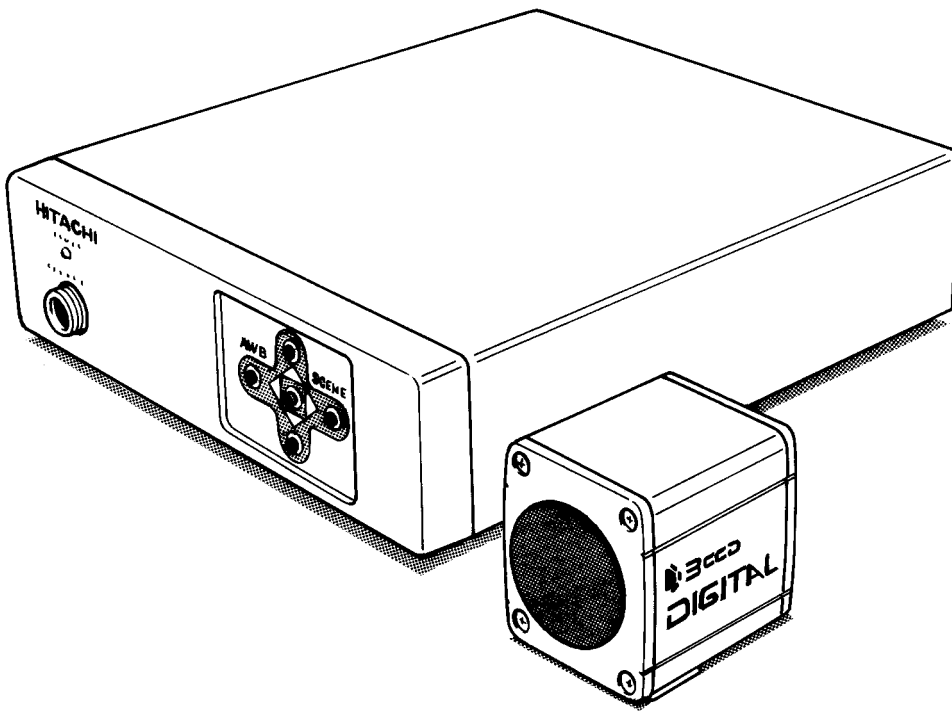


*3-CCD Color Camera*

**MODEL HV-D27 / HV-D37**

*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 Denshi, Ltd.**

# IMPORTANT SAFETY INSTRUCTIONS

## 1. Read Instructions

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

## 2. Retain Instructions

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

## 3. Heed Warnings

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

## 4. Follow Instructions

All operating and use instructions should be followed.

## 5. Cleaning

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

## 6. Attachments

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

## 7. Water and Moisture

Do not use this product near water - for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like.

## 8. Accessories

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

## 9. Moving

A product and cart combination should be moved with care.

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

## 10. Ventilation

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

The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface.

This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

## 11. Power Sources

This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company.

For products intended to operate from battery power, or other sources, refer to the operating instructions.

## **12. Grounding or Polarization**

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

## **13. Power-Cord Protection**

Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plug, convenience receptacles, and the point where they exit from the product.

## **14. Lightning**

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

## **15. Overloading**

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

## **16. Object and Liquid Entry**

Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

## **17. Inflammable and Explosive Substance**

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

## **18. Heavy Shock or Vibration**

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

## **19. Servicing**

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

## **20. Damage Requiring Service**

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- a. When the power-supply cord or plug is damaged.
- b. if liquid has been spilled, or objects have fallen into the product.
- c. If the product has been exposed to rain or water.
- d. If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
- e. If the product has been dropped or damaged in any way.
- f. When the product exhibits a distinct change in performance-this indicates a need for service.

**21. Replacement Parts**

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part.

Unauthorized substitutions may result in fire, electric shock, or other hazards.

**22. Safety Check**

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

**23. Wall or Ceiling Mounting**

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

**24. Heat**

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

# WICHTIGE SICHERHEITSANWEISUNGEN

## **1. Alle Anweisungen lesen.**

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

## **2. Die Anweisungen aufbewahren.**

Die Sicherheits- und Bedienungsanleitungen sollten fünftigen Bezug aufbewahrt werden.

## **3. Warnungen beachten.**

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

## **4. Anweisungen befolgen.**

Alle Bedienungsanleitung- und  
Verwendungsanweisungen sollten befolgt werden.

## **5. Reinigung**

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

## **6. Zubehör**

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

## **7. Wasser und Feuchtigkeit**

Dieses Erzeugnis nicht in der Nähe von Wasser verwenden - z.B. in der Nähe einer Badewanne, eines Waschbeckens, einer Küchenspüle, eines Waschzubers, in einem nassen Keller, in der Nähe eines Schwimmbeckens usw.

## **8. Aufstellung**

Das Erzeugnis nicht auf einen unstabilen Wagen, Stand, Dreifuß, Träger oder Tisch stellen.  
Das Erzeugnis kann sonst herunterfallen und ein Kind oder einen Erwachsenen schwer verletzen.  
Außerdem kann das Gerät schwer beschädigt werden. Nur mit einem Wagen, Stand, Dreifuß, Träger oder Tisch verwenden, der vom Hersteller empfohlen oder mit dem Erzeugnis verkauft worden ist. Für jegliche Anbringung sollten die Anweisungen des Herstellers befolgt werden, und das vom Hersteller empfohlene Anbringungszubehör sollte verwendet werden.

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

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

## **10. Ventilation**

Schlitze und Öffnungen im Gehäuse dienen der Ventilation. Sie sind für zuverlässigen Betrieb des Gerätes und Schutz vor Überhitzung erforderlich und dürfen nicht blockiert oder abgedeckt werden.

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

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

### **11. Stromversorgung**

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

### **12. Erdung oder Polarisierung**

Dieses Erzeugnis ist mit einem Schutzkontaktstecker mit drei Leitern ausgerüstet, mit einem Erdungskontakt. Dieser Stecker paßt nur in ein schuko-Steckdose. Dies ist eine Sicherheitsmaßnahme. Wenn Sie den Stecker nicht in die Steckdose stecken können, so wenden Sie sich bitte an ihren Elektriker, damit er die veraltete Schutz des Schutzkontaktsteckers unwirksam.

### **13. Netzkabelschutz**

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

### **14. Blitzschlag**

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

### **15. Überlastung**

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

### **16. Eindringen von Fremdkörpern und Flüssigkeit**

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

### **17. Entflammbare und explosive Substanzen**

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

### **18. Starke stöße oder Vibrationen**

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

### **19. Wartung**

Versuchen Sie nicht, dieses Erzeugnis Selbst zu warten, da Sie sich durch Öffnen bzw. Entfernen von Abdeckungen hohen Spannungen und sonstigen Gefährdungen aussetzen können.

Beziehen Sie sich für jegliche Wartung auf qualifiziertes Wartungspersonal.

## **20. Beschädigung, die Wartung erfordert**

Ziehen Sie den Stecker dieses Erzeugnisses aus der Steckdose und wenden Sie sich an qualifiziertes Wartungspersonal, wenn eine der folgenden Bedingungen vorliegt:

- a. Wenn das Netzkabel oder der Stecker beschädigt ist.
- b. Bei Eindringen von Flüssigkeit oder Fremdkörpern in das Gerät.
- c. Wenn das Erzeugnis Regen oder Wasser ausgesetzt worden ist.
- d. Wenn das Erzeugnis bei Befolgen der Bedienungsanleitungen nicht normal funktioniert.

Nur die Regelelemente verstellen, die in den Bedienungsanleitungen behandelt werden, da unangemessene Einstellung anderer Regelelemente Beschädigung verursachen kann und oft beträchtliche Arbeit durch einen qualifizierten Techniker erfordert, um das Erzeugnis wieder, zu normalem Betrieb zurückzubringen.

- e. Wenn das Erzeugnis fallen gelassen oder beschädigt worden ist.
- f. Wenn das Erzeugnis eine klare Änderung in der Leistung zeigt-dies weist darauf hin, daß Wartung erforderlich ist.

## **21. Ersatzteile**

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

## **22. Sicherheitsprüfung**

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

## **23. Anbringung an der Wand oder an der Decke**

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

## **24. Wärme**

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

# MISES EN GARDE IMPORTANTES

## 1. Lire les instructions

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

## 2. Conserver ces instructions

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

## 3. Tenir compte des avertissements

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

## 4. Observer les instructions

Observer toutes les instructions de fonctionnement et d'utilisation.

## 5. Nettoyage

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

Nettoyer l'appareil avec un chiffon humide.

## 6. Fixations

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

## 7. Eau et humidité

Ne pas utiliser l'appareil à proximité d'eau-par exemple près d'une baignoire, d'un lavabo, d'un évier ou d'un bac à lessive, dans un sous-sol humide, ou près d'une piscine, etc.

## 8. Accessoires

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

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

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

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

## 10. Ventilation

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

## 11. Sources d'alimentation

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

## **12. Mise à la terre ou polarisation**

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

## **13. Protection du cordon d'alimentation**

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

Faire particulièrement attention aux fiches des cordons, à la proximité des prises, et à l'endroit où ils ressortent de l'appareil.

## **14. Foudre**

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

## **15. Surcharge**

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

## **16. Pénétration d'objets et de liquides**

Ne jamais enfoncer d'objets d'aucune sorte dans les ouvertures de l'appareil car ils pourraient toucher des points de tension dangereuse ou court-circuiter des pièces, ce qui pourrait provoquer un feu ou un choc électrique. Ne jamais renverser de liquide d'aucune sorte sur l'appareil.

## **17. Substances inflammables et explosives**

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

## **18. Chocs ou vibrations violents**

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

## **19. Réparations**

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

## **20. Dommages nécessitant réparations**

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

- a. Lorsque le cordon d'alimentation ou sa fiche sont endommagés
- b. Si du liquide s'est renversé sur l'appareil ou que des objets sont tombés dedans
- c. Si l'appareil a été exposé à la pluie ou à l'eau.
- d. Si l'appareil ne fonctionne pas normalement lorsqu'on observe les instructions d'utilisation.

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

- e. Si l'appareil est tombé ou qu'il a été endommagé.
- f. Si l'appareil affiche une nette modification de ses performances, cela signifie qu'il a besoin d'être réparé.

## **21. Pièces de rechange**

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

## **22. Vérification de sécurité**

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

## **23. Montage au mur ou au plafond**

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

## **24. Chaleur**

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

## IMPORTANT NOTICE

### For USA

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

#### WARNING

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

### For Canada

This product does not exceed the class A/class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations.

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

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## Standard composition

### Check when unpacking.

Camera, HV-D27 or HV-D37	1
Camera cable, 3m(10ft: C-301 KAJ) or 10m(33ft: C-102 KAJ) or 20m(67ft: C-202KAJ)	1
Power plug, RM12BPG-3S (JMR0152*)	1
Operation Manual	1
Function labels for RC-C10 Remote Control Box	1

\* Part code

## Overview

The HV-D27 and HV-D37 from Hitachi are separate head and control unit type 3 element color cameras respectively incorporating 1/2-inch and 1/3-inch 410 K pixel CCD image sensors. The circuit from processor to encoder is digitized and contained on a single chip to deliver top level picture quality and stability.

Proprietary digital processing technology borne of extensive experience in the design of broadcast and industrial color cameras provides a wealth of high performance functions in these industrial camera models. The picture quality is further at a level unattainable with earlier analog camera designs.

