3-CCD Color Camera
HV-HD201
HV-HD201M
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 solten 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 verietzen.

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 Einbauinstallierung 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 Schuts des Schutzkontaktsteckers unwirksam.

13. Netzkabelschutz

Netzkabel sollten so verlegt werden, deß 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 verhütet Beschädigung durch Blitzschlag und Netzspannungsstöße.

15. Überlastung

Wandsteckdosen, Verlängerungskabel und eingebaute Bequemlickkeitssteckdosen 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 ausserzen 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 angemissenen 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 á 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 á proximité d'eau-ar exemple prés d'une baignoire, d'un lavabo, d'un évier ou d'un bac á lessive, dans un sous-sol humide, ou prés d'une piscine, etc.

8. Accessoires

Ne pas placer l'appareil sur un chariot, un socle, un pied, un support ou one table instables L'appareil pourrait tomber, blessant griévement 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 á 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 irréguliéres 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 placant 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 bibliothéque ou une é tagé re, sans ventilation suffisante ou sans repecter les instructions du fabricant.

11. Sources d'allmentation

L'appareil devra être alimenté exclusivement sur le type d'alimentation indiqué sur l'étiquette signalétique. Sil'on n'est pas sûr du type d'alimentatio 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 á la terre ou polarisation

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

Ne pas rendre vaine la measure de sécurité assurée par cette prise avec mise á la terre.

13. Protection du cordon d'alimentation

Acheminer les cordons d'alimentation de facon qu'on ne risque pas de marcher dessus ou de les coincer sous un objet placé dessus ou contre eux.

Faire particuliérement attention aux fiches des cordons, á la proximité des prises, et á l'endroit oú 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 dú á 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 piéces, ce qui pourrait

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

17. Substances inflammabes et explosives

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

18. Chocs ou vibrations violents

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

19. Réparations

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

20. Dommages nécessitant réparations

Débrancher l'appareil de la source d'alimentation et confier les réparations á 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 á la pluie ou á 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 entrainer 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. Piéces de rechange

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

22. Vérificaton de sécurité

Aprés 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 maniére recommandée par le fabricant.

24. Chaleur

Eloigner l'appareil des sources de chaleur, telles que radiateurs, appareils de chauffage, cuisiniéres, 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 limités applicable aux appareils numériques de classe A prescrites dans le rVglement sur le brouillage radioélectrique édicter par le ministére des communications du canada.

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Overview

The Hitachi color camera HV-HD201 is 3CCD HDTV camera combining high picture quality and high stability with the convenience of C mount optics. CCD size is 1/2-size and each consists of 1,500,000 picture elements.
Signal processing is all digitalized.
High quality picture and high color reproducibility functions are attained by Hitachi's unique digital processing technology and the latest CCD. In addition to the digital output of high-definition signal of four modes of 1080i/59.94, 1080i/50, 720p/59.94, 720p/50, it provides the VBS and RGB/YPbPr analog signal output of 480i/59.94(NTSC) and 576i/50(PAL) format. The image can be used all over the world.

Features

● **C mount**

The camera uses a C mount lens, which is the de facto standard in the industry. It 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 : There are 4 video output modes. These modes are 1080i(59.94 fields or 50 fields) or 720p(59.94 frames or 50 frames).

SDTV : Video output modes are 576i(50 fields) or 480i(59.94 fields).

There are total 8 HDTV/SDTV video output modes.

Note : The SDI output supports only HDTV.

● **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 0 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.

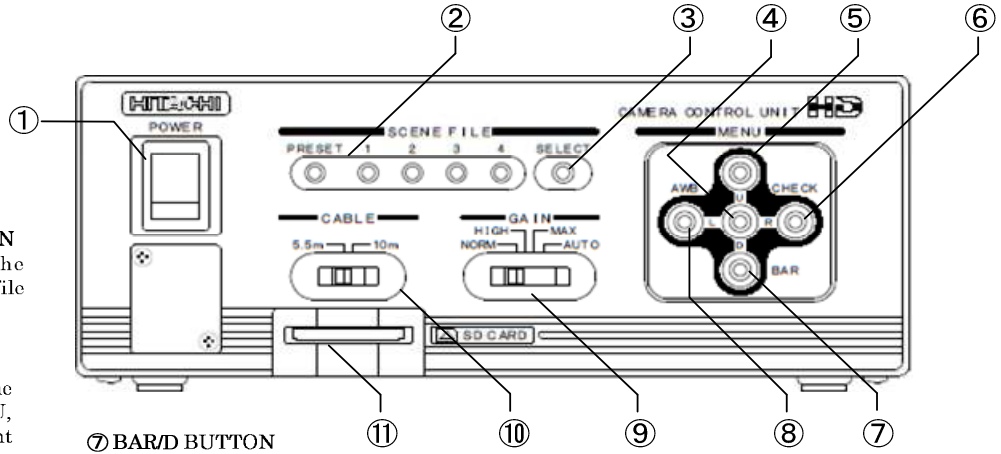
Transportation

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.

Blinking Screen at AUTO BLACK

It is not abnormal operation through the screen might blinks at the power start up or execution of AUTO BLACK.

Name and function of each section



① POWER SWITCH
It is power on/off switch.

② SCENE FILE LED
LED corresponding to the current scene file turns on.

③ SCENE FILE SELECT BUTTON
Press this button to change the Scene file. Previously set scene file can be called back.

④ 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).

⑤ U BUTTON
MENU mode:
Pressing this button moves the cursor up

⑥ CHECK/R BUTTON
DIRECT mode:
Press once to show the check Menu.
MENU mode:
In this mode, it is allowed to change functional data or carry out each function.

⑦ 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.

⑧ 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.

⑨ GAIN SWITCH
The electric sensitivity of a camera can be changed.

⑩ CABLE SWITCH
It sets up the camera according to the length of the camera cable to be used.

⑪ SD CARD SLOT
To insert the SD CARD for saving camera settings.

① 720P/1080i SELECT SWITCH
It sets the operational mode of HDTV.
(Please change it at power off state.)

② 59.94/50 SELECT SWITCH
It changes the field(frame at 720p) frequency.
(Please change it at power off state.)

③ HD-SDI CONNECTOR
Outputs HD-SDI signal.

④ S-VIDEO
Outputs Y/C signal.

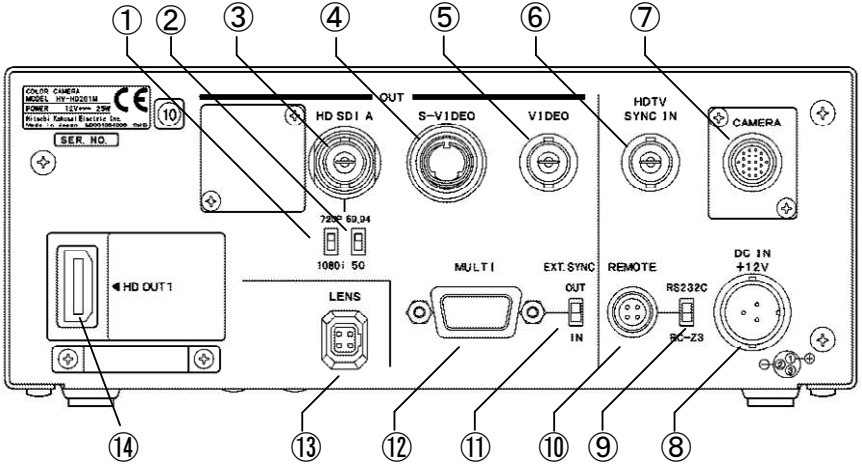
⑤ VIDEO
Outputs VBS signal.

⑥ HDTV SYNC IN CONNECTOR
Inputs SYNC signal of HDTV for external synchronization.

⑦ CAMERA CONNECTOR
The camera cable linked to a camera head is connected.

⑧ DC IN CONNECTOR
The 12V power supply is connected.

⑨ RS-232C/RC-Z3 SELECT SWITCH
Sets the signal level to connect to REMOTE terminal. (Please set it to RC-Z3 when camera is connected with remote control box made by our company.)



⑩ REMOTE CONNECTOR
Used for connection with the remote control box RC-Z3 or personal computer to remote control the camera.

⑪ HD/VD SIGNAL IN/OUT SELECT SWITCH
It inputs or outputs the HD/VD signal of multi connector for external synchronization.

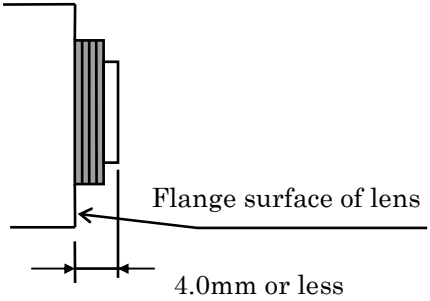
⑫ MULTI CONNECTOR
Outputs the analog picture signal/synchronization signal.
(Please refer to the connector terminal figure for details.)

⑬ LENS CONNECTOR
Connects the iris connector of an auto iris lens.

⑭ HDMI CONNECTOR
Outputs the HDTV picture signal.

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 3CCD 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 3CCD 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. Cosmicar). Lenses without self-contained iris amplifier are not compatible.

Camera settings differ according to the auto iris lens type (see page 45).

Note: The HV-HD201 uses lens connector wiring prescribed by the EIAJ (Electronic Industries Association of Japan). Refer to page 64.

3) Flangeback adjustment of 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 taking care not to disturb the focus ring, turn the flangeback adjustment ring to adjust the focus.

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

Video signal type lens adjustment

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

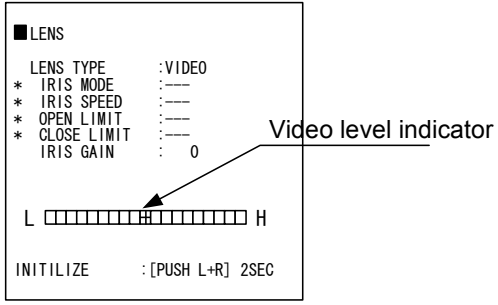
1) Preparation

(1) If GAIN SW of camera is at AGC.
  (a) Set GAIN SW to another mode.
  (b) Set the CAMERA MODE to MANUAL.
  (c) Set the SHUTTER of GAIN/SHUTTER menu to mode other than AES.

(2) If the light source has a flicker component (e.g. fluorescent or mercury light), change the electronic shutter mode (SHUTTER or SHUTTER VAR. setting) to reduce the flicker.

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) Capture the subject(such as white paper) where relatively brightness does not change and adjust the lens level control to where the center quadrangle is positioned at the video signal level indicator cross mark.

(3) If auto iris hunting occurs, reduce the Iris Gain setting.

