						
ID	OFF	OFF				
TITLE	OFF	OFF				

2) RC-Z3 control panel initialize

Menu items	Special Set ALL INITIALIZE	Function 1 INITIALIZE	Each menu INITIALIZE
SHUTTER	OFF	OFF	
CONTRAST	OFF	OFF	
DTL	VAR	VAR	
WHITE BAL	MEM	MEM	
GAIN	0dB	0dB	
IRIS	AUTO	AUTO	
ENABLE	OFF	OFF	
SCENE FILE	1		

Operation for better picture

Black balance

Black balance is adjusted for correct gradation in the video signal dark components. The following adjustments are required.

- When camera is used for the first time
- When camera has been idle for a long period
- Change in usage environment (e.g., large ambient temperature variation)

If the camera is functioning well, readjustment is not necessary each time power is supplied.

1. In the Direct mode, press ABB fir about 2 seconds for automatic black balance adjustment.

If completed normally, Auto Black OK is indicated.

Notes:1. An auto iris lens closes during adjustment.

If Manual iris mode, open the iris after adjusting.

2. A manual iris lens or a microscope may briefly result in a white image after adjustment.

This is not a defect.

3. When using a manual iris lens, avoid a bright camera subject (e.g., sunlight) during adjustment. This can impair black balance accuracy.

2. Black balance cannot be adjusted

Refer to the following error messages and readjust.

Error message	Correction
AUTO BLACK : NG CHANGE TO CAM TRY AGAIN	▪ Set color bar to off.
AUTO BLACK : NG IRIS NOT CLOSE TRY AGAIN	▪ Avoid sun or other bright light, reduce microscope lighting. ▪ Close lens iris.
AUTO BLACK : NG TRY AGAIN	▪ If repeated attempts are unsuccessful, internal inspection is required. Consult dealer regarding service.

White balance adjustment

Adjust if lighting conditions (color temperature) have changed.

- 1 Set filter disk
 - Indoor incandescent: position 1 (3200 K)
 - Outdoor: position 2 (5600 K)
 - Outdoor very bright: position 3 (5600 K + ND)
- 2 In Menu mode, set white balance to Memory.
- 3 Exit Menu and enter Direct mode.
- 4 Use auto lens iris or set iris to a suitable value manually.
- 5 Zoom in to a white component in the scene.
- 6 Press AWB for 2 seconds for automatic white balance adjustment.
If successful, Auto white ok is indicated.
- 7 If unsuccessful, observe the following messages and corrections.

Error message	Correction
AUTO WHITE : NG CHANGE TO CAM TRY AGAIN	• Set color bar to off.
AUTO WHITE : NG CHANGE TO MEMORY MODE TRY AGAIN	• Use White BAL Memory mode.
AUTO WHITE : NG LOW LIGHT TRY AGAIN	• Not enough light. • Increase lighting, open lens iris, raise gain for suitable video level. • If filter disk is at 3, set to 2. • Again press AWB.
AUTO WHITE : NG HIGH LIGHT TRY AGAIN	• Too much light. • Reduce lighting, reduce lens iris opening, reduce gain for a suitable video level. • Again press AWB.
AUTO WHITE : NG C.TEMP HIGH CHANGE TO FILTER TRY AGAIN	• Color temperature too high, cannot optimize. • If filter disk is 1, set to 2 and again press AWB.
AUTO WHITE : NG C.TEMP LOW CHANGE TO FILTER TRY AGAIN	• Color temperature too low, cannot optimize. • If filter disk is 2 or 3, set to 1 and again press AWB.

Real-time auto white

The camera itself detects white in the image and automatically adjusts white balance to compensate for changes in color temperature that occur in morning, mid-day and evening.

1. In the Menu mode, set White BAL to Auto.

Note: If the color temperature changes suddenly (e.g., camera direction changed from indoor to outdoor), the image may briefly appear reddish or bluish. This is not a defect and is self-correcting.

Auto shading compensation

Vertical shading may occur due to lens characteristics. The camera automatically corrects for color shading.