## Features

- Unitized signal processor  
The entire circuit from processor to encoder is organized into a single high density (0.5  $\mu$ m precision) LSI chip that conserves both space and power. Moreover, the 10 bit A/D converter and 13 bit signal processor provide high signal to noise ratio and wide dynamic range.
- High resolution  
Horizontal resolution (luminance channel) is 800 TV lines with the HV-D27 and 750 TV lines with the HV-D37.
- Digital processing enables wide array of functions  
Desired hue and tint can be adjusted with 6-vector independently variable masking. Even at wide dynamic range, auto-knee and dynamic chroma can provide superbly colored images. The versatile detail compensating functions allow optimum contour compensation to match the scene.

- Intelligent automatic level control (ALC)

Digital light metering by ALC gating freely selectable for overall picture or 64 segments is combined with AGC and AES (auto electronic shutter) enable response over an extremely wide range of lighting conditions. The ALC response can also be set.

- Three application files

Different setting data according to the application and scene can be stored in 3 application files.

- 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.

- Scene files

Three scene files can store different setting data according to application and scene conditions.

- Field on demand

An external trigger signal can be used for image pickup at a desired timing to instantly obtain an image. The trigger and shutter can also adjust the pickup time.

## Notes to users

### Notes for safety

- 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 Denshi service representative.

### Operating considerations

- Power supply

Check that the supplied voltage is between 10.5 and 17 VDC. Inadequate voltage can affect color fidelity and cause noise, while voltage over 17 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 Denshi 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 photographers 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.

### **CCD properties**

The following phenomena are inherent to a charge coupled device imaging element and do not indicate malfunction.

- 1) **Smear and blooming**

Vertical bands are visible when a strong light enters the scene. Adjust the camera aiming direction carefully to avoid strong direct or reflected light.

- 2) **Fixed pattern noise**

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

### 3) Moire

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

### 4) Ghosting

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

Name and function each section

**SETUP button**

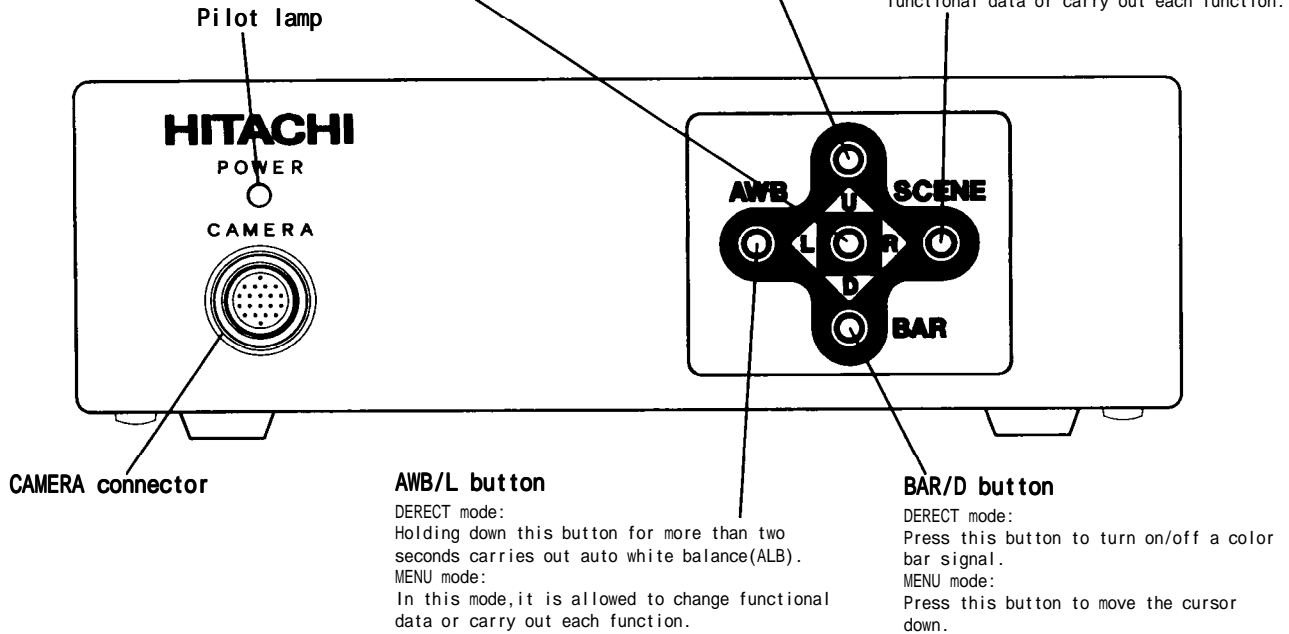
Press this button to display the camera setup menu. The switches U,D,L and R provide different functions depending on whether the menu is displayed (MENU mode) or not (DERECT mode).

**U button**

DERECT mode: Not available.  
MENU MODE: Pressing this button moves the cursor up.

**SCENE/R button**

DERECT mode: Selects the scene file. Press once to show the present file name for 1 second. During the display, press again to change the scene file.  
MENU mode: In this mode, it is allowed to change functional data or carry out each function.



**12V IN connector**

**REMOTE connector**

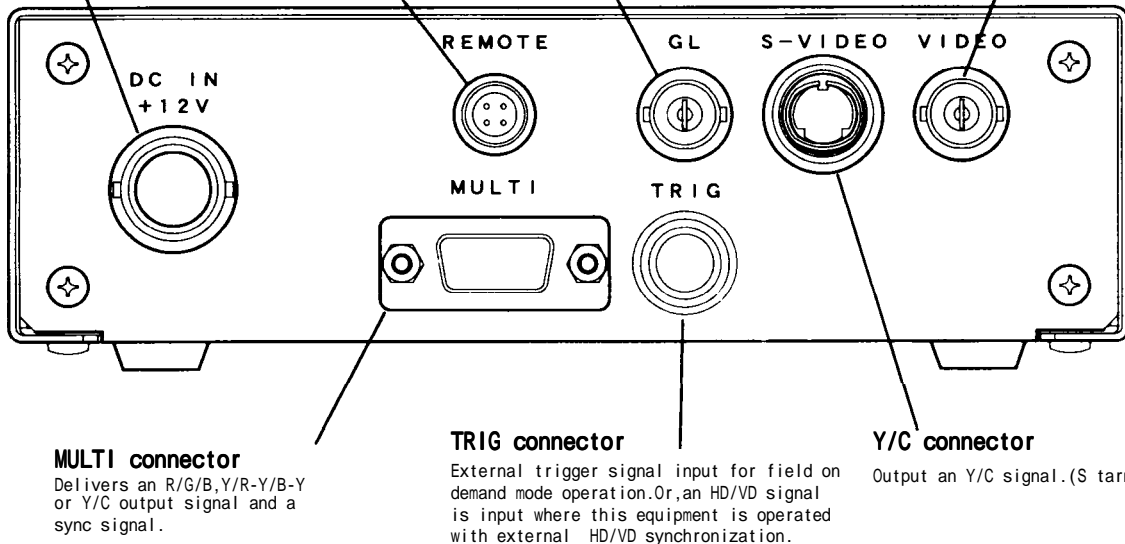
Used for connection with the remote control box RC-C10 or personal computer.

**GL IN connector**

Receives a black burst signal or composite video signal where this equipment is operated with external synchronization.

**VIDEO connector**

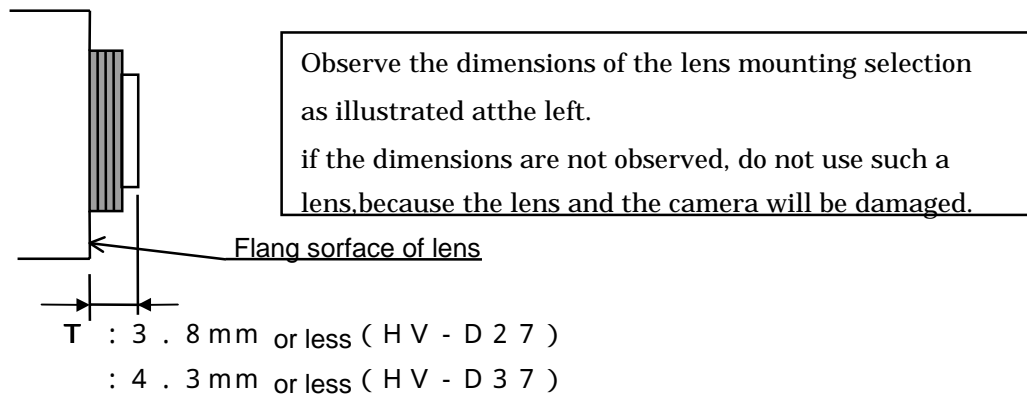
Outputs a composite video signal (1Vp-75 hms).



## Lens caution

### LENS

#### CAUTION:



### Selection of lens

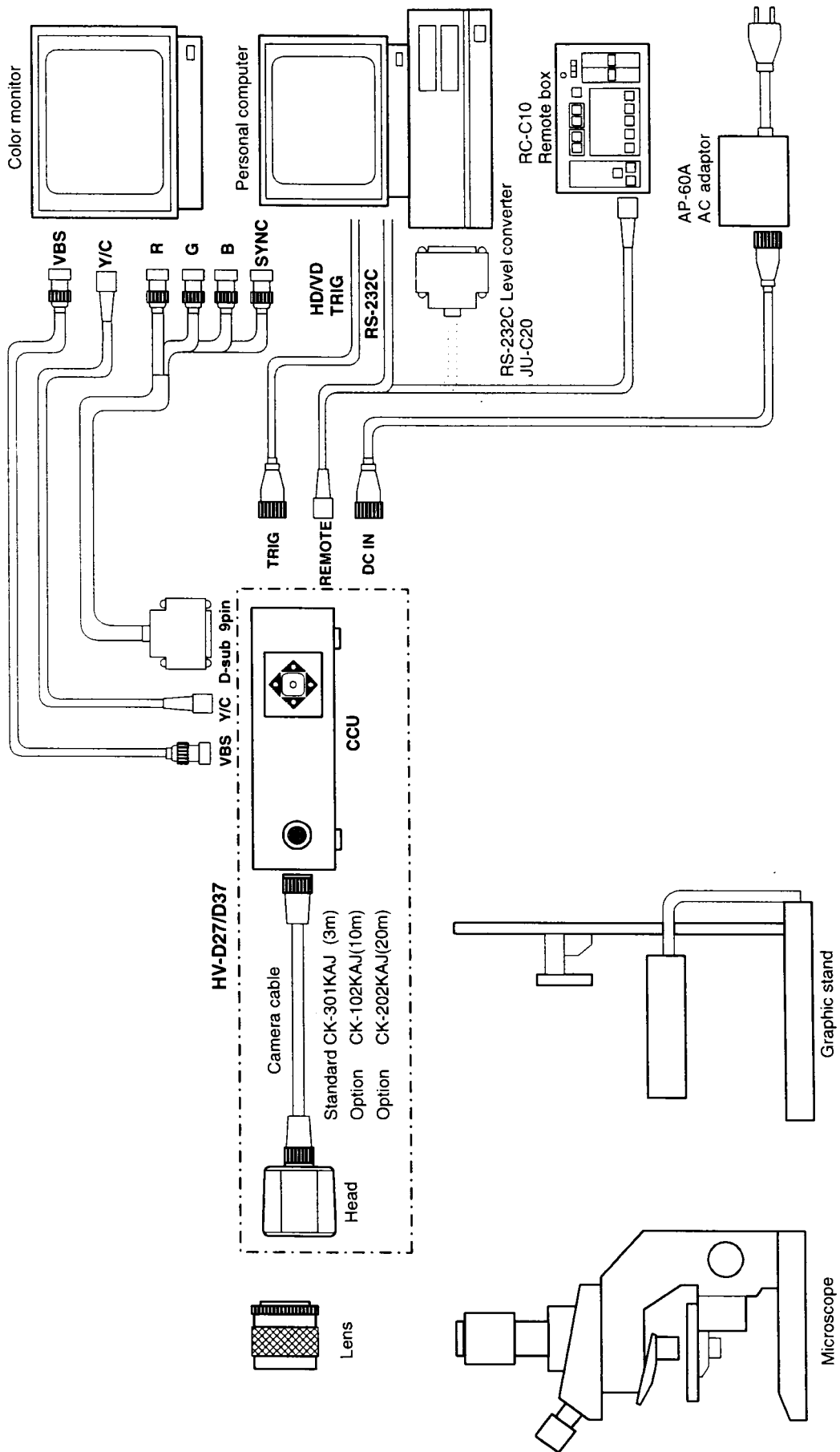
Camera performance depends greatly on the choice of lens. Note the following points when choosing the lens.