3) Lens adjustment difficulties

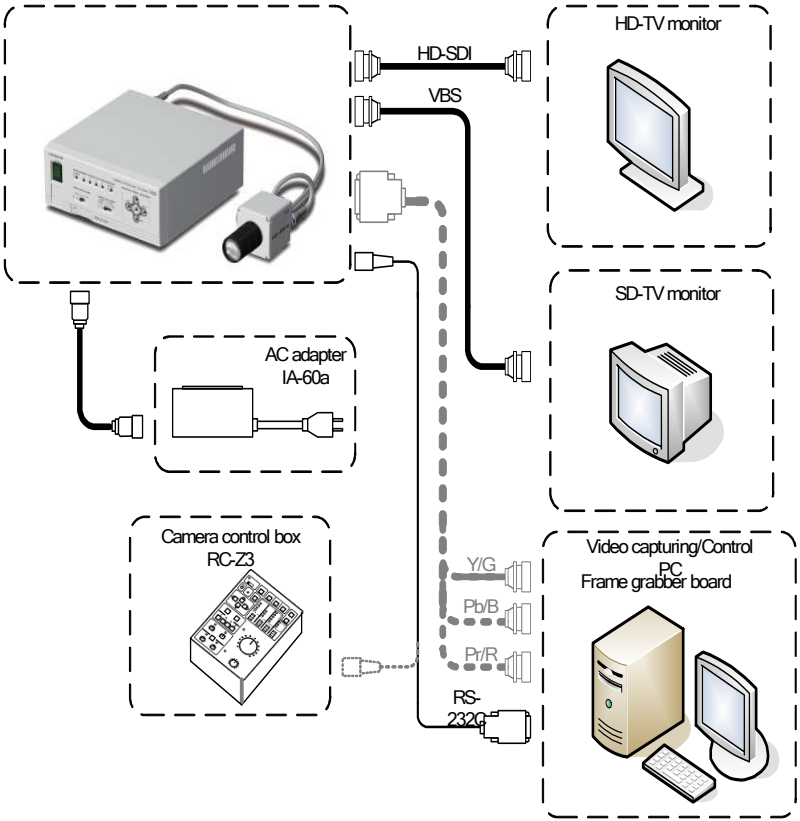
(1) If the light intensity level of subject is low in auto iris operation, adjust it by setting GAIN SW and increasing the GAIN setting of GAIN/SHUTTER menu.

(2) Lens Level control fully at Hi, but auto iris inoperative. Reduce the Iris Gain setting or Lens Level control fully at Low, but auto iris inoperative Increase the Iris Gain setting.

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

.

System configuration example



Menu Screen Operation

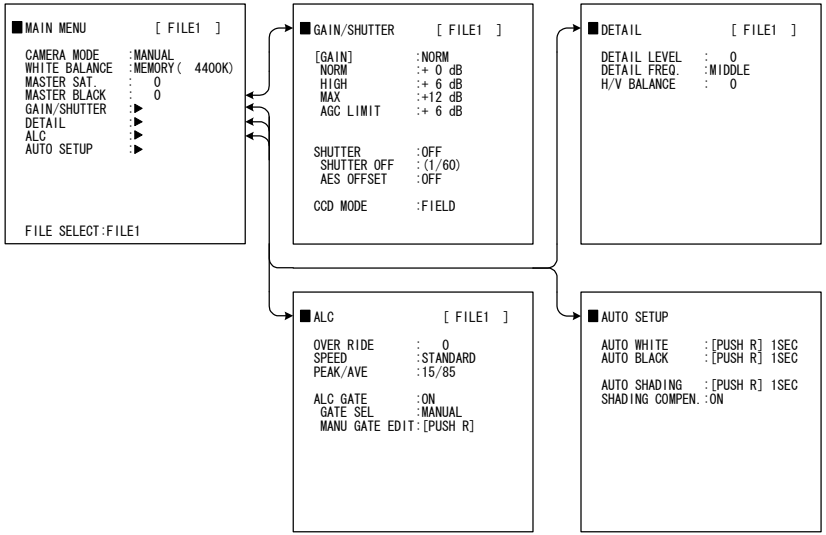
1. Menu Structure

For settings in the camera, the MAIN and SPECIAL SET 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 to enter in 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, move the cursor to item with ▶ and press the R button, the desired subsidiary menu will be displayed. To return to the MAIN MENU from the subsidiary menu, move the cursor to the top line (title line of subsidiary menu) and press the L button.

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

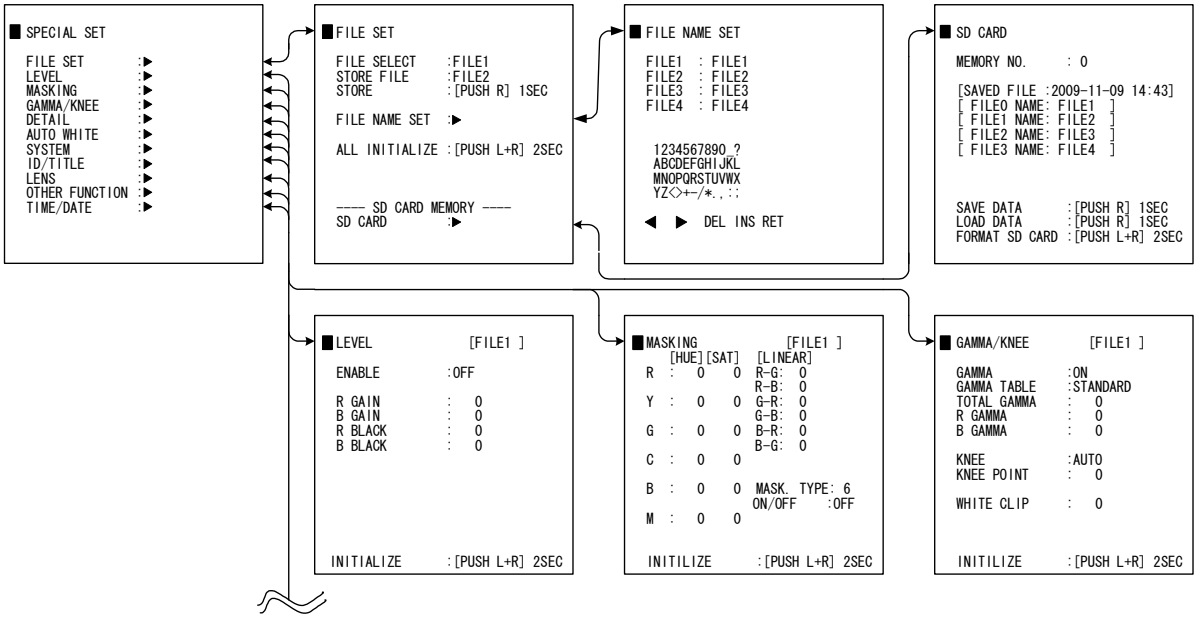


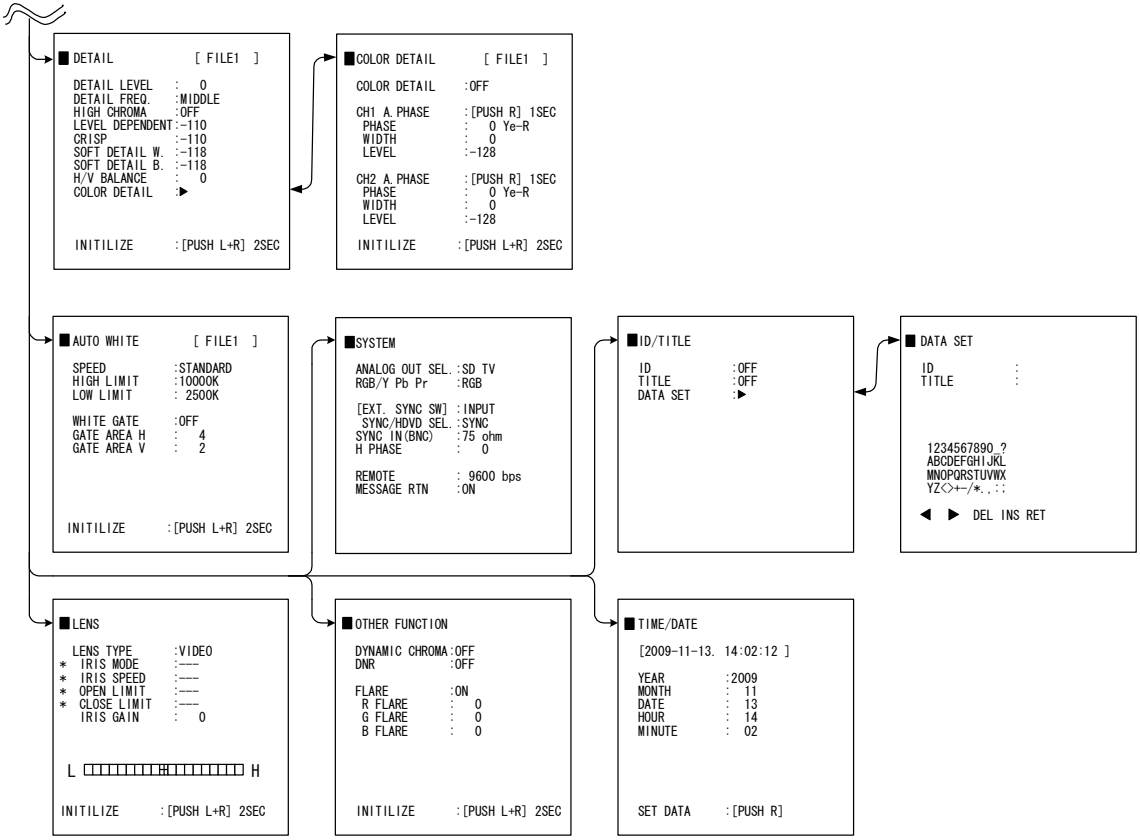
2) SPECIAL SET Menu Structure

If the menu is not displayed, press the MENU button for 2 seconds while holding down the U button. Thus, the SPECIAL SET menu will be displayed. The SPECIAL SET menu indicates a list of items, and subsidiary menus are available for each special item. These menus are arranged hierarchically as shown below. To return to the SPECIAL SET menu, move the cursor to the top line (title line of each subsidiary menu) and press the L button.

On each menu screen, move the cursor to any desired item using the U or D button. Move the cursor to the SPECIAL SET line and press the R button to change to the MAIN MENU. MAIN MENU and SPECIAL SET can be interchanged until the menu screen is erased.

Press the MENU button to end the menu setting.




■DETAIL [FILE1]
DETAIL LEVEL : 0
DETAIL FREQ. :MIDDLE
HIGH CHROMA :OFF
LEVEL DEPENDENT :-110
CRISP :-110
SOFT DETAIL W. :-118
SOFT DETAIL B. :-118
H/V BALANCE : 0
COLOR DETAIL :▶
INITILIZE :[PUSH L+R] 2SEC
■COLOR DETAIL [FILE1]
COLOR DETAIL :OFF
CH1 A.PHASE :[PUSH R] 1SEC
PHASE : 0 Ye-R
WIDTH : 0
LEVEL :-128
CH2 A.PHASE :[PUSH R] 1SEC
PHASE : 0 Ye-R
WIDTH : 0
LEVEL :-128
INITILIZE :[PUSH L+R] 2SEC
■AUTO WHITE [FILE1]
SPEED :STANDARD
HIGH LIMIT :10000K
LOW LIMIT : 2500K
WHITE GATE :OFF
GATE AREA H : 4
GATE AREA V : 2
INITILIZE :[PUSH L+R] 2SEC
■SYSTEM
ANALOG OUT SEL. :SD TV
RGB/Y Pb Pr :RGB
[EXT. SYNC SW] :INPUT
SYNC/HDVD SEL. :SYNC
SYNC IN(BNC) :75 ohm
H PHASE : 0
REMOTE : 9600 bps
MESSAGE RTN :ON
■ID/TITLE
ID :OFF
TITLE :OFF
DATA SET :▶
■DATA SET
ID :
TITLE :
1234567890_?
ABCDEFGHIJKL
MNOPQRSTUVWX
YZ◇+−/*.,:;
◀ ▶ DEL INS RET
■LENS
LENS TYPE :VIDEO
* IRIS MODE :---
* IRIS SPEED :---
* OPEN LIMIT :---
* CLOSE LIMIT :---
IRIS GAIN : 0
L H
INITILIZE :[PUSH L+R] 2SEC
■OTHER FUNCTION
DYNAMIC CHROMA :OFF
DNR :OFF
FLARE :ON
R FLARE : 0
G FLARE : 0
B FLARE : 0
INITILIZE :[PUSH L+R] 2SEC
■TIME/DATE
[2009-11-13. 14:02:12]
YEAR :2009
MONTH : 11
DATE : 13
HOUR : 14
MINUTE : 02
SET DATA :[PUSH R]

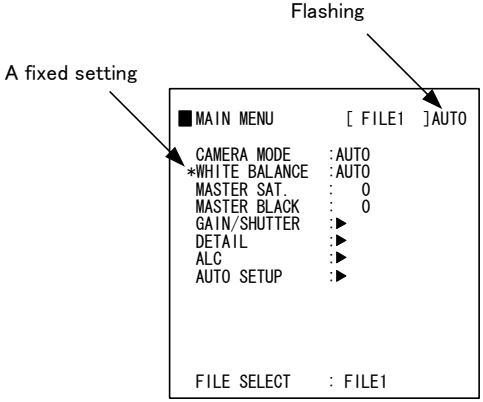
2. MAIN MENU

1) CAMERA MODE : Camera mode

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

In the AUTO mode, the "*" mark is displayed at the following function items. The setting of these items is fixed in this mode and can not be changed. The Auto indication flashes when a function is related to the auto mode.