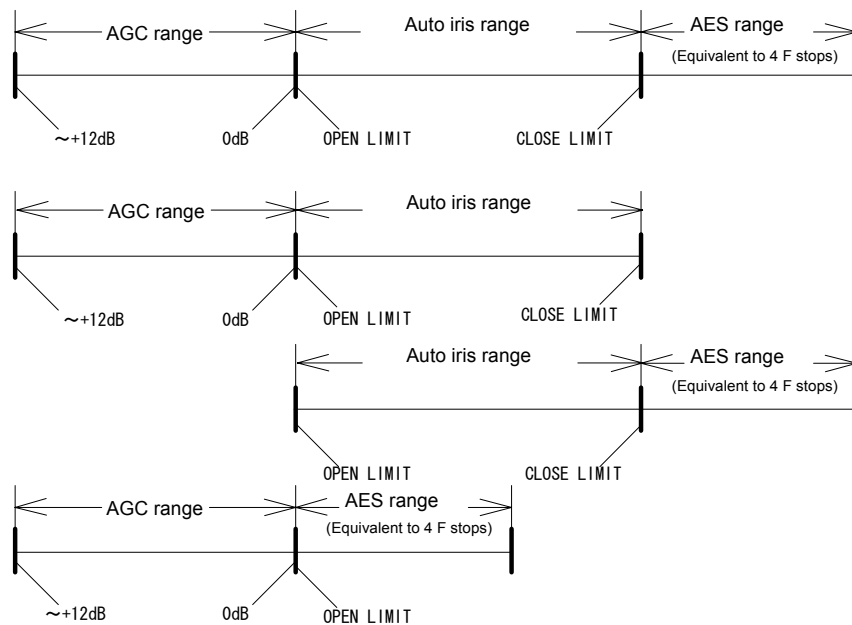
1. Use auto iris lens or adjust manually for suitable iris.
2. Pickup a white image that completely fills the screen. Use care vertical white shading is absent.
3. At the WHT Shading menu, adjust green channel shading with MNL GADJ. Press L for 1 second for auto whit adjustment, then press R for 1 second again for auto white adjustment (see page 18).

Note: Be sure to adjust auto shading when using the camera for the first time or after changing the lens.

ALC

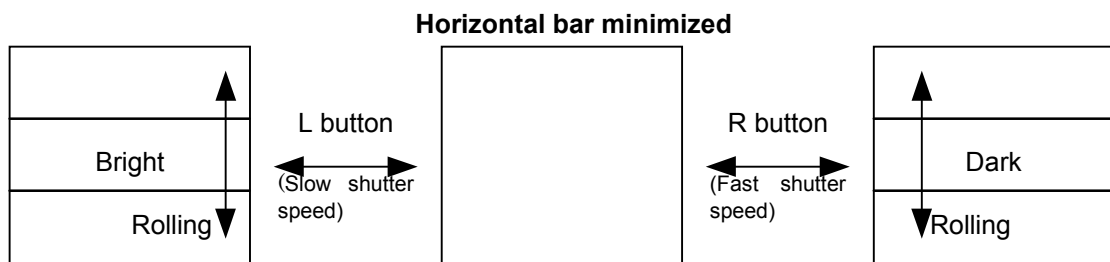
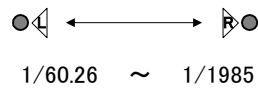
AGC, AES and auto iris provide 4 types of auto level control (ALC). These allow stable video signal output under a broad range of light variation.

Note: When not using an auto iris lens, at the Lens menu, set the iris mode to Manual.



Lock scan mode shutter speed

- 1) Press Setup and open Function 2.
Press D to shift the cursor to shutter items and set the shutter to VAR with the L and R buttons.
Press to shift to Variable.
- 2) Use L and R to set the lock scan mode shutter speed in the range 1/60.26 to 1/1985 second.
When picking up an image of e.g., a computer screen with a different scanning frequency, a bright or dark horizontal bar may roll vertically. The bar can be minimized by adjusting the shutter speed.



Notes

- 1) Each pressing of the L or R button changes the shutter speed by 1H (1 horizontal period). Hold the button depressed for continuous change.
- 2) If the scanning frequency is less than 60 Hz, the rolling bar cannot be stopped.
- 3) Raising the shutter speed improves the resolution of moving images, but reduces the sensitivity. Use mainly outdoors in bright locations. Also note that due to the CCD properties, increasing the shutter speed increases vertical smear.

Function selection by internal switch setting

SW206

Set the switch to RC-Z3 when connecting the remote control box. Set the switch to RS-232C when connecting a personal computer.

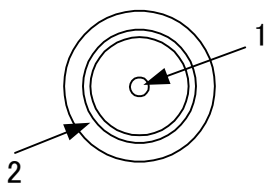
Factory setting is RC-Z3.



Connectors

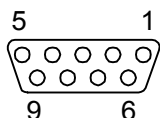
Connector pin diagrams

SDI 1 OUT/ SDI2 OUT /GL IN (BNC female)



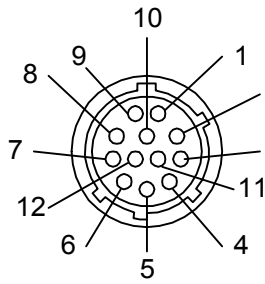
Pin	Signal	Pin	Signal	Pin	Signal
1	SDI1 OUT	1	SDI2 OUT	1	GL IN
2	GND	2	GND	2	GND

MONITOR OUT(9pin D-sub female:CDS3109-0123)