Image ghosting can occur if the lens is not matched to the CCD. Choose 1/2-inch for the HV-D27 and 1/3-inch for the HV-D37.

When the exit pupil is short, colors at the upper and lower parts of the screen become uneven.

The camera does not include flangeback adjustment. Depending on the type, focus might be imperfect at the telephoto and wide angle extremes of a zoom lens.

# System examples



# Menu Screen Operation

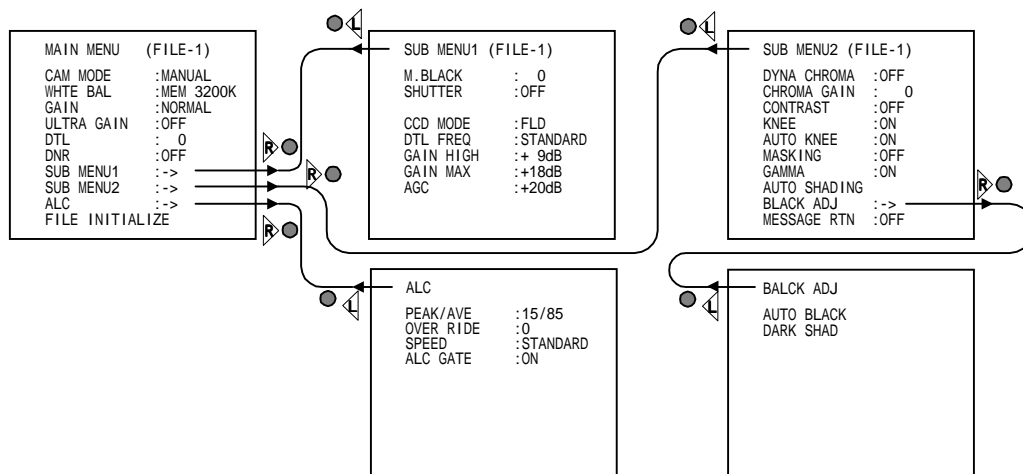
## 1. Menu Structure

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

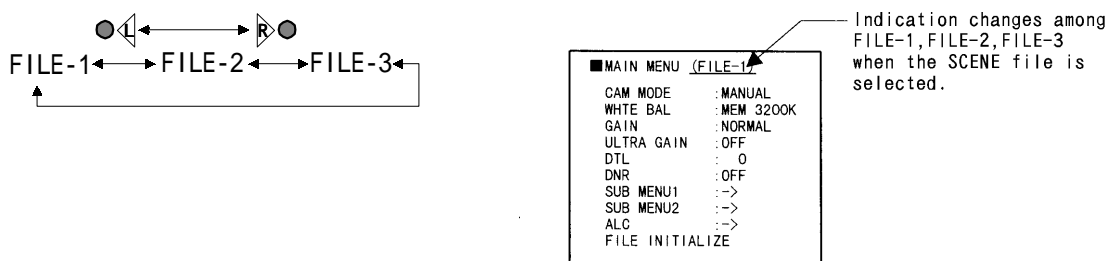
### 1-1 MAIN Menu Structure

Press the SEUTP button and MAIN MENU appears on the screen to indicate the main menu mode. Again press the SETUP button to extinguish the menu and enter the direct mode. There are a main function setup menu and three sub-menus, which are arranged hierarchically as shown below. On the MAIN menu, bring the cursor to SUB MENU 1, SUB MENU 2 or ALC and press the R button, and the desired subsidiary menu will come up. To return to the MAIN menu from the SUB menu 1, SUB menu 2 or ALC, bring the cursor to the top line (title line of SUB MENU 1, SUB MENU 2 or ALC) and press the L button.

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



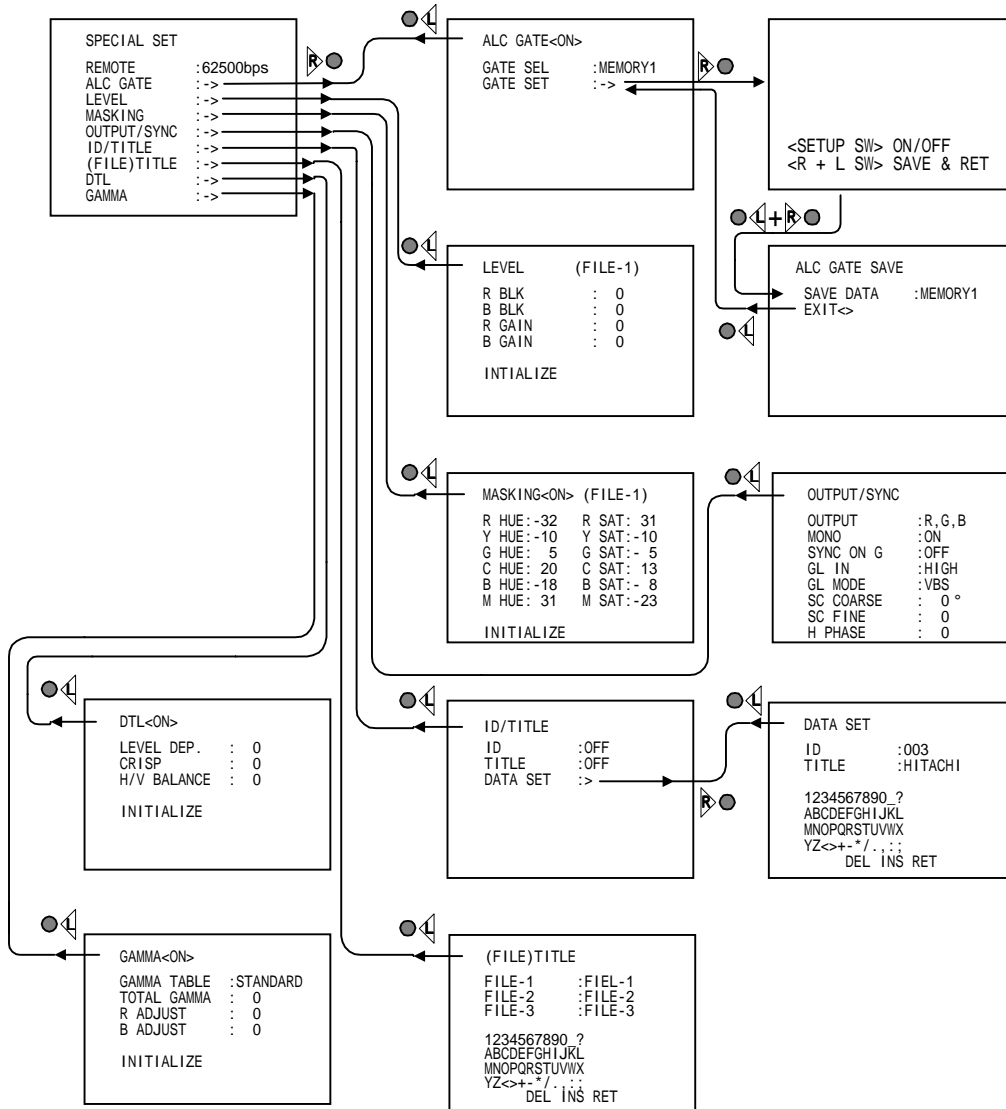
At the first line of the main menu, press the R and L buttons to select the SCENE file. The indication changes to show the selected file.



Refer to Page 24 for a detailed description of the SCENE file.

## 1-2 SPECIAL Menu Structure

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



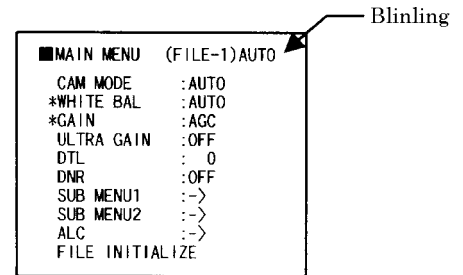
## 2 . MAIN MENU

### 1 ) CAM MODE : Camera mode

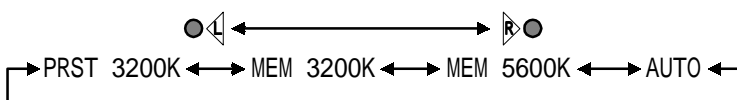
- **MANUAL** : In this mode, you can set up most functions. Use the MANUAL mode for detail settings.
- **AUTO** : The video level and white balance are adjusted automatically. Without having to make detail settings, you can display images under standard conditions.

On the Main menu, some function items have the asterisk (\*) mark. In the AUTO mode, the default settings shown below are given and the cursor skips over these items. When the AUTO mode is selected, 'AUTO' blinks at the upper right corner of each screen.

Menu	Function and Mode
MAIN MENU	WHITE BAL : AUTO
	GAIN : AGC
SUB MENU 1	SHUTTER : AES
	CCD MODE : FLD
	GAIN HIGH : Not settable
	GAIN MAX : Not settable
SUB MENU 2	KNEE : ON
	AUTO KNEE : ON
	GAMMA : ON
LEVEL	R BLK : Not effective
	B BLK : Not effective
	R GAIN : Not effective
	B GAIN : Not effective



### 2 ) WHITE BAL : White balance mode

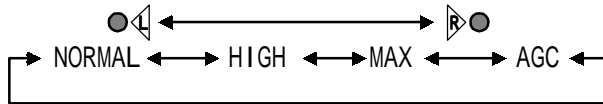


- **PRST 3200K** : The white balance condition is optimized at a color temperature of 3200K.
- **MEM 3200K** : White balance is automatically adjusted by the direct mode AWB button. Use in the color temperature range from halogen to fluorescent lighting.
- **MEM5600K** : White balance is automatically adjusted by the direct mode AWB button. Use in the high color temperature range from xenon to mercury lighting.
- **AUTO** : The white balance condition is set through realtime auto white balancing (automatic tracking).

Note: If selecting MEM 3200K and MEM 5600K, set to the direct mode (extinguish the menu) and press the AWB button for auto white balance adjustment.

In the Auto CAM mode, white balance is fixed at AUTO.

3 ) GAIN : Gain mode

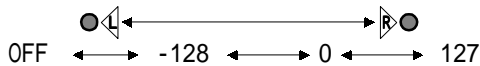


- NORMAL : The gain level is set to 0 dB.
- HIGH : The gain level is set to a value specified at GAIN HIGH on the SUB menu 1.
- MAX : The gain level is set to a value specified at GAIN MAX on the SUB menu 1.
- AGC : An increase in gain is controlled automatically. The upper limit of gain to be increased corresponds to a value specified at AGC on the SUB menu 2.  
In the Auto CAM mode, gain is fixed at AGC.

4 ) ULTRA GAIN : ULTRA GAIN ON/OFF

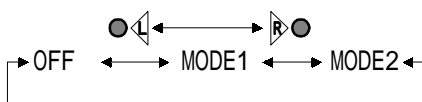
The on setting increases the sensitivity about 12 dB (but there is some loss of resolution).