MENU		Function and Mode
(MAIN MENU)	WHITE BALANCE	AUTO
(GAIN/SHUTTER)	GAIN	AUTO
(GAIN/SHUTTER)	SHUTTER	AES
(LEVEL)	ENABLE	OFF
(GAMMA/KNEE)	GAMMA	ON
(GAMMA/KNEE)	KNEE	AUTO



2) WHITE BALANCE : White balance mode

The hue(white balance) of the camera image is adjusted that changes with the various illuminations. When white subject is captured, the hue is adjusted for the camera image to be white.

- PRST 3200K : The white balance condition is optimized at a color temperature of 3200K. (Halogen lamp etc.)
- PRST 5600K : The white balance condition is optimized at a color temperature of 5600K. (Sun light etc.)
- MEMORY (4400K) : White balance is automatically adjusted by the direct mode AWB button. The approximate standard color temperature is displayed into [ ] after adjustment.
- 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) MASTER SAT : The density of color(Chroma) of entire image is adjusted.

The master saturation level can be set in a range of -128 to 127. The color of the entire image will be light on the –side and dense on the +side. For zero (0) setting, hold down both the L and R buttons for approx. 2 seconds.

4) MASTER BLACK : Black brightness of the image is adjusted.

It is used when black portions are whitish or black saturations occur.

The master black level can be set in a range of -128 to 127. The black level will be lower on the –side and higher (whiten) on the +side. For zero (0) setting, hold down both the L and R buttons for approx. 2 seconds.

5) GAIN/SHUTTER : Change to GAIN/SHUTTER menu.

6) DETAIL : Change to DETAIL menu.

7) ALC : Change to ALC menu.

8) AUTO SETUP : Change to AUTO SETUP menu.

9) FILE SELECT : Select among scene files 1, 2, 3, and 4.
The most suitable camera setting for a scene can be stored in each scene file and can be selected from these scene files. In addition, scene file can also be changed by pressing SCENE FILE SELECT button of the front panel.

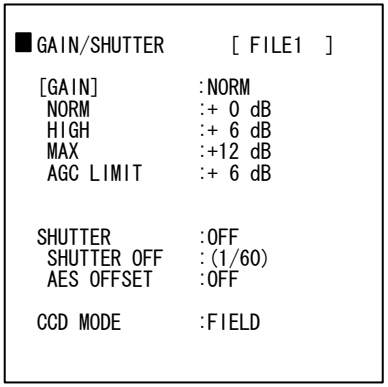
3. GAIN/SHUTTER

This menu is for camera brightness adjustment.

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 noise is also amplified.

[GAIN] : **State of the GAIN switch of front panel.**
There is fixed mode of NORM/HIGH/MAX GAIN and AUTO mode of self adjustment in proportion to the brightness.

- NORM : Electric sensitivity(0 to 18dB) is set when the GAIN switch is at the position of NORM.
- HIGH : Electric sensitivity(1 to 17dB) is set when the GAIN switch is at the position of HIGH.
- MAX : Electric sensitivity(2 to 18dB) is set when the GAIN switch is at the position of MAX.
- AUTO : AGC(Auto Gain Control) Limit is set when the GAIN switch is at the position of MAX. The Gain is set automatically in the limit(0 to AGC LIMIT) in proportion to the brightness.



Note: In the CAMERA MODE: AUTO, GAIN is fixed at AGC.
MAX can not be set less than HIGH.

2) SHUTTER : Electronic shutter mode

Shutter adjusts the light receiving time of CCD. It is used to adjust too bright subject and to reduce the after-image of the moving object. Using SHUTTER makes the image darker.

Note: If a blinking light source such as a fluorescent lamp is used, flicker occurs. The inverter fluorescent lamps of high blinking frequency are not like to give influence although the flicker occurs in case of inverter fluorescent lamps which include low blinking frequency components.

- OFF : Electronic shutter does not operate.
- PRESET : Shutter operates at the shutter speed set from the following shutter preset speed. It is selected from 1/100 (59.94Hz mode), 1/60 (50Hz mode), 1/250, 1/500, 1/1000, 1/2000, 1/4000 and 1/10000 second.
- VARIABLE : Shutter operates at the shutter speed set from the following shutter variable speed.
  1/59.94 to 1/10087s : (59.94Hz mode)
  1/50 to 1/8414s : (50Hz mode)

- AES : Auto Electronic Shutter
  Electronic shutter is automatically controlled according to the brightness of the subject. 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.
  Its shutter speed is limited by the following AES LIMIT setting.
  LIMIT can be set in the range below. (AES OFFSET : OFF)
  [59.94Hz mode] 1/59.94 to 1/10087s
  [50Hz mode] 1/50 to 1/8414s

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 1/10087s
AES OFFSET : ON [50Hz mode] 1/60 to 1/8414s

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

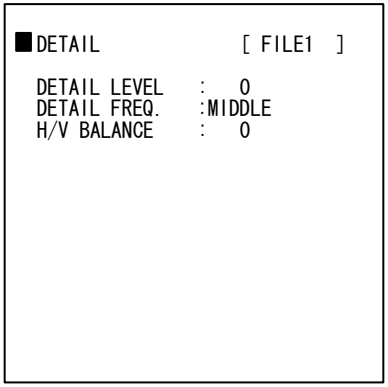
3) CCD MODE : CCD store mode

(It is not displayed in 720p mode because of non availability.)

- FIELD : The field integration mode operation is performed (for ordinary purpose of application).
- FRAME : Frame integration mode; although vertical resolution is improved, image lag is slightly increased. It is suggested for still images.

4. DETAIL : DETAIL level setup

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



1) DETAIL LEVEL : Setting of contour correction amount

The DETAIL 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 factory setting, hold down both the L and R buttons for approx. 2 seconds.

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

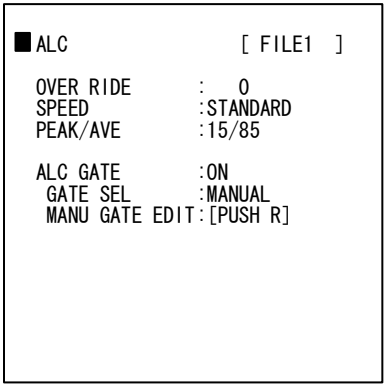
- LOW : DETAIL level decrease and a picture becomes soft.
- MIDDLE : DETAIL level is standard.
- HIGH : DETAIL level increase and a picture becomes sharp.

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

Setting range is -32 to 31. The horizontal detail amount will be lower on the –side and vertical detail amount will be lower on the +side. Press the L and R buttons simultaneously for about 2 seconds for factory setting(0).

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.
  It is used where variations are sudden, such as changing a microscope magnification.

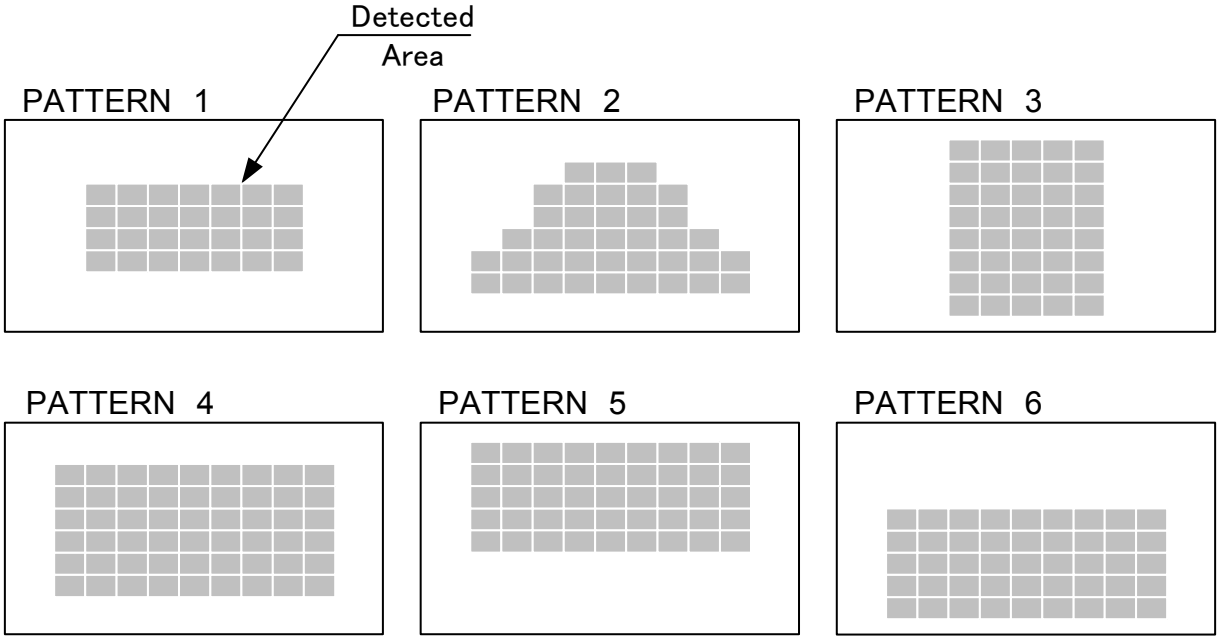
3) PEAK/AVERAGE : Set auto level control for Peak or Average in 4 steps of 50/50, 25/75, 18/85 or 0/100.
At high Average setting, background may be difficult to see in picture bright components. Increasing the Peak setting may render spotlighted components easier to see.

4) ALC GATE : ON/OFF toggle

- ON : Video signal of the specified area is detected for controlling AGC, lens and ALC of auto electronic shutter. GATE SELECT is displayed 1 line below and the detection area can be selected.

- OFF: Video signal of the entire screen is detected for ALC control.

5) GATE SELECT : ALC gate area setting. (It is displayed only for ALC GATE : ON)
User can select pattern arbitrarily from MANUAL mode along with fixed 6 patterns from Mode 1 to Mode 6.