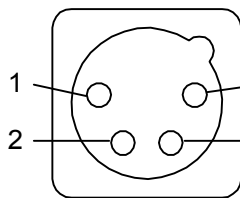
Pin	Signal	Pin	Signal
1	GND	6	Spare
2	Spare	7	SYNC OUT
3	R/P _R OUT	8	HD OUT
4	G/Y OUT	9	VD OUT
5	B/P _B OUT	-	

LENS (12 pin female)



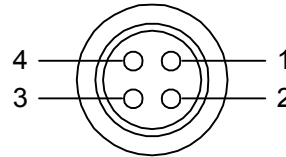
Pin	Signal
1	NC
2	NC
3	GND
4	ENF AUTO
5	IRIS CONTROL
6	+12V
7	IRIS POSITION
8	IRIS Auto/Rem.
9	EXETEND
10	NC
11	NC
12	NC

DC IN (4 pin XLR male:HA16RA-4P)



Pin	Signal
1	GND
2	NC
3	NC
4	+12V input

Remote 1,2 (4 pin female:HR10A-7R-4S(01))



Pin	Signal
1	+9V output
2	SD input
3	SD output
4	SD ground

Specifications

1) Signal system	HDTV (based on CCIR)
2) Optical system	2/3-inch F1.4 prism
3) Imaging system	RGB 3 element
4) Pickup elements	2/3-inch CCD with microlenses
	Total pixels: 2010 (H) × 1086 (V)
	Effective pixels: 1920 (H) × 1080 (V)
	Effective image area: 9.6 (H) × 5.4 (V) mm
5) Scanning system	1125 lines 2:1 interlace
6) Scanning frequency	33.7625 kHz (H), 59.94 Hz (V)
7) Sync system	Internal, external automatic selection, Sync, HD/VD selected by menu
8) Horizontal resolution	1000 TV lines, luminance signal (Y signal center, Y Out, DTL off)
9) Signal to noise ratio	54 dB typ (Y Out, $\gamma = 1$, DTL off, gain = 0 dB)
10) Standard sensitivity	2000 lx, F8.0
11) Minimum illumination	16 lx, (100%, F1.4, gain = +12 dB)
12) Gamma correction	0.35 to 1.0 (on/off selectable)
13) Picture distortion	0% full screen, not including lens characteristics
14) Registration	0.05% full screen, not including lens characteristics
15) Vertical contour correction	2 H
16) Lens mount	Bayonet, flangeback 48 mm in air
17) Sensitivity selection	AGC or manual (0, +3, +6, +9, +12 dB 5 positions)
18) DTL control functions	Level and frequency
19) CCD drive functions	
	Preset : 1/100, 1/250, 1/500, 1/1000, 1/2000 second
	Lock scan : 1/60.26 to 1/1985 second
	AES : Off to approx. 1/2000 second
	Frame readout (image lag impairment)
20) Color bar	SMPTE
21) Power supply voltage	12 VDC nominal, 10.8 to 14 VDC
22) Power consumption	Approx. 27 W
23) Dimensions	98 (W) × 105 (H) × 180 (D) mm, see Drawing No. 7369112
24) Mass	Approx. 1.5kg (less lens)
25) Operating recommended	
ambient temperature	0 to +40 °C
26) Storage ambient tem	
perature	-20 to +60 °C

Input and output signals

1. Input signal conditions

1) External sync (multipin and Aux connectors)

3 value sync :0.6 Vp-p ± 3 dB, 75 Ω or high impedance (multi connector only)

2) Serial data (4 pin connector)

1.5 Vp-p ± 3 dB, high impedance (when connected to RC-Z3)

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

Note: Set internal switch according to connected equipment.

2. Output signal ratings

1) Video (HD SDI Two outputs)

HD SDI 0.8Vp-p 1.5Gbps SMPTE292M Standard

2) Video (multi, monitor connectors)

Y, G :1.0 Vp-p, 0.7 Vp-p, 75 Ω

PB, B :0.7 Vp-p, 75 Ω

PR, R :0.7 Vp-p, 75 Ω

Note: Multipin and monitor connector component and RGB signal outputs set by menu.