5 ) DTL : DTL level setup



The DTL level can be set to OFF or in a range of -128 to 127. The degree of contour correction increases in the positive value setting, and it decreases in the negative value setting. For zero (0) setting, hold down both the L and R buttons for approx. two seconds. However, if setting is OFF, 0 is not set over if the buttons are pressed.

6 ) DNR : Digital noise reduction mode



OFF, MODE 1 or MODE 2 is selectable. In MODE 2, noise becomes lower than that in MODE 1 but a feel of image resolution becomes lower slightly.

7 ) SUB MENU 1 : The SUB menu 1 is brought up.

8 ) SUB MENU 2 : The SUB menu 2 is brought up.

9 ) ALC : The ALC is brought up.

10 ) FILE INITIALIZE : Returns main menu items of scene file to factory settings.

Simultaneously press the L and R buttons for about 2 seconds to initialize the selected application file. The Special menu items are not initialized.

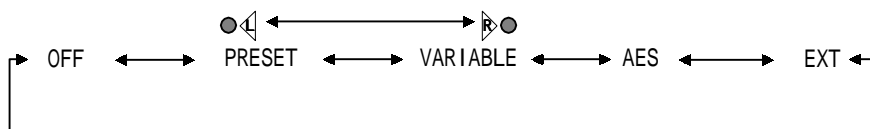
### 3 . SUB MENU 1

#### 1 ) M BLACK : Master black level setting

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

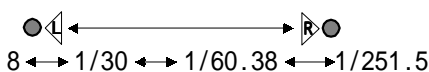
#### 2 ) SHUTTER : Electronic shutter mode

When the shutter speed is Variable, operation is at the speed selected by the Variable setting (see below). In the Auto CAM mode, the shutter is set to AES.



(Note) In the AES mode, FLD operation is performed even if 'CCD MODE:FRM' is specified.

#### 3 ) VARIABLE : Variable electronic shutter speed setting



##### • 8 ~ 1/30 ( 1/25 : PAL ) : Long-time store mode

The camera delivers intermittent video signal output. So, to view continuous images, it is required to use the video memory. A clear image can be attained even if the subject is illuminated with a faint light source. As the store time increases, the degree of after-image becomes higher.

(Note) With an increase in store time, the degree of characteristic pattern noise, white scratch, etc. of the CCD image sensor will become higher.

##### • 1/60.38 (1/50.31: PAL) ~ 1/251.5 (1/253.8: PAL) : Lock scan mode

When an image of a subject display screen having a different scan frequency is taken, a bright or dark horizontal bar appears to roll up or down the screen.

When the shutter speed is Variable, operation is at the speed selected by the Variable setting (see below). In the Auto CAM mode, the shutter is set to AES.

The shutter speed can be adjusted to where the horizontal bars are minimized in the display.

(Note) If the display screen scanning frequency is less than 60Hz (50Hz PAL), the rolling horizontal bars cannot be stopped. Not settable in the Auto CAM mode.

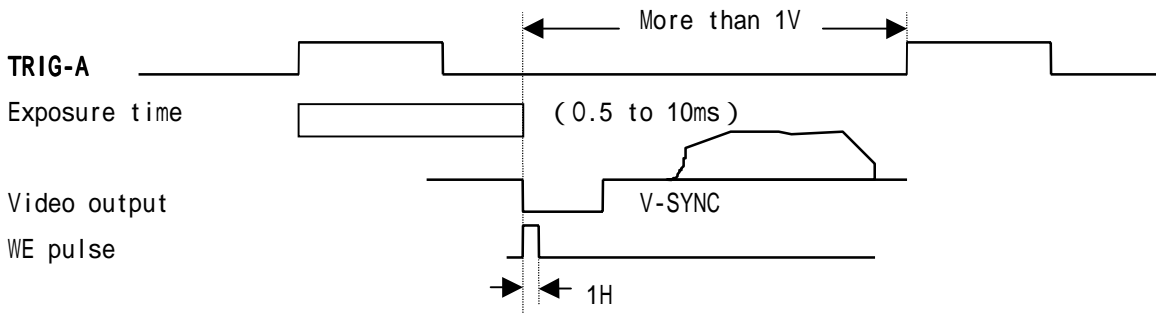
4 ) EXT : FIELD-ON-DEMAND FANCTION

Frame-on-demand refer to a function for picking up rapidly moving objects by applying a trigger pulse input at a desired timing to provide a desired or a fixed exposure time. The function is effective since the object is always taken at the same position in the picture.

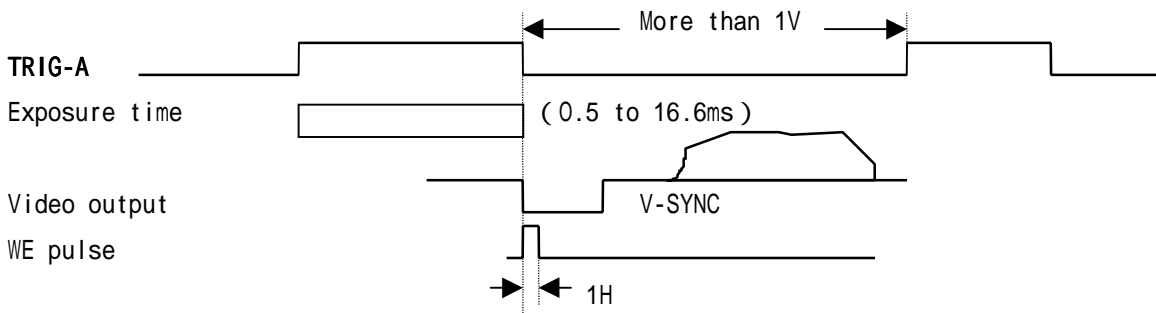
- FIX : Fixed

When a single trigger pulse (TRIG-A) is applied, exposure starts at the pulse rising edge. The exposure time is fixed (1/100(NTSC) ,1/60(PAL) to 1/2000) and set by the L or R button.

The video output is obtained immediately after exposure ends.

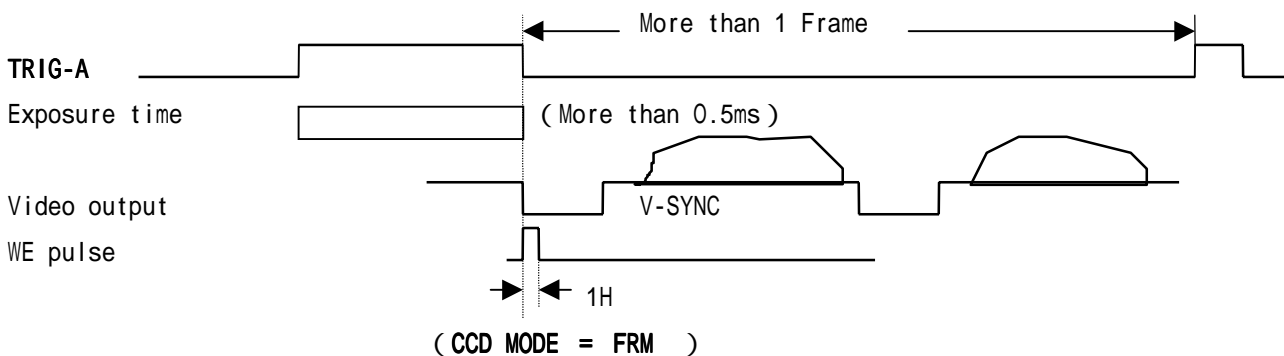


- SHORT : When a single trigger pulse (TRIG-A) is applied, exposure starts at the pulse rising edge and ends at the falling edge. One filed of the picture is obtained immediately at vertical reset. The pulse width determines the exposure time.



- LONG : When a single trigger pulse (TRIG-A) is applied, exposure starts at the pulse rising edge and ends at the falling edge. At the FRM CCD mode setting, one frame of the picture is obtained immediately at vertical sync reset. The pulse width determines the exposure time.

At the FLD CCD mode setting, operation is the same as the Short mode.



(Note) Wite an increase in store time , the degree of characterristic pattern noise , white scratch , etc.

5 ) CCD MODE : CCD store mode changeover

- FLD : The field store mode operation is performed (for ordinary purpose of application).
- FRM : Frame store mode operation is performed. The vertical resolution can be increased but the degree of after-image becomes slightly higher. It is therefore recommended to use the FRM function when taking a still image.

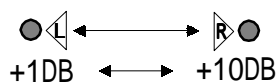
(Note) When the shutter mode is AES, even if set to frame, the camera operates in the field mode. In the Auto CAM mode, The CCD mode is set to FLD.

6 ) DTL FREQ : DTL amplifying frequency changeover.



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

7 ) GAIN HIGH : Gain setting in GAIN HIGH mode (At the time of AGC:OFF mode)



The gain level can be set in a range of +1 to +10 dB.

Cannot be set in the Auto CAM MODE.

8 ) GAIN MAX : Gain setting in GAIN MAX mode (At the time of AGC:OFF mode)

The gain level can be set in a range of +11 to +20 dB.

Cannot be set in the Auto CAM MODE.

9 ) AGC : Upper gain limit setting in AGC mode (At the time of AGC:ON mode)

The upper limit of gain increase in AGC operation can be set in a range of +6 to +20 dB.

## 4 .SUB MENU 2

### 1 ) DYNA CHROMA : Dynamic chroma ON/OFF

With knee on, setting the dynamic chroma on improves coloration in bright portions of the scene.

### 2 ) CHROMA GAIN : Level setting in chroma signal

The chroma signal level can be set in the range of -128 to +127. Respectively press the R button to increase and the L button to decrease the chroma signal level. Set the level to 0 by simultaneously pressing both L and R buttons for about 2 seconds.

### 3 ) CONTRAST : Contrast OFF/NORMAL/HIGH

Contrast can be set in two steps of Normal and High.  
HIGH enhances the contrast more than NORMAL.

### 4 ) KNEE : KNEE ON/OFF

The on setting provides natural gradation in bright portions.  
Knee is fixed to on in the Auto CAM mode.

### 5 ) AUTO KNEE : AUTO KNEE ON/OFF

At the on setting, gradation in bright components is automatically optimized even with scene changes.

### 6 ) MASKING : Masking ON/OFF

At the on setting, the overall screen gradation is set by the Special Set Masking menu.  
Standard setting is on.

### 7 ) GAMMA : Gamma ON/OFF

Gamma on/off setting. In the Auto CAM mode, gamma is fixed at on.

### 8 ) AUTO SHADING : Automatic shading correction is carried out.

Pressing the R button performs automatic shading correction. For details, refer to 'How to Attain Better Images' (p. 28).

9 ) BLACK ADJ : The BLACK ADJ menu is brought up.

10) MESSAGE RTN : Message display ON/OFF

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

## 5 . ALC

1 ) Peak/AVE: Sets ALC detect signal peak/average ratio. Can be set in 4 steps of 50/50, 25/75, 15/85 and 0/100. When the average data percentage is large, the background is easier to see if the scene has bright components. Conversely, a larger peak data percentage makes bright objects such as clouds easier to distinguish.

2 ) Over ride: ALC setting

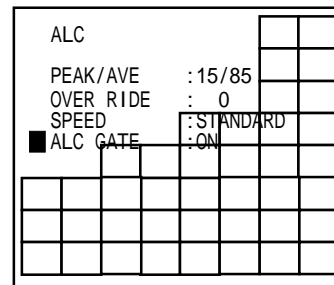
Setting range is from -128 to 127. Press the R button to increase and the L button to decrease the level. Set to 0 by simultaneously pressing R and L buttons for about 2 seconds.