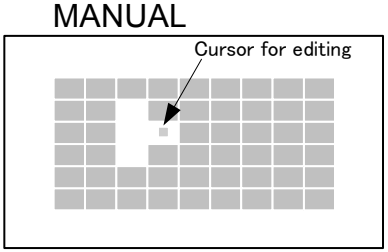


6) MANU GATE EDIT : Manual ALC gate pattern setting

(It is displayed only for ALC GATE : ON and GATE SELECT : MANUAL)

Move the cursor to MANU GATE EDIT:[PUSH R] of ALC Menu. Press "R" button on the camera's front face to ALC gate edit mode.

In the ALC gate edit mode the current MANUAL GATE photometry area and cursor to edit this area is displayed, and arbitrary photometry area can be specified.



<How to edit ALC gate pattern>

a) Move the cursor by pressing "L", "R", "U" and "D" button on the camera's front face to specify the desired photometry area (or exclude the gate area).

b) Push the menu button to ON/OFF the photometry area at the cursor position.

c) Repeat the above steps(a, b) to set arbitrary gate pattern.

d) Exit from MANUL GATE setting menu

Press both "L" and "R" buttons on the camera's front face for 2 seconds or more.

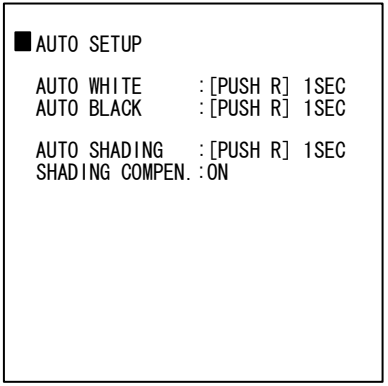
APPLY:[PUSH D] and CANCEL:[PUSH L] will be displayed.

Press "D" button to save the edited ALC gate setting and to exit from ALC gate edit mode.

Press "L" button to cancel the edited ALC gate setting and to exit from ALC gate edit mode

6. AUTO SETUP

Menu for initial image adjustment



1) AUTO WHITE : Automatically adjust the white balance.

Move the cursor to AUTO WHITE and press and "R" button for 1 second or more for automatic white balance adjustment. The same function can be executed also by pressing the "AWB" button on the camera's front face for 2 seconds, when the menu is not displayed. Set WHITE BALANCE of MAIN MENU to MEMORY before executing this function.

2) AUTO BLACK: Color balance drift of the dark side is automatically adjusted.

Move the cursor to AUTO BLACK and press "R" button for 1 second or more to execute the AUTO BLACK function.

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

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 and press "R" button for 1 second or more to execute the AUTO SHADING function.

4) SHADING COMPEN.: Shading correction by AUTO SHADING is turned ON/OFF.

If AUTO SHADING is executed in OFF state, the adjustment result is memorized in the camera, but shading correction is not effective.

7. SPECIAL SET

SPECIAL SET menu allows more detailed settings for the camera.

(Please refer to Page 12 for the display method of the SPECIAL SET menu.)

1) FILE SET : Change to FILE SET menu
File operations, such as copy settings between scene files.

2) LEVEL : Change to LEVEL menu.
Sets black and signal levels of R and B image signals.

3) MASKING : Change to MASKING menu.
Sets 6/12 vector masking correction.

4) GAMMA/KNEE : Change to GAMMA/KNEE menu.
Gamma response, KNEE characteristics are set.

5) DETAIL : Change to DETAIL menu.
DETAIL boost frequency, color, crisp and other properties are set.

6) AUTO WHITE : Change to AUTO WHITE menu.
Sets color temperature range and correction speed of AUTO WHITE and detection area of screen.

7) SYSTEM : Change to SYSTEM menu.
Sets the MULTI connector I/O signals, external synchronization and external control signals of camera back panel.

8) ID/TITLE : Change to ID/TITLE menu.
The comment can be displayed on screen. The ID can be used to distinguish when several cameras are controlled with PC.

9) LENS : Change to LENS menu.
Set for optimum lens operation. Setting is required according to the lens type.

10) OTHER FUNCTION : Change to OTHER FUNCTION menu
Sets saturated portion color correction, flare correction, and noise reduction.

11) TIME/DATE : Change to TIME/DATE menu.
The calendar of the camera is matched to time.

8. FILE SET

Used for transferring scene file data to another file or setting all data to preset values, and also the setting information can be saved to SD card an read back.

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 R button for more than 1 second to transfer selected scene file data to store file.

4) FILE NAME SET : Change to FILE NAME SET menu.
FILE1 to FILE4 can be changed to user defined name.

5) All INITIALIZE : Press L and R button simultaneously for more than 2 seconds to copy preset data to all scene files. (Initialize to factory condition)

6) SD CARD : It is displayed only when the SD card has been inserted.
Change to SD CARD menu.

(**Note: SD** card and **SDHC** card can be used in this camera.)

9. FILE NAME SET

FILE1 to FILE4 can be changed to user defined name.

<How to set scene file name>

a) When the cursor is at FILE1~4, press the R button.
The first character of the setting data blinks in edit mode.

b) Use L, R, U and D buttons to select an input character from the character table.

c) Press the MENU button to enter the selected character. (Now the next character can be edited.)

d) Repeat the above steps (b, c) to set file name.

e) On completion of character input, move the cursor to RET using the L, R, U or D button and press the MENU button to exit from the edit mode.

◀ : Blinking shifts one character toward the left.

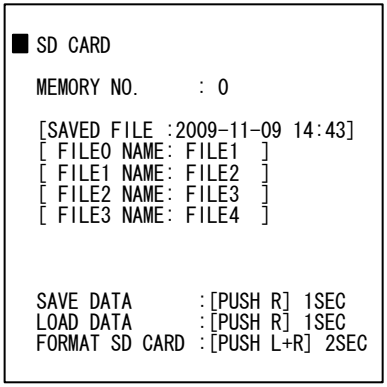
▶ : Blinking shifts one character toward the right.

DEL : Blinking character is deleted, and the subsequent character string is shifted left.

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

RET : The cursor is moved to FILE NAME SET.

10. SD CARD (It is displayed only when the SD card has been inserted.)



1) MEMORY NO. : The file number is selected in which camera settings are saved(or read). File0~9 can be selected.

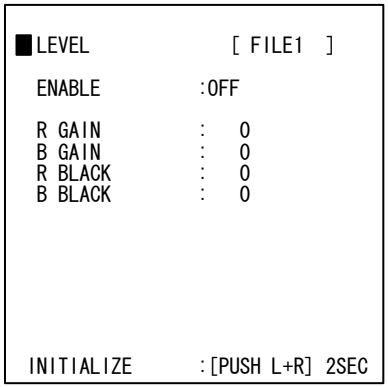
2) SAVE DATA : Press R button for more than 1 second to save all the camera menu settings to the SD card.

3) LOAD DATA : Press R button for more than 1 second to load the setting data saved to the SD card.
(It is displayed only when SD card has valid data.)

4) FORMAT SD CARD : Formats the SD CARD.
Press L and R button for more than 2 seconds to format the SD card.

11. LEVEL

The hue in dark and bright part of the red and blue image signal is adjusted.



1) ENABLE : Level control ON/OFF setting.
Note : ENABLE is fixed at OFF for CAMERA MODE : AUTO.

2) R GAIN : Sets bright part of red
The allowable setting range is -128 to 127. Press the R button to increase the Red video signal gain and press the L button to decrease the Red video signal gain. Press the L and R buttons simultaneously for about 2 seconds for 0 (zero) setting.

3) B GAIN : Sets bright part of blue
The allowable setting range is -128 to 127. Press the R button to increase the Blue video signal gain higher and press the L button to decrease the Blue video signal gain. Press the L and R buttons simultaneously for about 2 seconds for 0 (zero) setting.

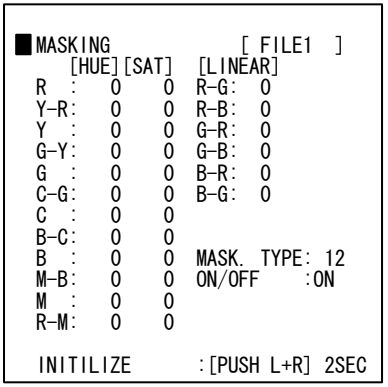
4) R BLACK : Sets dark part of red
The allowable setting range is -128 to 127. Press the R button to increase the Red video signal black level and press the L button to decrease the Red video signal black level. Press the L and R buttons simultaneously for about 2 seconds for 0 (zero) setting.

5) B BLACK : Sets dark part of blue
The allowable setting range is -128 to 127. Press the R button to increase the Blue video signal black level and press the L button to decrease the Blue video signal black level. Press the L and R buttons simultaneously for about 2 seconds for 0 (zero) setting.

6) INITIALIZE : Initializes the LEVEL menu settings. Press L and R buttons simultaneously for about 2 seconds for initialization. (Only the selected scene file is initialized.)

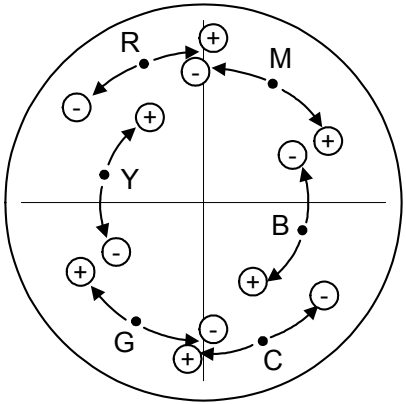
12. MASKING

Menu for tone adjustment of selected color.
There are 6/12 vector [HUE] and [SAT] masking for correction of hue and saturation and [LINEAR] masking for correction of hue while keeping picture brightness fixed.



The HUE/SAT is adjusted for Red(R), Green(G), Blue(B), Yellow(Y), Cyan(C) and Magenta(M) in 6 color mode and for natural tint of those color in 12 color mode. MASK. TYPE setting sets the color mode.
These settings are effective when ON/OFF of MASKING menu is set to ON.

1) R HUE : Changes hue of red color.
2) Y-R HUE : Changes hue of natural tint of red and yellow.
3) Y HUE : Changes hue of yellow color.
4) G-Y HUE : Changes hue of natural tint of green and yellow.
5) G HUE : Changes hue of green color.
6) C-G HUE : Changes hue of natural tint of cyan and green.
7) C HUE : Changes hue of cyan color.
8) B-C HUE : Changes hue of natural tint of blue and cyan.
9) B HUE : Changes hue of blue color.
10) M-B HUE : Changes hue of natural tint of magenta and blue.
11) M HUE : Changes hue of magenta color.
12) R-M HUE : Changes hue of natural tint of red and magenta.



The above items can be set in the range from -64 to 63. Respectively press the R button to increase and the L button to decrease the vector color hue as indicated in the figure. Each item is set to 0 by simultaneously pressing the L and R buttons for about 2 seconds.

13) R SAT : Changes chroma of red color.
14) Y-R SAT : Changes chroma of natural tint of red and yellow.
15) Y SAT : Changes chroma of yellow color.
16) G-Y SAT : Changes chroma of natural tint of green and yellow.
17) G SAT : Changes chroma of green color.
18) C-G SAT : Changes chroma of natural tint of cyan and green.
19) C SAT : Changes chroma of cyan color.
20) B-C SAT : Changes chroma of natural tint of blue and cyan.
21) B SAT : Changes chroma of blue color.
22) M-B SAT : Changes chroma of natural tint of magenta and blue.
23) M SAT : Changes chroma of magenta color.
24) R-M SAT : Changes chroma of natural tint of red and magenta.