3) Sync signal (multi, monitor connectors)

HD :2 Vp-p, 75 Ω

VD :2 Vp-p, 75 Ω

3 value sync :0.6 Vp-p, 75 Ω

4) Serial data (4 pin connector)

1.5 Vp-p, low (RC-Z3 connected)

RC-232C level (personal computer connected)

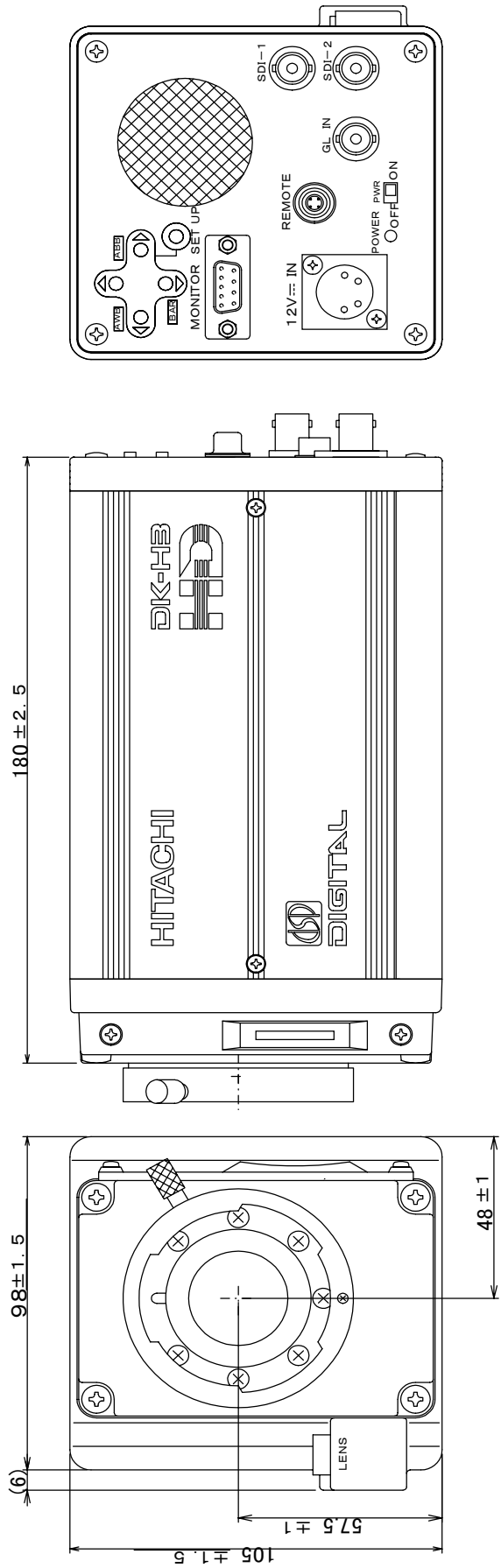
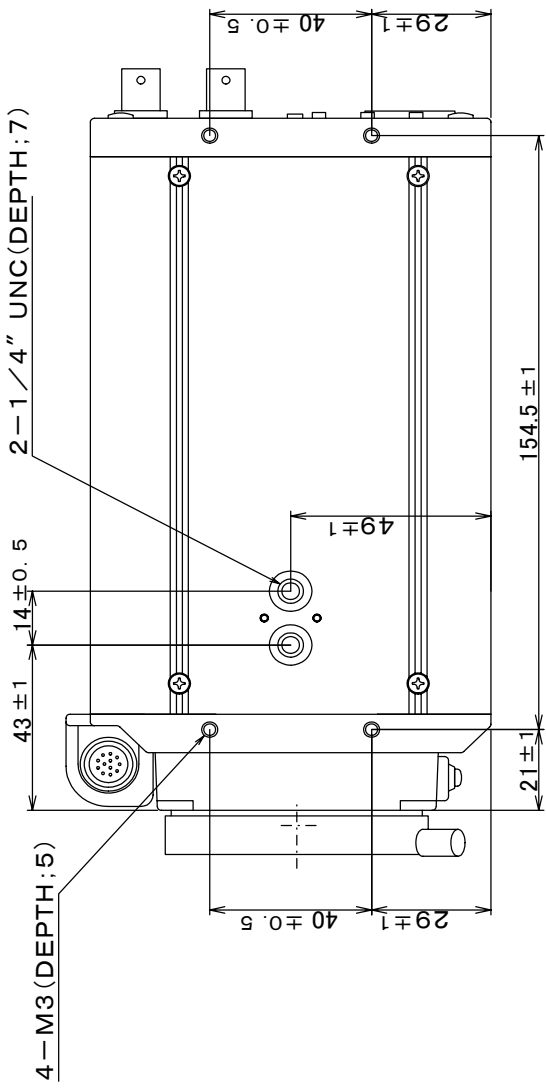
Note: Change internal SW206 setting.

Separately sold accessories

Be sure to consult dealer or sales office regarding optional accessories.

Zoom lens (remote control type)	HJ116XB4 IAS (Canon)
Zoom lens (remote control type)	HA15AX8BERD (Fujinon)
AC adapter	AP-60A
Camera control box	RC-Z3
RS232C conversion adapter	JU-Z2

External dimensions



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Parts Center

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Latin Sales

Phone: (561) 682-4420, FAX: (561) 496-3718

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Midwest Sales

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Service (734) 721-6180

South Sales

Phone: (877) 326-8105, FAX: (516) 496-3718
Service (678) 937-0201

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