3 ) Speed: ALC operating speed

The ALC operation can be set for Slow, Standard or Fast.

2 ) ALC Gate: ALC gate on/off

On : The selected area video signal is detected for controlling AGC and AES. In the menu mode, the light sensing area is overlapped on the video signal and visible. Sensing area setting is described on page . When the cursor is shifted to another item, the window is not visible. In the direct mode, the window is not shown, but ALC operates from the ALC gate.



Off: The full screen video signal is detected for control. The window is not displayed.

## 6 . BLACK ADJ

1) Auto black: Automatic black balance adjustment

Press the R button to activate automatic adjustment. See page 26.

2) Dark Shad: Automatic dark shading adjustment

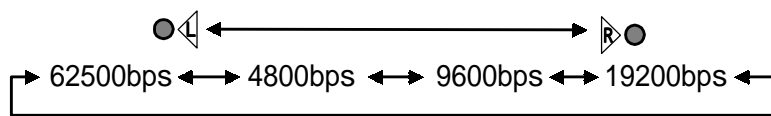
Press the R button to activate automatic adjustment. See page 26.

## 7 . SPECIAL SET

1 ) REMOTE : Remote control baud rate setting

For baud rate setting, use the L and R buttons.

(Note) When setting a baud rate, do not connect the communication cable with the REMOTE terminal.



- 62500bps : Select this baud rate when using the RC-C10 remote control box. In this case, be sure to also set the RC-C10 baud rate to 65200 bps. Refer to the RC-C10 operating instructions.

- 19200bps, 9600bps, 4800bps : Select any one of these baud rates when controlling the camera from a personal computer through RS-232C interfacing. For details, refer to 'Function Selection by Internal Switch Setting'. Contact us for details of the control procedure using a personal computer. Technical documents including protocol data will be supplied.

2 ) LENS : Change to LENS menu.

3 ) IRIS GATE : Change to IRIS GATE menu.

4 ) WHITE GATE : Change to WHITE GATE menu.

5 ) LEVEL : Change to LEVEL menu.

6 ) MASKING : Change to Masking menu.

7 ) OUTPUT/SYNC : Change to OUTPUT/SYNC menu.

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

9 ) DTL : Change to DTL menu.

## 8 . ALC GATE

Menu for setting light sensing areas used for ALC data.

1) Gate sel: Select sensor area arrangement pattern.

Preset 1 - preset 5: 5 fixed arrangement patterns.

Memory 1 and memory 2: Arrangement patterns from Gate Set.

2) Gate set: Changes to ALC gate pattern setting screen.

Desired of 64 areas can be set.

ALC gate pattern setting

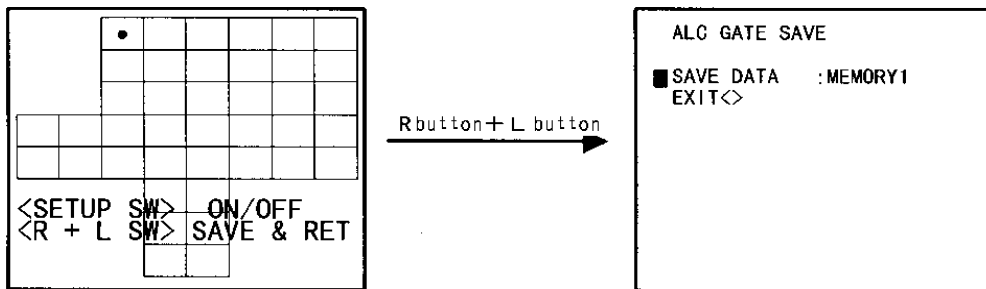
1) Shift the cursor with the L, R, U and D buttons to designate the light sensing areas.

2) Press the Setup button to select or deselect an area. Selected areas are outlined in the display.

3) Simultaneously press the L and R buttons for about 2 seconds to produce the ALC Gate Save menu. Select the memory for saving the changed data.

- Memory 1: Save pattern in memory 1.
- Memory 2: Save pattern in memory 2.
- Cancel: Exit without saving data.

4) To exit the menu at the end of setting, position the cursor at Exit and press the L or R button.



Note: Select at least 20 areas for a stable image.

## 9 . LEVEL

This menu screen allows you to set up a black level and gain of R/B video signal.

1 ) R BLK : R black level setting

The allowable setting range is -128 to 127.

Pressing the R button increases a numeric value to make the R video signal black level higher.

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

2 ) B BLK : B black level setting

The allowable setting range is -128 to 127.

Pressing the R button increases a numeric value to make the B video signal black level higher.

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

3 ) R GAIN : R gain level setting

The allowable setting range is -128 to 127.

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

4 ) B GAIN : B gain level setting

The allowable setting range is -128 to 127.

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

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

WHITE BAL : In case of AUTO, numeric values of R GAIN and B GAIN become ineffective.

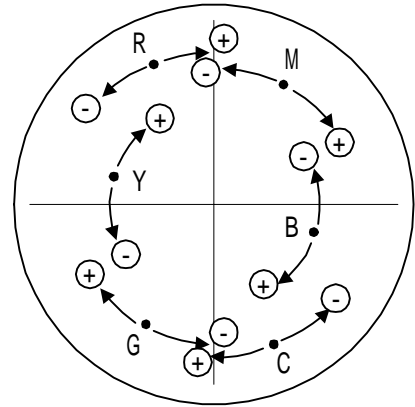
5 ) INITIALIZE

Red and blue gain settings are initialized for each application. Simultaneously press the L and R buttons for about 2 seconds to return the selected files to the factory settings. See Page 24 for the factory settings of each application file.

10. MASKING

Menu for setting the masking.

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



The above items can be set in the range of -32 to +31. Respectively press the R button to increase and the L button to decrease the vector color hue as indicated in the figure. Each item can be set to 0 by simultaneously pressing the L and R buttons for about 2 seconds.

- 7 ) R SAT: Increase red color level
- 8 ) Y SAT: Increase yellow color level
- 9 ) G SAT: Increase green color level
- 10 ) C SAT: Increase cyan color level
- 11 ) B SAT: Increase blue color level
- 12 ) M SAT: Increase magenta color level

The above items can be set in the range of -32 to +31. Respectively press the R button to increase and the L button to decrease the color level. Each item can be set to 0 by simultaneously pressing the L and R buttons for about 2 seconds.

- 13 ) INITIALIZE: Mask settings are initialized to factory values for each application file. Simultaneously press the L and R buttons for about 2 seconds to return the selected files to the factory settings. See Page 25 for the factory settings of each application file.

## 11 . OUTPUT/SYNC

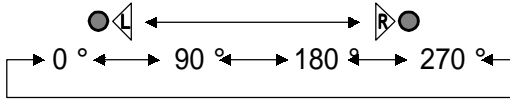
On this menu screen, you can make signal changeover for output to the D-SUB connector and phase adjustment for external synchronization.

- 1 ) OUTPUT : Output mode changeover



- R, G, B : The R, G and B video signals are output to the D-SUB connector.
  - Y, R-Y, B-Y : The Y, R-Y and B-Y signals are output to the D-SUB connector.
  - Y/C : The Y/C signal is output to the D-SUB connector. It can be delivered simultaneously with the Y/C signal output from the Y/C connector (S terminal).
- 2 ) MONO : Monochrome (black and white) ON/OFF for the video output signal from the VIDEO connector  
Set to ON for monochrome. Setting ineffective during color bar.
- 3 ) SYNC ON G : G video signal synchronization ON/OFF (In the R/G/B mode only)  
When output is RGB with Sync on and G on, Sync is added to the G video signal.
- 4 ) GL IN : Impedance changeover of input to the GL IN connector.
- HIGH : The high impedance level is provided.
  - 75 : An impedance of 75 ohms is provided.
- (Note) When power to the camera is turned off, the high impedance level is provided. So, do not use this function in a system where power is turned off for the camera unit only.
- 5 ) GL MODE :
- VBS : The VBS signal or BBS (black burst) signal is input as an external synchronizing signal.
  - HD/VD : The HD/VD signal is input as an external synchronizing signal.
- (Note) During external sync with HD and VD signals, be sure to use either RGB or Y, B-Y, R-Y output signals. Although VBS and Y/C output signals are also produced, these cannot be used as normal output signals.

6 ) SC.COARSE : Coarse adjustment of subcarrier phase



Using the L or R button, select one of the following phases; 0°, 90°, 180° and 270°.

7 ) SC.FINE : Fine adjustment of subcarrier phase

The allowable setting range is -128 to 127.

There is no direct relationship between a numeric value and a degree of phase. If the relevant range is exceeded, the SC COARSE setting is updated automatically to permit continuous adjustment.

8 ) H.PHASE : Adjustment of horizontal synchronization phase

The allowable setting range is -128 to 127.

## 12 . ID/TITLE

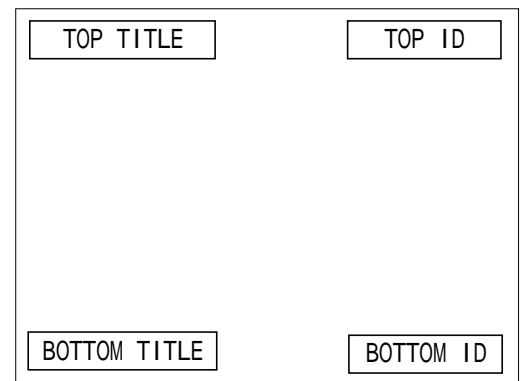
ID and title display position and data setting menu.

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 personal computer.

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

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



ID/TITLE Display Position

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

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

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

ID : Enter an ID code consisting of three characters.

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

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

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

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

### < ID/TITLE Setup Procedure >

With the cursor located at DATA SET, press the D button. The cursor moves to the ID data set position and the first character flashes.

Using the L, R, U and D buttons, select an input character.

Press the SET UP button, and the selected character will be entered. (The cursor will then move to the next character position.)

In the same manner, repeat the above steps and to enter an ID code and TITLE.

On completion of character input, bring the cursor to RET using the L, R, U or D button. Then, press the SET UP button.

The cursor is returned to DATA SET.

To quit the SPECIAL SET mode, press the SET UP button.

: Flashing shifts one character toward the left.

: Flashing shifts one character toward the right.

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

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

RET : The cursor is returned to DATA SET.

## 13. (FILE) TITLE

Menu for setting the scene file name.

- 1) File-1: Set File-1 title.
- 2) File-2: Set File-2 title.
- 3) File-3: Set File-3 title.

Setting procedure

- 1) Select input characters with the L, R, U and D buttons.
- 2) Press the Setup button to decide a character. The cursor shifts to the next character position.
- 3) In the same manner, set the titles for Files 2 and 3.
- 4) After completing character input, shift the cursor to RET with the L, R, U and D buttons, and press Setup. The cursor shifts to (File) Title.
- 5) Press the Setup button to exit the Special set mode.

: Move 1 character toward left. The selected character flashes.

: Move 1 character toward right. The selected character flashes.

DEL: Delete flashing character and close vacated space.

INS: Insert a space at the flashing character position and shift subsequent characters toward the right.

RET: Shift cursor to (File) Title.

## 14. DTL

Menu for setting detail parameters

- 1) LEVEL DEP : Dependent level setting

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

Setting range is -128 to +127. Press the R button to increase the value, reduce the detail amount

and expand the video signal level range. Press L button to decrease the value and reduce the range. Set to 0 by simultaneously pressing the L and R buttons for about 2 seconds.

2 ) CRISP : Crispness level setting

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

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

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

4 ) INITIALIZE : Return each item to factory settings by simultaneously pressing the L and R buttons for about 2 seconds.

## 15.GAMMA

Menu for setting the gamma parameters.