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 chroma of each color. Each item is set to 0 by simultaneously pressing the L and R buttons for about 2 seconds.

(Reference)
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.)

25) RG LINEAR : Color density and hue are changed in the direction of red-cyan axis. Blue and yellow do not change.

26) RB LINEAR : Color density and hue are changed in the direction of red-cyan axis. Green and magenta do not change.

27) GR LINEAR : Color density and hue are changed in the direction of green-magenta axis. Blue and yellow do not change.

28) GB LINEAR : Color density and hue are changed in the direction of green-magenta axis. Red and cyan do not change.

29) BR LINEAR : Color density and hue are changed in the direction of blue-yellow axis. Green and magenta do not change.

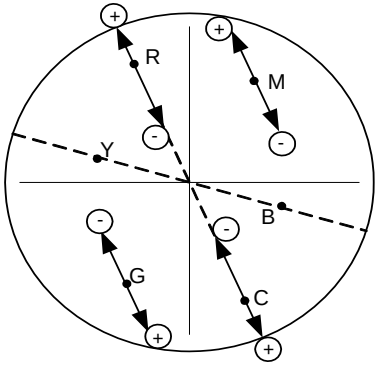
30) BG LINEAR : Color density and hue are changed in the direction of blue-yellow axis. Red and cyan do not change.

31) MASK. TYPE : Masking color mode 6 or 12 color is set.
(In 6 color mode since the intermediate colors other than R/Y/G/C/B/M are automatically set, simple adjustments can be made.)

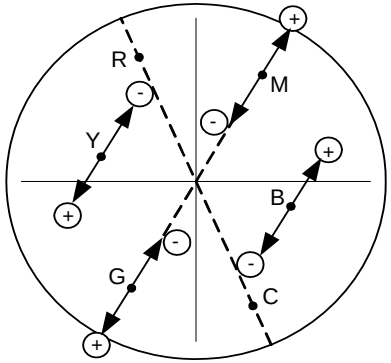
32) ON/OFF : Masking corrections are effective in the ON state.
(All the masking menu settings become invalid in the OFF state.)

33) INITIALIZE : Initializes MASKING menu settings to preset values. Press L and R buttons simultaneously for about 2 seconds for initialization. (Only the selected scene file is initialized.)

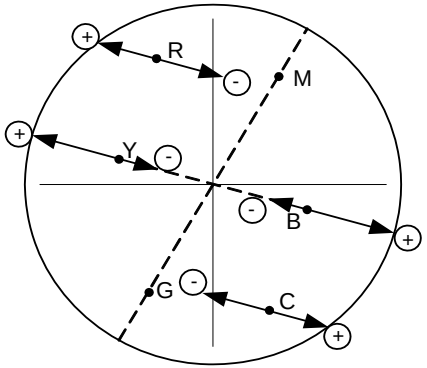
The following diagrams illustrate linear masking(LINEAR) operations.



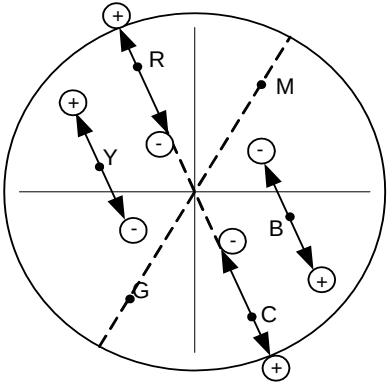
RG LINEAR



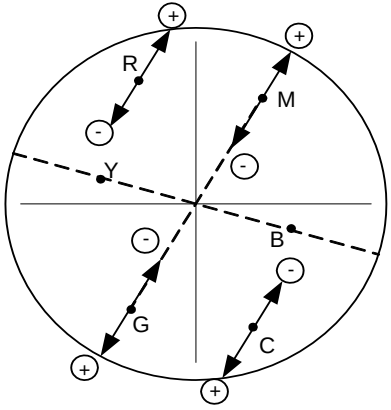
GB LINEAR



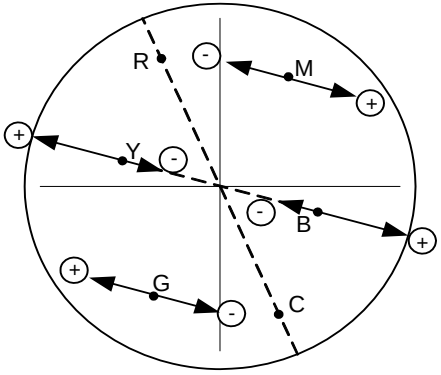
BR LINEAR



RB LINEAR



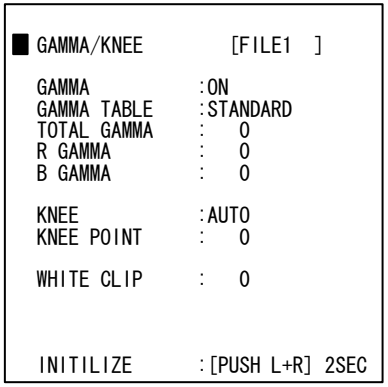
GR LINEAR



BG LINEAR

13. GAMMA/KNEE

Menu for gamma correction and knee(compression of bright part)correction.



1) GAMMA : Gamma ON/OFF

- OFF : Gamma correction will not effective.
- ON : Gamma correction will be effective. (Usual usage)

(ON is selected unconditionally for CAMERA MODE: AUTO).

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

6) KNEE : Sets operation mode of knee correction.
KNEE correction is a function that compresses the high luminance part and makes the image difficult to saturate even for bright subjects.

- OFF : KNEE correction is not operated.
- ON : It provides natural gradation in bright portions.
- AUTO KNEE : Gradation in bright components is automatically optimized even with scene changes.

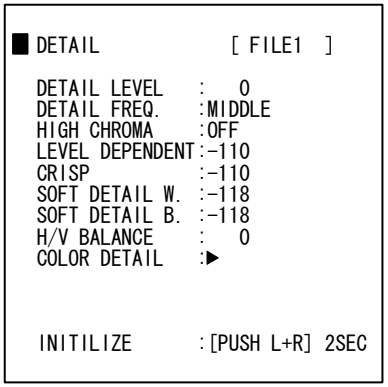
7) KNEE POINT : Sets Knee point(Starting point of high luminance compression).
Use L and R to set in the range -128 (smallest) to 127 (largest).

8) WHITE CLIP : Sets white clip level
Use L and R to set in the range of -128 (lowest) to 0 (highest) clip level. Normally set for clip at about 109% video level. Adjust when there is excess video level from the equipment interface.

9) INITIALIZE : Initialize GAMMA/KNEE menu settings to factory setting. Press L and R buttons simultaneously for about 2 seconds for initialization. (Only the selected scene file is initialized.)

14. DETAIL

Various settings of contour correction.



1) DETAIL LEVEL : Setting of contour correction amount

The DETAIL 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 factory setting, hold down both the L and R buttons for approx. two seconds.
(Same as DETAIL LEVEL function of MAIN MENU.)

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

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

(Same as DETAIL FREQ. function of MAIN MENU.)

3) HIGH CHROMA : High chroma detail on/off setting

The amount of DETAIL for the high chroma subject can be increased for the high chroma parts where the detail is less effective.

- OFF : High chroma detail correction will be off.
- ON : Contours are enhanced for high chroma(strong color) subjects.

4) LEVEL DEPENDENT : Level dependent setting

The noise for dark part of the image is prevented being emphasized in the detail correction.
The detail amount is reduced for image part below a constant level. Setting range is -128 to +127. Press the R button to increase the standard level and effect, dark image becomes soft image. Press L button to decrease the level and effect. (The entire image becomes blur in case of too large setting value.)
Press the L and R buttons simultaneously for about 2 seconds for factory setting.

5) CRISP : Crispness level setting
Minute noise is prevented being emphasized in the detail correction.
The detail signal less than a fixed level is not corrected and detail correction becomes ineffective.
Press the R button to increase the setting level and effect. Press the L button to decrease the setting level and reduce effect. (The entire image becomes blur in case of too large setting value.) Press the L and R buttons simultaneously for about 2 seconds for factory setting.

6) SOFT DETAIL W. : Limits the maximum DETAIL level in bright image portions.
DETAIL 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 DETAIL level. SOFT DETAIL W. allows you to set the maximum DETAIL level on the bright side (white). Press the L and R buttons simultaneously for about 2 seconds for factory setting.

7) SOFT DETAIL B. : Limits the maximum DETAIL level in black image portions.
DETAIL 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 DETAIL level. SOFT DETAIL B. allows you to set the maximum DETAIL level on the dark side (black). The limitation of DETAIL amount of Dark part(black) is set. Press the L and R buttons simultaneously for about 2 seconds for factory setting.

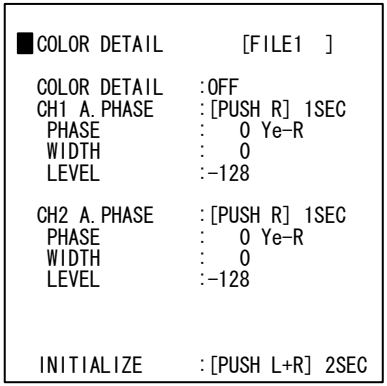
8) H/V BALANCE : Balance setting for horizontal and vertical detail amount
Setting range is from -32 to 31. The horizontal detail amount will be lower on the –side and vertical detail amount will be lower on the +side. Press the L and R buttons simultaneously for about 2 seconds to factory setting(0). (Same as H/V BALANCE function of MAIN MENU.)

9) COLOR DETAIL : Changes to COLOR DETAIL menu.

10) INITIALIZE : Initializes DETAIL menu settings to factory setting.
Press L and R buttons simultaneously for about 2 seconds for initialization. (Only the selected scene file is initialized.)

15. COLOR DETAIL

The amount of an contour enhancement can be set in the specified range of hue.(Ch1, CH2 can be set independently).



1) COLOR DETAIL : Selects color detail mode

- OFF : Color detail is ineffective.
- CH1 ON : Only CH1 is effective (CH2 is ineffective).
- CH2 ON : Only CH2 is effective (CH1 is ineffective).
- CH1&CH2 ON : CH1 and CH2 both are effective.

2) CH1 A. PHASE : Automatic detection of hue of CH1 color detail.
CH2 A. PHASE : Automatic detection of hue of CH2 color detail
When the cursor is moved to this item, the detection mark is displayed at the center of the screen. Move this mark to a portion of the subject in your target color. Then, press the R button for 1 second. The hue of this area is automatically detected and set to phase.

3) PHASE : Sets hue of color detail
Hue is shown by 6 areas and numerical value of -128~127.
(When cursor is at this item, mark is display at the corresponding part and range to set hue.)

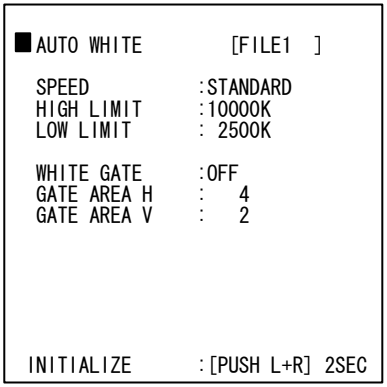
4) WIDTH : Sets range for the hue set in PHASE
Setting range is -128 to 127. Press button R for wide region and L button for narrow region.
(When cursor is at this item, mark is display at the corresponding part and range to set hue.)

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 : Initializes DETAIL menu settings to factory setting.
Press L and R buttons simultaneously for about 2 seconds. (Only the selected scene file is initialized.)

16. AUTO WHITE

Detailed setting concerning white balance correction.



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

- Standard：Usual setting
- Slow ：Sets slow convergence speed.

2) HIGH LIMIT： Sets the upper limit (Blue side) of a color temperature range within which white balance is to be applied. If a Blue subject is excessively corrected to white, a natural image is obtained by reducing this value.
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. If a Red subject is excessively corrected to white, a natural image is obtained by increasing this value.
Range of Setting：2000K ~ HIGH LIMIT
Unit of Setting ：100K

(Complimentary Note)
Real time auto white adjust the white within the range of LOW LIMIT~HIGH LIMIT
There will be the following approx. standard of color temperature.
Light bulb：2800~3500K
Sun light ：5500~6500K

4) WHITE GATE : Sets the gate to adjust the white balance for a part of the screen as a subject. The best balance at the time of real time white balance operation can be controlled by matching the gate to white and gray in the screen.

- ON : Real time auto white balance operation or memory auto white balance is executed for specified detection area.
- OFF : A video signal of the entire image is detected for carrying out white balance control.

5) GATE AREA H : Sets horizontal width of detection gate.
To set this value make the WHITE GATE ON and display the detection gate.

- Setting width : 0 to 10

6) GATE AREA V : Sets vertical width of detection gate.
To set this value make the WHITE GATE ON and display the detection gate.

- Setting width : 0 to 7

7) INITIALIZE : Initializes AUTO WHITE menu settings to factory setting.
Press L and R buttons simultaneously for about 2 seconds. (Only the selected scene file is initialized.)

17. SYSTEM

Menu for settings of image output mode, an external synchronization, and camera control communication. (The external synchronization of this camera is only for HD TV.)

```
SYSTEM

ANALOG OUT SEL. :SD TV
RGB/Y Pb Pr     :RGB

[EXT. SYNC SW]  :INPUT
 SYNC/HDVD SEL. :SYNC IN
SYNC IN(BNC)    :75 ohm
H PHASE         :   0

REMOTE          : 9600 bps
MESSAGE RTN     :ON
```

1) ANALOG OUT SEL : Sets analog signal output mode.

- HD TV : Outputs the analog output signal in HDTV mode. (Only RGB/YPbPr signal is effective in this mode, there is no output signal from VIDEO, VBS and YC terminal.)
- SD TV : Outputs the analog output signal in SDTV mode. There is SDTV picture output signal from VIDEO, VBS terminal other than RGB/YPbPr signal from multi connector.

2) RGB/YPbPr : Changes image output from multi connector.

- RGB : Outputs R, G, B signals.
- Y Pb Pr : Outputs Y Pb Pr (Y, R-Y and B-Y) signals.

3) EXT. SYNC SW : Displays the state of EXT. SYNC switch of camera back panel. (It can not be changed form menu.)

- INPUT : EXT. SYNC switch is set to IN. (External signal input mode)
- OUTPUT : EXT. SYNC switch is set to OUT. (External signal output mode)

(If the EXT. SYNC switch is at OUT, the input signal at SYNC IN BNC connector becomes ineffective.)

4) SYNC/HDVD SEL : Selects external synchronizing signal. (Sync in/out is according to state of EXT. SYNC switch.)

① To synchronize this camera with the synchronizing signal of other HD-TV device.(EXT. SYNC switch is set to IN.)

- SYNC IN : External synchronization with HD-TV sync signal(input from the SYNC IN BNC connector).
- HDVD IN(MULTI) : External synchronization with HD, VD signal(input signals from multi connector(13 pin(HD), 14 pin(VD))

② Synchronizing signal of this camera is output to other HD-TV device. (EXT. SYNC switch is set to OUT)

- SYNC OUT(MULTI) : Outputs the HD-TV sync signal from 13 pin of multi connector
- HDVD OUT(MULTI): Outputs the HD/VD signal of HD-TV from 13 pin(HD) and 14 pin(VD) of multi connector

5) H PHASE : Adjustment of horizontal synchronization phase.

The phase of the image can be adjusted, when there is an input external sync signal and camera is operating in external sync mode.

The allowable setting range is -128 to 127.

Note: There is no external synchronization, if the input external sync signal is not corresponding to set TV system. SDTV signal can not be synchronized with external sync signal.

6) SYNC IN(BNC) : Changes input impedance of SYNC IN connector(BNC connector).

- HIGH : high impedance
- 75 ohm : 75Ω impedance

Note: When the camera is turned off, it becomes high impedance. So, do not use this camera in a system which causes camera to be turned off.

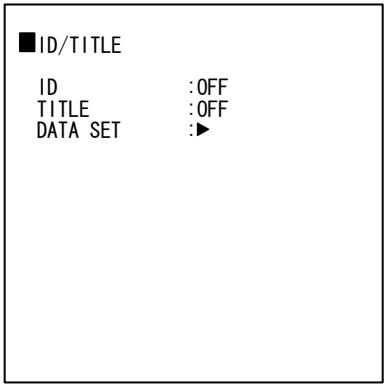
7) REMOTE : Sets the remote control baud rate.
Selects from 9600bps and 19200bps. (When RS-232C/RC-Z3 switch is at RC-Z3, it allows 9600bps only)

8) MESSAGE RTN : Message display ON/OFF

- ON : Displays the result of AWB execution in the DIRECT mode.
- OFF : The result of AWB execution in the DIRECT mode is not displayed.

18. 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.
- ON : Displayed at the upper right corner of screen

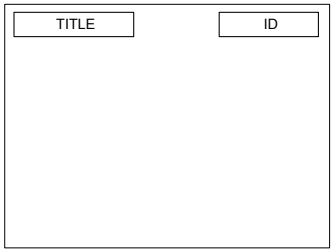
2) TITLE : At this function item, specify whether the TITLE is displayed on screen or not. In case that the TITLE is displayed on screen, specify its display position also.

- OFF : Not displayed.
- ON : Displayed at the upper left corner of screen

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 and a space character are permitted.



ID/TITLE Display Position

<ID/TITLE Setup Procedure>

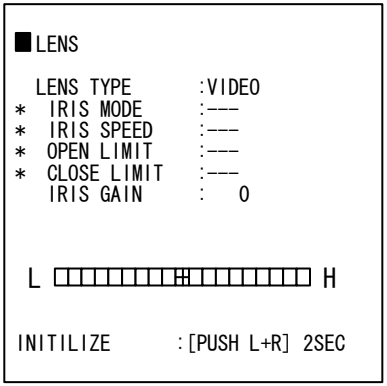
a) When the cursor is at ID or TITLE, press the R button.
   The first character of the setting data blinks in edit mode.
b) Use L, R, U and D buttons to select an input character from the character table.
c) Press the MENU button to enter the selected character. (Now the next character can be edited.)
d) Repeat the above steps (b, c) to set ID or TITLE.
e) On completion of character input, move the cursor to RET using the L, R, U or D button and press the MENU button to exit from the edit mode.

◀ : Blinking shifts one character toward the left.
▶ : Blinking shifts one character toward the right.
DEL : Blinking character is deleted, and the subsequent character string is shifted left.
INS : A space is inserted at the blinking character position, and the subsequent character string is shifted right.
RET : The cursor is moved to DATA SET

(_ indicates blank)

19. 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. (Effective only for DC Lens Type).

- AUTO : Sets auto iris
- MANUAL : Used for manual iris and microscopes.

Note: Please be sure to set the Open Limit and Close Limit in the AUTO iris mode when using the camera for the first time or after replacing the lens.

3) IRIS SPEED : Sets auto iris speed. (Effective only for DC Lens Type).

Sets speed in a range of 0 to 15 at which camera controls the lens iris. 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.

When lens operation is not stable(hunting), use lower value of iris speed.

4) OPEN LIMIT : Sets open limit. (Effective only for DC Lens Type.)

Sets the edge of open side of the lens controlled by auto iris. It just aligns it to open according to specification of lens. Observe the iris and adjust in the range from 0 to 8.0V 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 7.5V.

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

5) CLOSE LIMIT : Sets close limit. (Effective only for DC Lens Type.)
Sets the edge of close side of the lens controlled by auto iris. It just aligns it according to specification of lens. Observe the iris and adjust to precisely the largest value (smallest diameter). The setting range is from 0 to 8.0V. Press R to increase and L to decrease the setting. Press L and R buttons simultaneously for about 2 seconds to set to 2.5V.

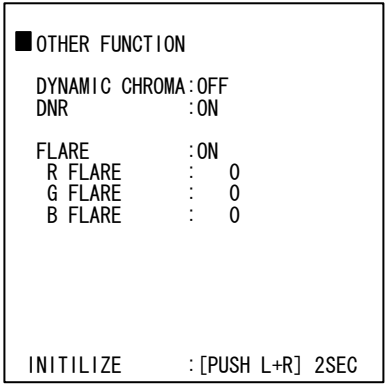
6) IRIS GAIN : Sets gain of auto iris control signal. (Effective only for VIDEO Lens Type.)
Adjusts standard level of the lens control signal. The setting range is from -128 to 127. Adjust the lens Level control to overlap the level indicator mark ■ (which is usually displayed at the bottom of the screen at 0 setting) with the + mark at the center. central marker of the video signal level indicator. Refer to description of video signal type lens adjustment (page 9).

Note:

1. Be sure to execute the adjustment of the lens when using the camera for the first time or after replacing the VIDEO type lens.
2. Before adjusting Iris Gain, be sure to set the AGC to OFF, and Over-ride to 0.

7) INITIALIZE : Initializes LENS menu settings to factory setting. Press L and R buttons simultaneously for about 2 seconds for initialization.

20. OTHER FUNCTION



1) DYNAMIC CHROMA : Dynamic chroma ON/OFF setting
- OFF : Dynamic chroma function becomes ineffective.
- ON : Improves coloration in bright scene components.

2) DNR : Digital noise reduction setting
The noise in the image is reduced. (However, the image resolution falls slightly.) MODE2 provides greater noise reduction than MODE1.
- OFF : DNR function becomes ineffective.
- MODE1 : DNR MODE1 becomes effective.
- MODE2 : DNR MODE2 becomes effective.

3) FLARE : Flare compensation ON/OFF setting
Corrects for extraneous reflections in the optical and CCD systems which ends to weaken bright image components. Normally set to on.

4) R FLARE : Sets flare compensation for Red
The setting range is from 0 to 64. Set large values for large compensation.

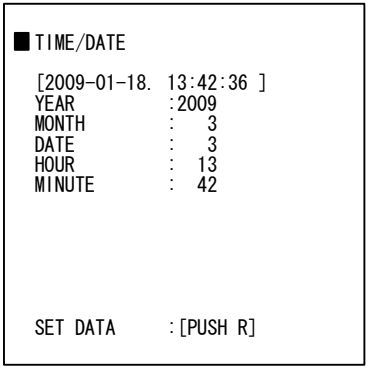
5) G FLARE : Sets flare compensation for Green
The setting range is from 0 to 64. Set large values for large compensation.

6) B FLARE : Sets flare compensation for Blue
The setting range is from 0 to 64. Set large values for large compensation.

7) INITIALIZE : Initializes OTHER FUNCTION menu settings to factory setting. Press L and R buttons simultaneously for about 2 seconds for initialization.

21. TIME/DATE

Menu for setting the internal clock of the camera.