1) Gamma table: Select gamma rising slope.

Standard: Standard setting.

Low: Reduce gradation in dark component.

High: Raise gradation in dark component.

2) Total gamma: Gamma correction can be adjusted from standard in the range of -64 to 63. Press R to increase and L to decrease the gamma correction amount. Set to 0 by simultaneously pressing R and L for about 2 seconds.

3) R Adjust: Red gamma can be fine adjusted in the range of -64 to 63. Press R to increase and L to decrease the red gamma correction amount. Set to 0 by simultaneously pressing R and L for about 2 seconds.

4) B Adjust: Blue gamma can be fine adjusted in the range of -64 to 63. Press R to increase and L to decrease the red gamma correction amount. Set to 0 by simultaneously pressing R and L for about 2 seconds.

5) INITIALIZE: Set to factory setting simultaneously pressing R and L for about 2 seconds.

## Scene files (FILE-1,FILE-2,FILE-3)

The camera setting data can be saved to 3 scene files. This function enables storing the optimum settings for 3 sets of special but recurring scene conditions for later recall when setting up the camera.

### 1. Items stored in scene files

The following items can be stored in each scene file. The data shown are those entered at the factory.

Menu item	Setting data
<b>MAIN MENU</b>	
WHITE BAL	MEM 3200K
GAIN	NORMAL
DTL	0
DNR	OFF
<b>SUB MENU 1</b>	
M.BLACK	0
SHUTTER	OFF
DTL FREQ	STANDARD
<b>SUB MENU 2</b>	
DYNA CHROMA	ON
CHROMA GAIN	0
AUTO KNEE	ON
MASKING	ON

Menu item	Setting data	
<b>MAIN MENU</b>		
	HV-D27	HV-D37
R GAIN	0	0
B GAIN	0	0
<b>MASKING</b>		
	HV-D27	HV-D37
R HUE	-2	-1
Y HUE	3	-1
G HUE	4	10
C HUE	0	-2
B HUE	-3	-5
M HUE	-7	-9
R SAT	8	15
Y SAT	8	19
G SAT	6	13
C SAT	1	-3
B SAT	0	3
M SAT	11	13

## 2 . Common file settings

The settings of these items apply to all files. They cannot be set differently for each file. The table indicates the factory settings.

Menu item	Setting data
<b>MAIN MENU</b>	
CAM MODE	MANUAL
ULTRA GAIN	OFF
<b>SUB MENU 1</b>	
VARIABLE	NTSC:1/60.38
	PAL :1/50.31
PRESET SHT	NTSC:1/100
	PAL :1/60
PRESET TRIG	NTSC:1/100
	PAL:1/60
CCD MODE	FLD
GAIN HIGH	+9dB
GAIN MAX	+18dB
AGC	+20dB
<b>SUB MENU 2</b>	
CONTRAST	OFF
KNEE	ON
GAMMA	ON
AUTO SHADING	Adjusment data
MESSAGE RTN	ON
<b>ALC</b>	
PEAK/AVE	15/85
OVER RIDE	0
SPEED	0
ALC GATE	OFF

Menu item	Setting data
<b>BLACK ADJ</b>	
AUTO BLACK	Adjusment data
DARK SHAD	Adjusment data
<b>SEPECIAL SET</b>	
REMOTE	62500bps
<b>ALC GATE</b>	
GATE SEL	MEMORY1
(MEMORY1 DATA)	6 × 6
(MEMORY2 DATA)	6 × 6
<b>LEVEL</b>	
R BLK	0
B BLK	0
<b>OUTPUT/SYNC</b>	
OUTPUT	R, G, B
MONO	OFF
SYNC ON G	OFF
GL IN	75
GL MODE	VBS
SC COARSE	0 °
SC FINE	0
H PHASE	0

Menu item	Setting data
<b>ID/TITLE</b>	
ID	OFF
TITLE	OFF
ID DATA	(Blank)
TITLE DATA	(Blank)
<b>(FILE)TITLE</b>	
FILE-1	FILE-1
FILE-2	FILE-2
FILE-3	FILE-3
<b>DTL</b>	
LEVEL DEP.	0
CRISP	0
H/V BALANCE	0
<b>GAMMA</b>	
GAMMA TABLE	STANDARD
TOTAL GAMMA	0
R ADJUST	0
B ADJUST	0

# How to Attain Better Images

## Black Balance Adjustment

Adjust black balance to provide proper color tone at a dark part of video image. In the following cases, be sure to carry out black balance adjustment.

When using the camera first after purchasing it.

When using the camera after it has been unused for a long time.

When changing the camera cable length

When the camera operating environment is changed (e.g., when the ambient temperature varies significantly).

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

1. At the BLK ADJ item of Sub menu 2, position the cursor to Auto Black and press the R button to activate automatic black balance adjustment.

(Notes) 1) In combinational use with the manual iris lens or microscope, a full-black screen image is provided from the CCD image sensor during adjustment. When picturing after adjustment, a white screen image appears momentarily. This phenomenon is not a symptom of trouble, however.

- 2) 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 black balance adjustment again.

Error message	Procedure
AUTO BLACK : BAR	• Turn off the color bar.
AUTO BLACK : NG	• Carry out ABB again. If this message appears in repeated attempts, it is necessary to inspect the inside of the camera. In this case, notify your local Hitachi Denshi sales agent or Hitachi Denshi service office

## Dark shading compensation

When the camera cable length is changed, horizontal color shading can occur in the image. The shading can be compensated as follows.

1. Close the lens iris.
2. In the menu mode, position the cursor at Dark Shad and press R to activate automatic shading adjustment.
3. In the menu mode, position the cursor at Auto Black and press R to activate automatic black balance adjustment.
4. Repeat steps 2 and 3 several times.

Note: Be sure to compensate for dark shading when changing the camera cable.

## White Balance Adjustment

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

1. In the MENU mode, set up WHITE BAL: MEM 3200K or MEM 5600K.
2. Turn off the MENU screen to select the DIRECT mode.
3. Provide a proper aperture value of lens using the auto iris function or manually.
4. Put an white object in the subject image, and zoom it up.
5. Hold the AWB button pressed for about 2 seconds for automatic white balance adjustment. With MESSAGE RTN:ON, AUTO WHITE appears. At the end of successful adjustment AUTO WHITE:OK appears.
6. If white balance adjustment cannot be made, any of the following messages will appear. Take a proper procedure according to the error message, and then try white balance adjustment again.

Error message	Procedure
AUTO WHITE : NG CHANGE TO CAM TRY AGAIN	<ul style="list-style-type: none"> <li>• Turn off the color bar.</li> </ul>
AUTO WHITE : NG CHANGE TO MEMORY MODE TRY AGAIN	<ul style="list-style-type: none"> <li>• Set up WHITE BAL:MEM 3200K or MEM 5600K.</li> </ul>
AUTO WHITE : NG LOW LIGHT TRY AGAIN	<ul style="list-style-type: none"> <li>• White balance cannot be made due to insufficient illumination.</li> <li>• Increase the intensity of illumination, turn lens iris toward open direction, or increase the gain to provide a proper video level.</li> <li>• Press the AWB switch again.</li> </ul>
AUTO WHITE : NG HIGH LIGHT TRY AGAIN	<ul style="list-style-type: none"> <li>• White balance cannot be made due to excess illumination.</li> <li>• Increase the intensity of illumination, turn lens iris toward closed direction, or increase the gain to provide a proper video level.</li> <li>• Press the AWB switch again.</li> </ul>
AUTO WHITE : NG C.TEMP HIGH TRY AGAIN	<ul style="list-style-type: none"> <li>• 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.)</li> <li>• Add a filter to the lens or illumination to decrease the color temperature.</li> </ul>
AUTO WHITE : NG C.TEMP LOW TRY AGAIN	<ul style="list-style-type: none"> <li>• 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.)</li> <li>• Add a filter to the lens or illumination to increase the color temperature.</li> </ul>
AUTO WHITE : NG C. TEMP HIGH CHANGE TO MEM 5600K TRY AGAIN	<ul style="list-style-type: none"> <li>• Color temperature too high for optimum adjustment.</li> <li>• Set WHITE BAL to MEM 5600 K mode.</li> </ul>

AUTO WHITE : NG C. TEMP LOW CHANGE TO MEM 3200K TRY AGAIN	<ul style="list-style-type: none"><li>• Color temperature too low for optimum adjustment.</li><li>• Set WHITE BAL to MEM 3200 K mode.</li></ul>
--	---

## Realtime Auto White

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

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

(Note) If the color temperature of the scene being taken is changed abruptly (when the camera is oriented from indoor side to outdoor side), the image may become bluish or reddish momentarily. This phenomenon is not a symptom of trouble, however. Immediately after it, the optimum white balance condition is set.

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

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

For details of the WHITE GATE function, refer to p. 18. 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

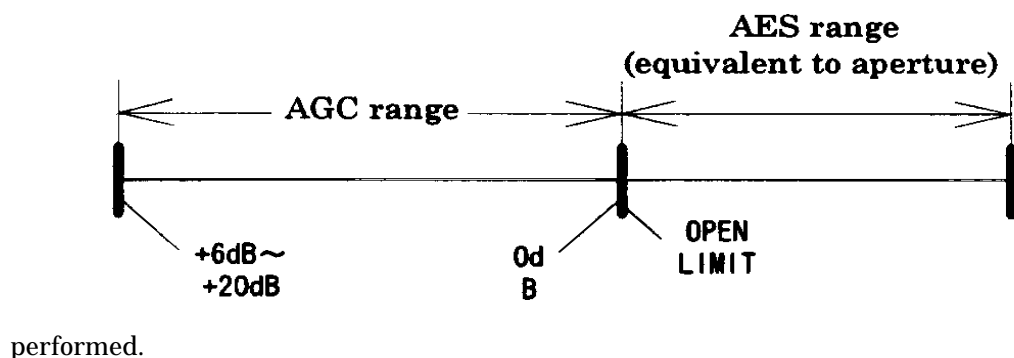
Color shading may occur in the vertical direction on screen due to any characteristic of lens. This camera is equipped with a function for correcting color shading automatically.

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

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

## A L C

In combination of GAIN:AGC, SHUTTER:AES, the following ALC (auto level control) can be

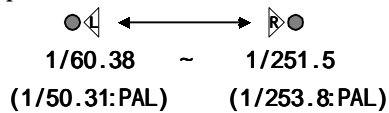


performed.

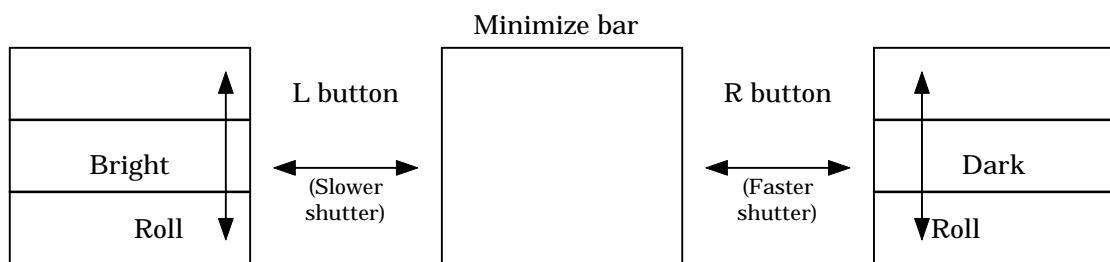
## Lock scan mode shutter speed setting

Press the Setup button and open the main menu, then open Sub menu 1. Set the cursor to SHUTTER by pressing D, select the VARIABLE position with the L-R buttons, again press D to shift to the variable items.