1) YEAR : Sets year

2) MONTH : Sets month

3) DATE : Sets date

4) HOUR : Sets hour

5) MINITUTE : Sets minute

6) SET DATA : Press R button to set the internal clock of the camera as above specified.

Black balance adjustment

Under normal condition, it is not required to make black balance adjustment at power-on.

1. In the menu mode, display the AUTO SETUP and move the cursor to AUTO BLACK. Push R button for 1 second or more to carry out automatic black balance adjustment. At the end of successful adjustment AUTO BLACK:OK appears.

   Notes : 1) Where the lens having the auto iris function is used, the iris is closed automatically during adjustment.

   2) In combinational use with the manual iris lens or microscope, When taking a picture after adjustment, a white screen image appears momentarily. This phenomenon is not an error.

   3) In case that the manual iris lens is used, do not attempt auto black balance adjustment while taking an image of subject having extremely high luminance such as the sun. This may deteriorate black balance accuracy.

2. If black balance adjustment cannot be made, any one of the following messages will appear. Take a proper procedure according to the error message, and then try again black balance adjustment.

Error message	Procedure
AUTO BLACK:NG CHANGE TO CAMERA TRY AGAIN	・Turn off the color bar.
AUTO BLACK : NG	・Close the lens iris. ・Avoid taking an image of subject having high luminance such as the sun, or decrease illumination on the microscope. ・Carry out AUTO BLACK again. If this message appears in repeated attempts, it is necessary to inspect the inside of the camera. In this case, contact your local Hitachi Kokusai Electric sales dealer or Hitachi Kokusai Electric service center.

White Balance Adjustment (WHITE BALANCE:MEMORY)

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 WHITE BALANCE to MEMORY.
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 messages of following page will appear. Take a proper procedure according to the error message, and then try again white balance adjustment.

Error message	Procedure
AUTO WHITE : NG CHANGE TO CAMERA TRY AGAIN	• Turn off the color bar.
AUTO WHITE : NG CHANGE WHITE BALANCE TO MEMORY TRY AGAIN	• Set WHITE BALANCE: MEMORY
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. • Preass again the AWB switch.
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. • Preass again the AWB switch.
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.
CAMERA MODE : AUTO CHANGE TO MANUAL	• Set camera mode to manual. • Preass again the AWB switch.

Realtime Auto White (WHITE BALANCE:AUTO)

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 BALANCE: 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 page 39. 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.

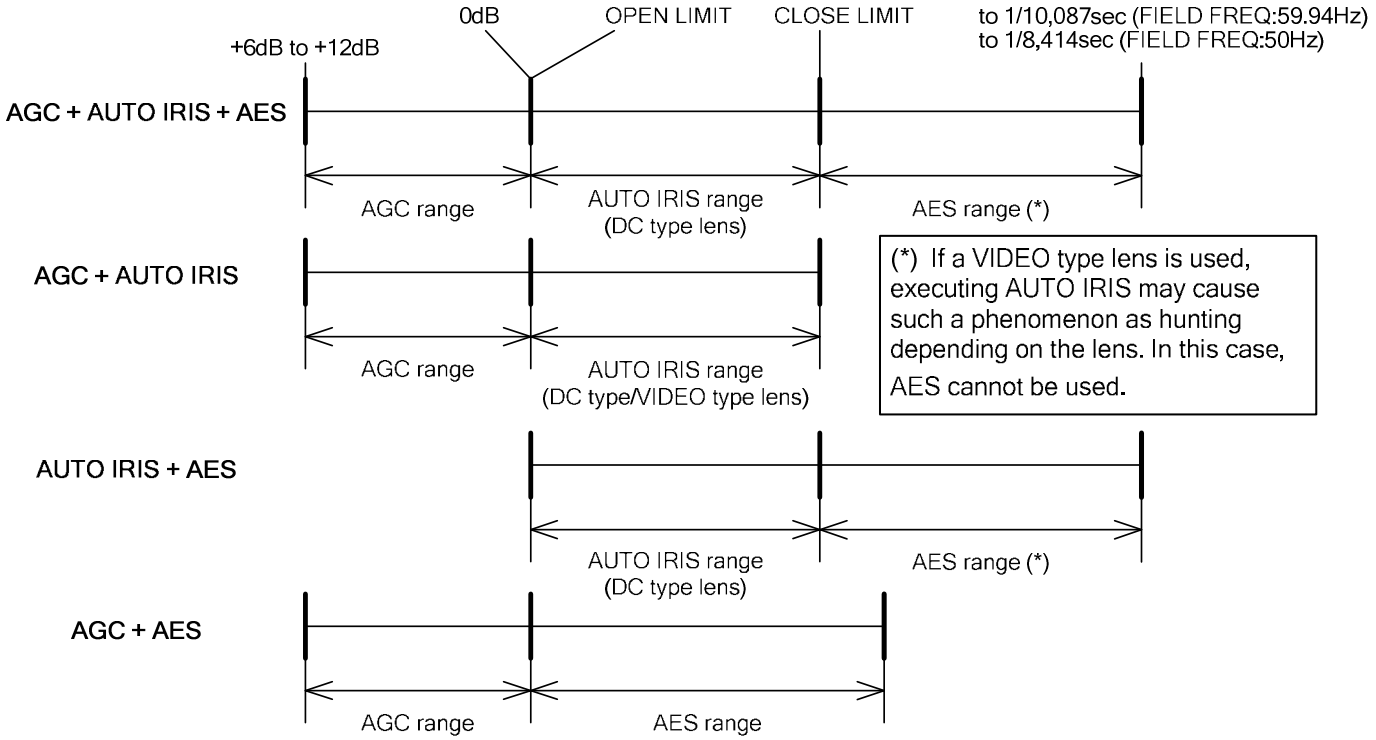
1. Provide a proper aperture value of lens using the auto iris function or manually.
2. Take an white image fully on screen. At this step, take care so that uneven brightness will not occur in the vertical direction.
3. In the DIRECT mode, press the AWB button more than 2 seconds or Move the cursor "■" to AUTO WHITE, press "R" button for 1 second or more to carry out automatic white balance adjustment.
4. Move the cursor "■" to AUTO SHADING and press "R" button to execute AUTO SHADING function. 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/SHUTTER menu SHUTTER or SHUTTER VAR. setting) 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.
Set camera's rear panel switch RS-232C/RC-Z3 to RC-Z3 to connect the remote control panel.

Operation

(1) Direct control

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

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

(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.

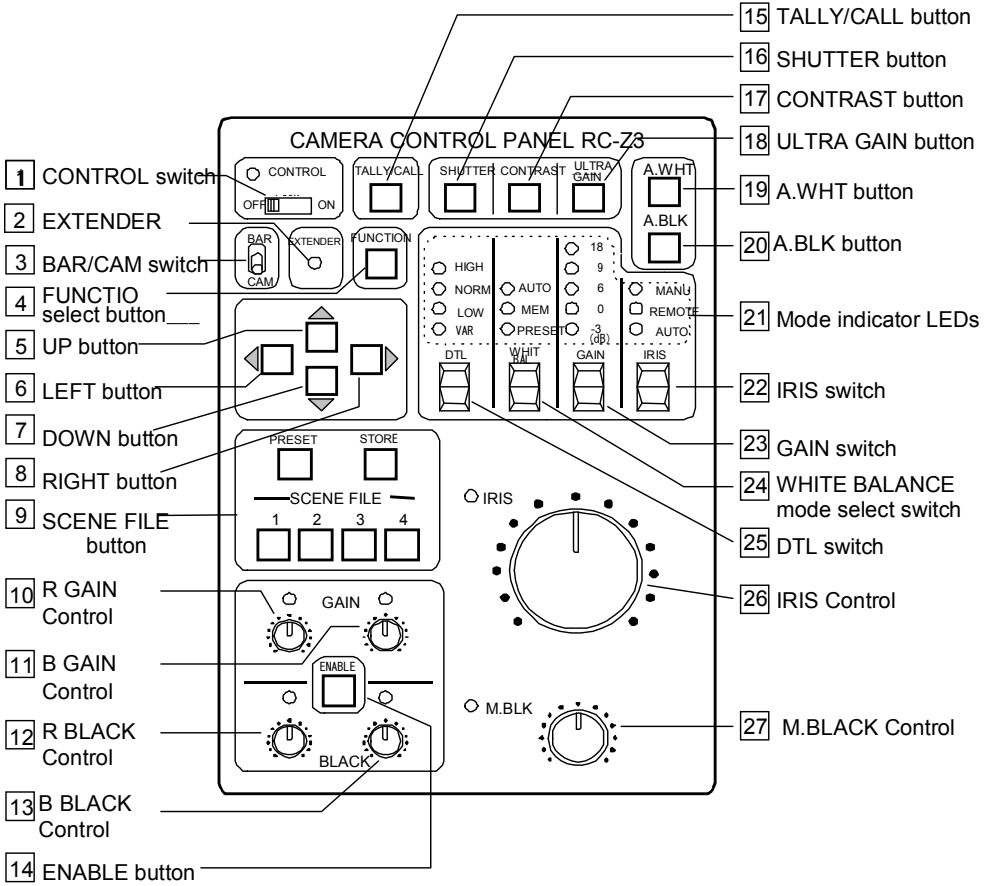
Note: While pressing the UP button presses the FUNCTION button for 2 seconds to produce the special set mode. The SPECIAL SET menu appears.

(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-HD201 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 differnt 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-HD201 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-HD201 camera.

18 ULTRA GAIN button

Ultra gain on/off. However, function is ineffective in the HV-HD201 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

Direct mode: Press A.BLK to conduct automatic black balance (button lights).

Menu mode ： A.BLK button operation is inhibited.

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-HD201 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→18 dB. The sensitivity setting is indicated by the combined GAIN LED indication.

Note: When CAMERA 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 CAMERA 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 DETAIL 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.

Connectors

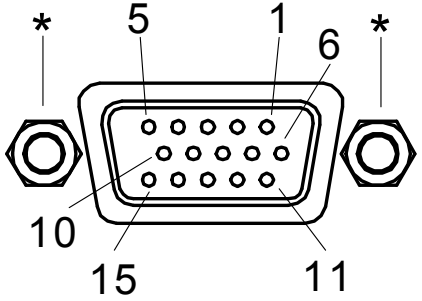
MULTI connector (DMSH-15S)

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

*TXD/RXD and the REMOTE connector can not be used simultaneously.

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

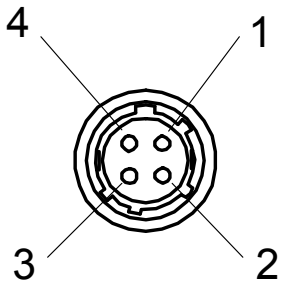
＊ Use No.4-40UNC plug retaining screws.



REMOTE connector (HR10A-7R-4S)

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

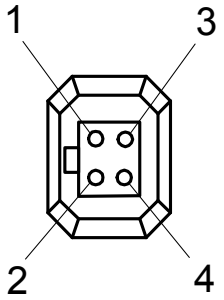
Plug: HR10A-7P-4P



LENS connector (D4-151N-100)

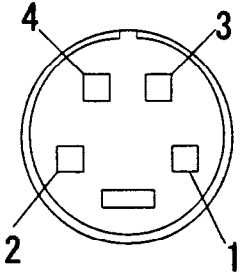
Pin No.	Signal
1	+12V
2	NC
3	Control
4	GND

Plug: E4-191J-100



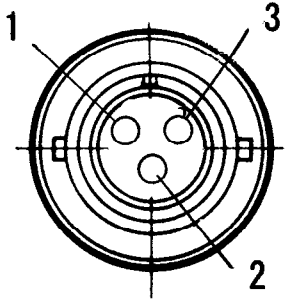
Y/C connector(TCS-7547-01-401)

Pin No.	Signal
1	Y GND
2	C GND
3	Y output
4	C output



DC 12V IN connector(RMI12BRD-3PH)

Pin No.	Signal
1	+12V input
2	GND
3	NC



External synchronization

HV-HD201 inputs or outputs the external synchronizing signal of HDTV and can synchronize video and other similar cameras. when the synchronization signal is input(or output), set the camera menu and EXT. SYNC switch of the camera back panel referring to the table below in advance.