Press the L and R buttons to set the shutter speed in the range indicated below. Set the desired shutter speed.



When picking up e.g., a computer screen having a different scanning frequency, bright or dark horizontal bars roll vertically across the screen (see figure). The shutter speed can be adjusted to minimize this effect in most cases.

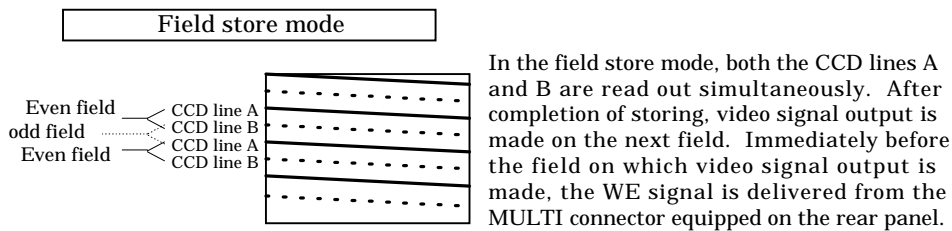


### Notes

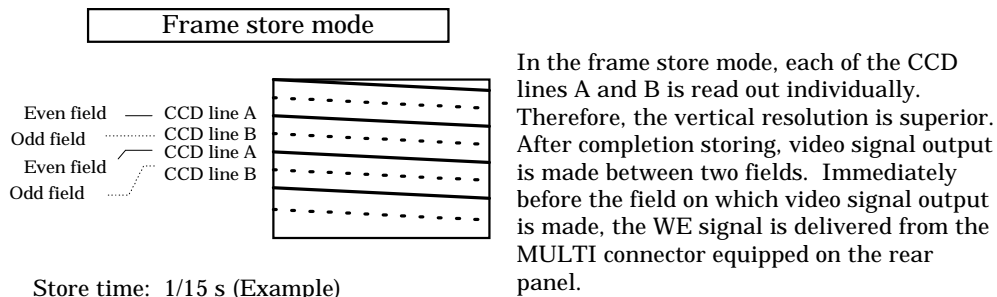
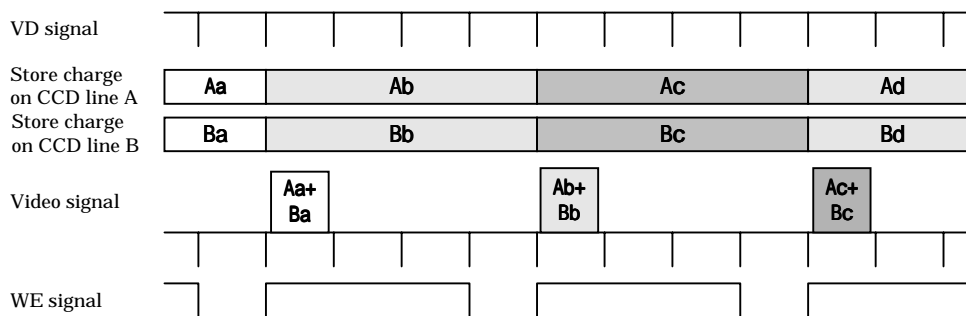
1. Each pressing of the L or R button changes the shutter speed by 1 H. Hold the button depressed for continuous change.
2. If the display scanning frequency is below 60 Hz, the rolling horizontal bar cannot be stopped.
3. Raising the shutter speed improves resolution of moving objects, but loses sensitivity to the extent auxiliary lighting may be needed for outdoor scenes. Also, vertical smear increases with higher shutter speeds due to the physical properties of CCD cameras.

## Long-Time Store Mode

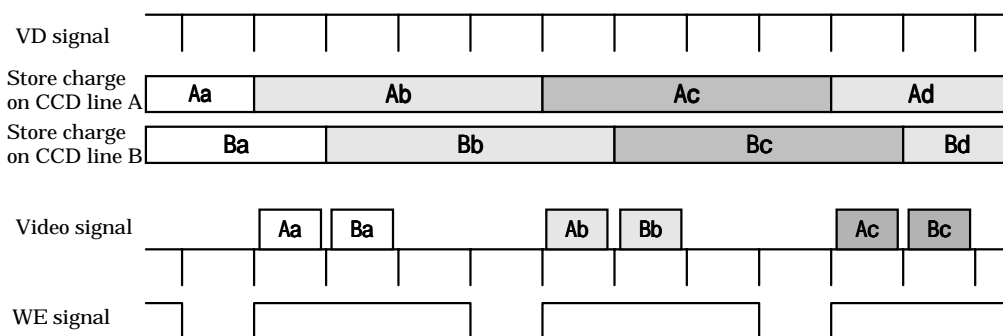
In case that illumination on the subject is insufficient, just increasing the gain of the camera may cause an increase in noise, resulting in an unclear image. In such a situation, it is advisable to select the long-time store mode using the external memory. Thereby, the image can be brighter and clearer according to the stored amount of image. This camera is provided with two kinds of image store functions (CCD MODE:FLD/FRM in SUB MENU 1). When one of these image store functions is used, video signal output is delivered from the camera with the timing shown below. Since the degree of after-image increases for a moving subject because of image storing, it is recommended to use the image store function when taking a still picture or scene.



Store time: 1/15 s (Example)



Store time: 1/15 s (Example)



## RC-C10 Remote Control Box

The RC-C10 enables operation of all camera menu items by remote control. Before connecting the remote control box, check the camera settings as follows.

(1) SW701 : Camera internal switch SW701 should be set to RC-C10 (factory setting).

See Page 34 for internal switch setting details.

(2) Baud rate : Open the Special set menu and set the baud rate to 62500 bps (factory setting).

### Operation

#### (1) Direct control

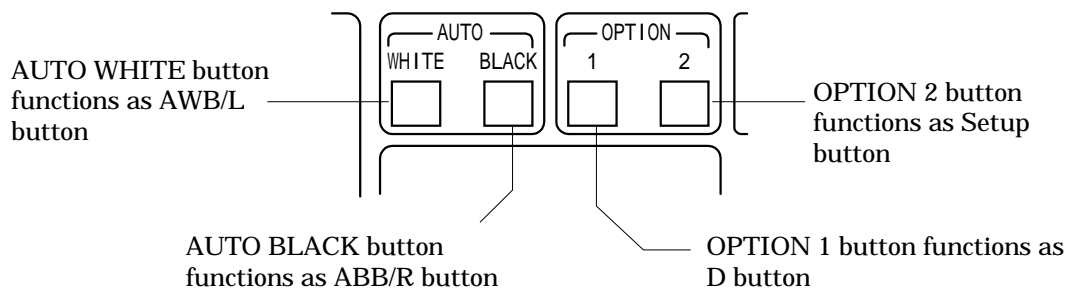
The following items can be controlled directly from the RC-C10 buttons. Refer to the RC-C10 operating instructions.

- BAR/CAM
- WHITE BAL
- GAIN
- DTL
- IRIS MODE
- IRIS
- M.BLK
- R GAIN
- B GAIN
- R BLK
- B BLK
- H PHASE
- SC COARSE
- SC FINE

\*Use Auto fixed for the HV-D27 and HV-D37.

#### (2) Menu control

Items not mentioned in the above list are controlled by menu settings. The control box Option 1, Option 2, Auto White and Auto Black buttons are assigned to menu operating buttons. When AUTO WHITE and AUTO BLK are not indicated in the menu, the functions are conducted directly from the control box buttons.



Refer to menu operation.

Note: Hold OPTION 1 depressed and press OPTION 2 for 2 seconds to produce the Special Set menu, the SPECIAL SET menu appears on the screen.

The accessory labels can be affixed to the controller buttons if required.



#### (3) Setting data storage

Data (menu and direct control items) set by remote control from the RC-C10 are not automatically saved. When setting data need to be stored, press the SET button (of the RC-C10).

Note: Use care since settings are lost if the application file is changed or power switched off without operating SET.

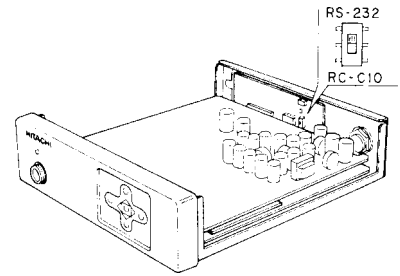
# Function Selection by Internal Switch Setting

## SW701

For connection with the remote control box RC-C10, set SW701 to the RC-C10 position.

For connection with the personal computer, set SW405 to the RS-232C position.

At shipment from factory, SW405 is set at the RC-C10 position.



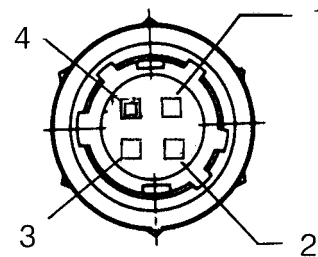
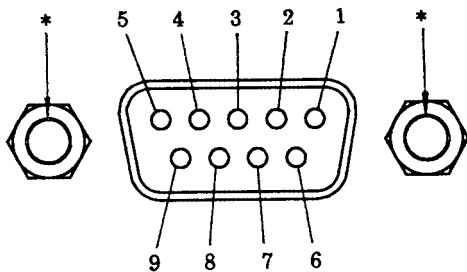
# Connectors

MULTI connector (SDEB-9S)

Pin No.	Signal designation
1	GND
2	WE
3	R/R-Y/C output
4	G/Y output
5	B/B-Y output
6	VBS output
7	SYNC output
8	HD output
9	VD output

REMOTE connector (HR10A-7R-4S)

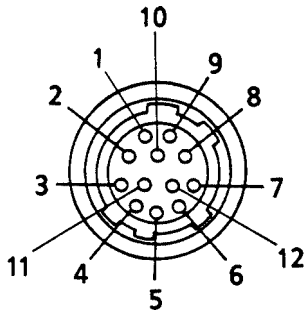
Pin No.	Signal designation
1	+12V output
2	RXD/SD input
3	TXD/SD output
4	GND



\* Use M2.6 plug retaining screws.