		Camera menu setting [SPECIAL SET] → [SYSTEM] SYNC/HDVD SEL	
		SYNC xxx	HDVD xxx
EXT. SYNC switch setting	IN	[A] : SYNC input*1 [B] : —— [C] : ——	[A] : —— [B] : HD input*1 [C] : VD input *1
	OUT	[A] : —— [B] : SYNC output [C] : (VD output)	[A] : —— [B] : HD output [C] : VD output

[A]～[C] in above mentioned table, corresponds to the following connectors.

A : "SYNC IN" BNC connector
B : "MULTI" connector 13 No. terminal
C : "MULTI" connector 14 No. terminal

***1 : It can not operate with synchronization signal of SDTV.**
Input the synchronization signal corresponding to the operation of HDTV.

Specifications

1)	Mode	HDTV modes 1080/59.94i, 1080/50i, 720/59.94p, 720/50p SDTV modes(Analog output only) 480/59.94i, 576/50i
2)	Image sensor	1/2-size CCD image sensor (Image size : 1/2-size)
	Total pixels	1504(H) × 1099(V)
	Effective pixels	1440(H) × 1080(V)
	Effective image area	6.98mm(H) × 3.92mm(V)
3)	Imaging system	R, G, B 3-CCD
4)	Optical system	1/2-size, F1.6 prism
5)	Lens mount	C mount (flangeback 17.526 mm in air)
6)	Horizontal resolution 800 TV lines	(HD-SDI output decode, screen center, DTL : OFF and Y ch)
7)	Standard sensitivity	F8.0 (2000lx, 3200K, reflection ratio 89.9%)
8)	S/N ratio	56dB (HD-SDI output decode , Y ch, 30 MHz)
9)	Minimum illumination	5 lx (F1.6, GAIN+18dB, Video level 50%)
10)	Screen distortion	Below measurement value (lens characteristics is excluded)
11)	Registration	Full screen 0.05% (lens characteristics is excluded)
12)	Gain	0dB to +18dB, 1dB step
13)	Shutter	
	Preset	1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
	Variable	1/60 to 1/10087 (59.94 Hz mode, x0.99/step) 1/50 to 1/8414 (50 Hz mode, x0.99/step)
14)	Gamma correction	0.45(ON)/1.0(OFF)
15)	Detail control	DETAIL level, DETAIL frequency, Level dependent, Crisp, Balance,

		Hi chroma DETAIL, Color DETAIL
16)	Scene files	4 Scene files
17)	Color bar output	ARIB bar
18)	Power supply voltage	12 V DC rating (10.5V~15V)
19)	Power consumption	Approx. 22 W(HV-HD201), Approx. 25 W(HV-HD201M)
20)	Dimensions	HEAD : 50mm(W) x 50mm(H) x 55mm(D) (excluding lens)
		CCU : 188mm(W) x 75mm(H) x 180mm(D)
21)	Mass	HEAD : Approx. 175g (excluding lens)
		CCU : Approx. 2.0 kg
22)	Operating temperature	0 to 40℃
23)	Storage temperature	-20 to 60℃

Input/Output Signals

1. Input signals

1) Synchronization signal input

HDTV Tri-level SYNC : 0.3 Vp-p ±0.1Vp-p (SYNC IN connector)
HDTV HD/VD : 2 to 5 Vp-p (MULTI connector)

Note: External synchronization is possible only with HDTV signal same as video output. It is effective only when the EXT. SYNC switch is set to IN.

2) Serial data input (REMOTE connector)

1.5 Vp-p ±3 dB/High (RC-Z3)
RS-232C level (PC)

Note: Set back panel RC-232C/RC-Z3 switch according to the connected device.

2. Output signal ratings

1) HD SDI output (SDI OUT connector)

0.8 Vp-p/75Ω

2) Component video output (MULTI connector)

Y : 1.0 Vp-p/75Ω
R-Y: 0.7 Vp-p/75Ω
B-Y: 0.7 Vp-p/75Ω

3) RGB output (MULTI connector)

R: 0.7 Vp-p/75Ω
G: 0.7 Vp-p/75Ω
B: 0.7 Vp-p/75Ω

Note: It becomes G on sync and RGB on sync for HDTV and SDTV mode respectively.

4) Composite Video Output (VIDEO Connector)
VBS 1.0 Vp-p/75Ω

5) Y/C Output (S-VIDEO Connector)
Y: 1.0 Vp-p/75Ω
C: NTSC 0.286 Vp-p (Burst)/75Ω
PAL 0.3 Vp-p (Burst)/75Ω

6) HDMI[*1] Output (HD OUT Connector)
([*1] : Only HV-HD201M)

7) Synchronization signal output (MULTI connector)
HDTV 3 value SYNC : 0.3 Vp-p/75Ω
HDTV HD/VD : 2 Vp-p/75Ω
Note: It is effective only when the EXT. SYNC switch is set to OUT.

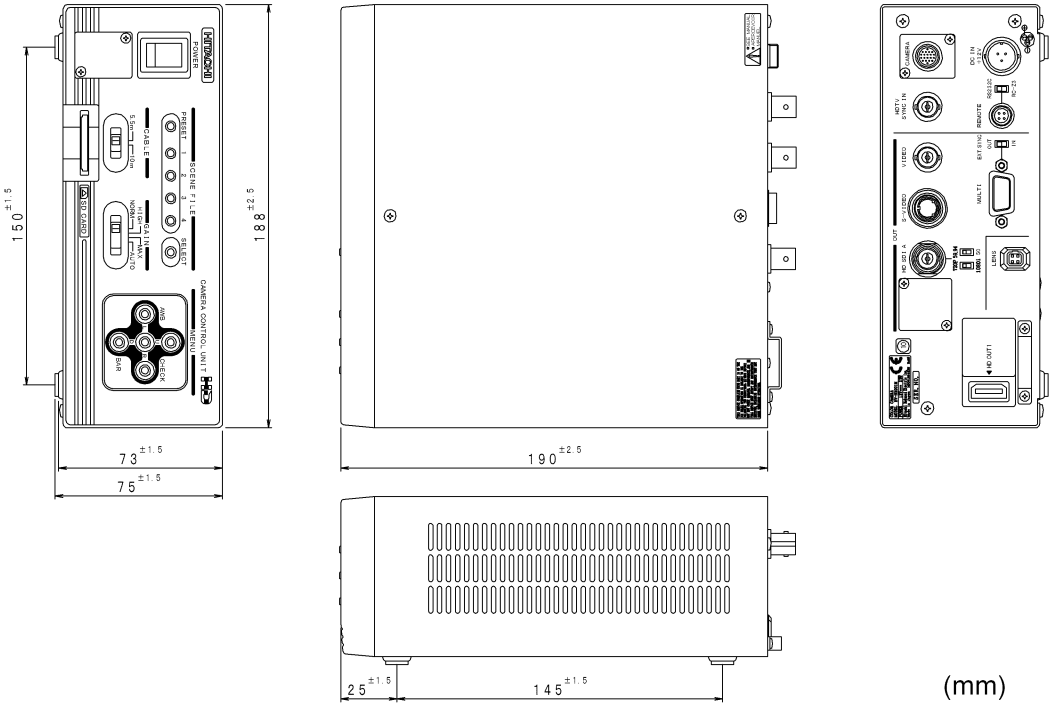
8) Serial data output (REMOTE connector)
1.5 Vp-p/Low (RC-Z3)
RS-232C level (PC)
Note: Set back panel RC-232C/RC-Z3 switch according to the connected device.

9) Lens iris control output (Lens connector, manual override)
DC Lens Mode
IRIS CONT : 1.5 V (closed) to 7.5 V (open) (Selectable)
VIDEO Lens Mode
IRIS CONT : 0.0 Vp-p to 1.0 Vp-p

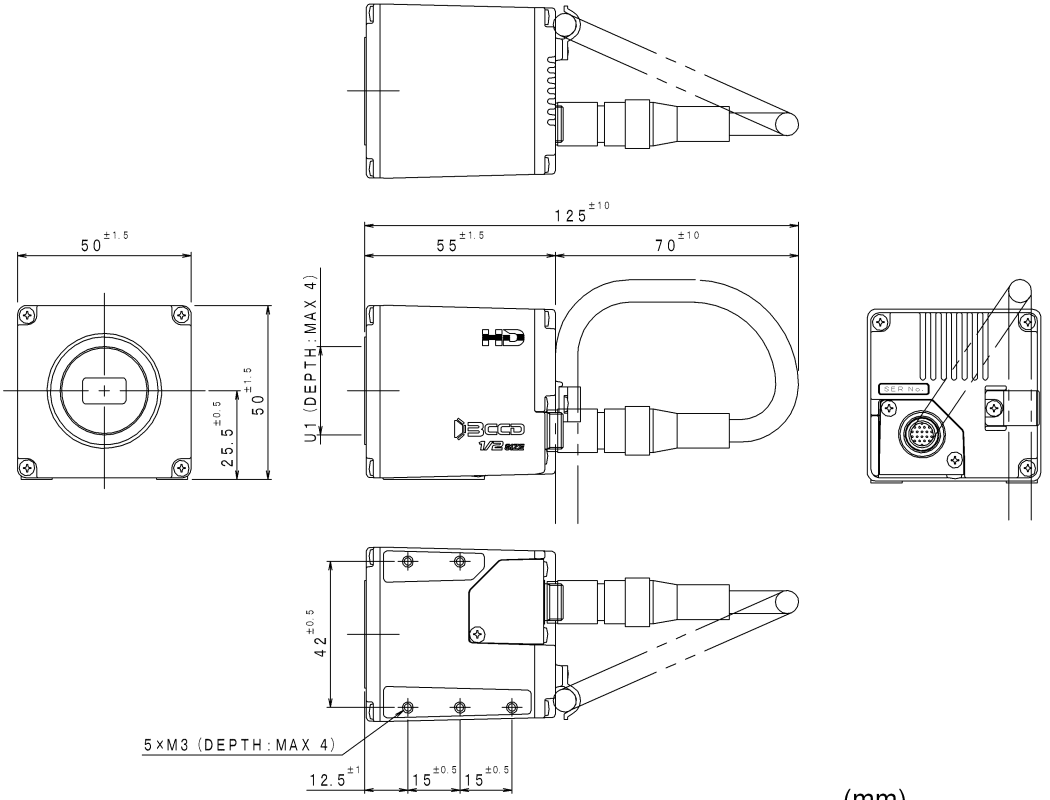
Major accessories

Camera control panel, RC-Z3

Dimensions



(mm)


125±10
55±1.5
70±10
50±1.5
50±1.5
25.5±0.5
U1 (DEPTH: MAX 4)
HD
3CCD
1/2 inch
SER No.
42±0.5
5×M3 (DEPTH: MAX 4)
12.5±1
15±0.5
15±0.5

(mm)