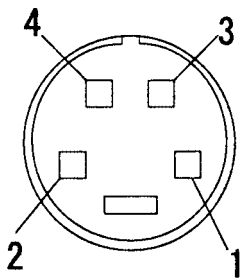
TRIG connector (HR10A-10R-12PB)

Pin No.	Signal designation
1	GND
2	
3	
4	
5	GND
6	HD input
7	VD/TRIG input
8	
9	
10	GND
11	
12	GND



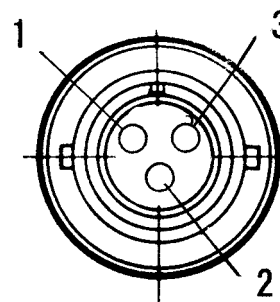
Y/C connector (TCS-7547-01-401)

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



12V-IN connector (RM12BRD-3PH)

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



# Specifications

	H V - D 2 7	H V - D 3 7
(1) Color system	NTSC、PAL	
(2) Optical systems	1/2-inch F1.6 prism	1/3-inch F2.2 prism
(3) Imaging systems	R,G,B 3-chip	
(4) Imaging device	1/2-inch interline C C D (with micro lenses)	1/3-inch interline C C D (with micro lenses)
Total pixels	NTSC 811(H) × 508(V) PAL 795(H) × 596(V)	
Effective pixels	NTSC 768(H) × 494(V) PAL 752(H) × 582(V)	
Effective image area	NTSC 6.45(H) × 4.84(V)mm PAL 6.47(H) × 4.83(V)mm	NTSC 4.88(H) × 3.66(V)mm PAL 4.89(H) × 3.64(V)mm
(5) Sync system	Internal/external (Automatic changeover VBS/BBS.However ,theHD/VD MODE needs to be switched )	
(6) Horizontal resolution	800TV lines (Y signal center, Y OUT and DTL off)	750TV lines (Y signal center, Y OUT and DTL off) 580TV lines ( RGB OUT )
(7) Signal to noise ratio	NTSC 62dB typ (DNR:ON) PAL 60dB typ (DNR:ON) (Y OUT, =1, DTL:OFF, GAIN:0dB)	NTSC 60dB typ (DNR:ON) PAL 58dB typ (DNR:ON)
(8) Standard sensitivity	2000 lx F8.0	
(9) Minimum illumination	1.5 lx ( 50IRE,ULTRA GAIN:ON, F1.6, GAIN:+20dB )	2.8 lx ( 50IRE,ULTRA GAIN:ON, F2.2, GAIN:+20dB )
(10) Gamma correction	0.35 ~ 1.0 ( on(3mode ) / off selectable )	
(11) Vertical contour correction	2H	
(12) Lens mount	C mount ( Flange focal distance 17.526 mm in air )	
(13) Sensitivity selection	AGC ( 0 ~ +20dB ) ,NORMAL/HIGH/MAX (3 position)	
(14) DTL control	DTL level and frequency.	
(15)CCD drive function		
Preset	: 1/100(1/60 PAL), 1/250, 1/500, 1/1,000, 1/2,000, 1/4,000, 1/10,000 second	
Lockscan	: NTSC 1/60.38 ~ 1/251.5 second(1H step) PAL 1/50.31 ~ 1/253.8 second(1H step)	
AES mode	: OFF to approx.1/50,000 second (up to equivalent of 4 F steos,continuously in 1 H steps)	
Long integration	: Selectable field/flame integration NTSC 1/30 to approx. 8 seconds ( 1 flame steps ) PAL 1/25 to approx. 8 seconds (1 flame steps) (External picture memory required for continuous picture)	
EXT	: FIX(1/100PAL(1/60)) FIX(250),FIX(500),FIX(1/1000),FIX(1/2000) SHORT TRIG,LONGTRIG(FLD),LONG TRIG(FLM) (External picture memory required for continuous picture)	
Flame readout	(Image lag response deteriorates)	

- |                                     |   |   |      |
|-------------------------------------|---|---|------|
| (16) Color bar                      | SMPTE   | PAL                                     | FULL |
| (17) Power supply voltage           | 12V rated   |   |      |
|                                     | Stable operation is ensured with DC power supply 10.5 to 17 V |   |      |
|                                     | No ripple and noise shall occur                               |   |      |
| (18) Power consumption              | Approx.10.5W  |   |      |
| (19) Dimensions                     | Camera head   | : 38.5 (W) × 46 (H) × 42 (D)mm          |      |
|                                     | Caamera control unit  | : 150 (W) × 45 (H) × 170 (D)mm          |      |
| (20) Mass                           | Camera head   | : Approx.90 g ( excluding lens )        |      |
|                                     | Camera control unit   | : Approx.930 g (excluding camera cable) |      |
| (21) Ambient temperature(operating) | 0 to 45   |   |      |
| (22)Ambient temperature (storage)   | -20 to 60   |   |      |

(Camera cable = 3 m )

## Input/Output Signals

### 1. Input signal

#### (1) Genlock input

- VBS 1.0 Vp-p  $\pm$  3 dB or black burst, 75  $\Omega$  or high impedance (BNC)  
(Sync 0.3  $\pm$  0.1 Vp-p, burst 0.3  $\pm$  0.1 Vp-p)
- HD/VD TTL level (TRIG connector)

#### (2) Serial data (4 pin connector)

- 1.5 Vp-p  $\pm$  3 dB, high impedance (in connection with RC-C10)
- RS-232C level (in connection with personal computer)

(Note) Set internal switch according to connected equipment.

#### (3) Trigger input TTL level(L:0 to 0.4 VDC H:3.4 to 5.0 VDC)

### 2. Output signal ratings

#### (1) Composite video (BNC, D-sub connector)

VBS 1.0 Vp-p, 75  $\Omega$

#### (2) Y/C (D-sub, Y/C connectors)

Y : 1.0 Vp-p, 75  $\Omega$   
C : 0.28 Vp-p (burst), 75  $\Omega$  (NTSC),  
0.3 Vp-p (burst), 75  $\Omega$  (PAL)

#### (3) Component (D-sub connector)

Y : 1.0 Vp-p, 75  $\Omega$   
R-Y: 0.7 Vp-p, 75  $\Omega$   
B-Y: 0.7 Vp-p, 75  $\Omega$

#### (4) RGB (D-sub connector)

R : 0.7 Vp-p, 75  $\Omega$   
G : 0.7 Vp-p, 75  $\Omega$   
B : 0.7 Vp-p, 75  $\Omega$

(Note) Menu settings select the D-sub connector output for Y/C, component or RGB.

#### (5) Sync (D-sub connector)

HD : 2 Vp-p, 75  $\Omega$   
VD : 2 Vp-p, 75  $\Omega$   
SYNC: 2 Vp-p, 75  $\Omega$

#### (6) Serial data (4 pin connector)

- 1.5 Vp-p/ Low (in connection with RC-C10)
- RS-232C level (in connection personal computer)

(Note) Set internal switch according to connected equipment.

## Major accessories

AC adaptor, AP-60A

Camera control box, RC-C10

Junction Unit, JU-Z2

Camera cable C-301KAJ (3m)

C-102KAJ (10m)

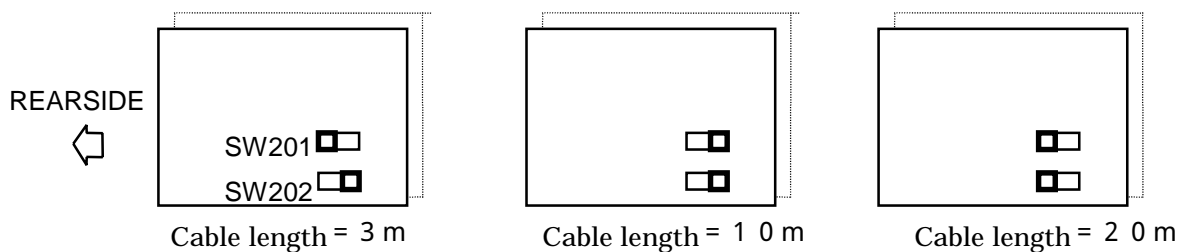
C-202KAJ (20m)

## Cable length setting (for serviceman information)

When it is needed to change the cable length, contact your local Hitachi Denshi sales representative.

Note the following points when replacing the camera cable.

- (1) Set CCU internal switches SW201 and SW202 according to the cable length. Remove the CCU cover and set the switches as indicated.



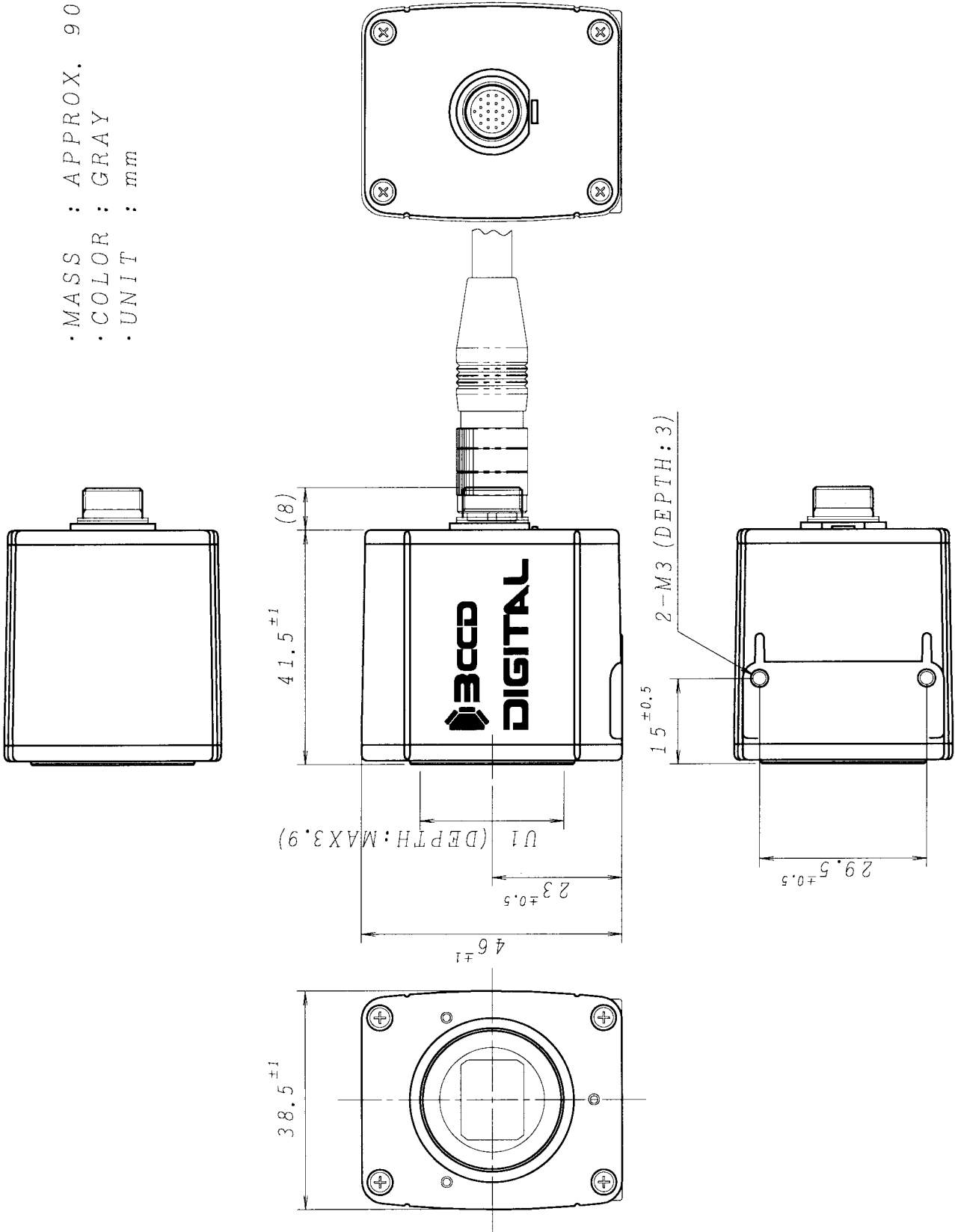
### CAUTION:

- 1) Be sure to switch off the power supply connected to the camera before removing the cover for setting the switches. Also switch off the power supply before reinstalling the cover.
- 2) Use care not to disturb other controls and switches.

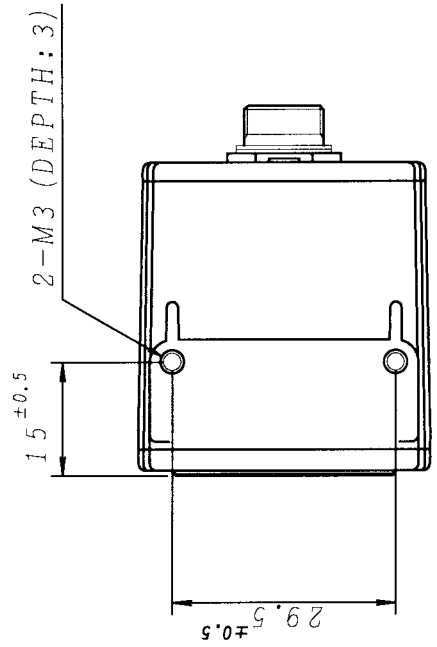
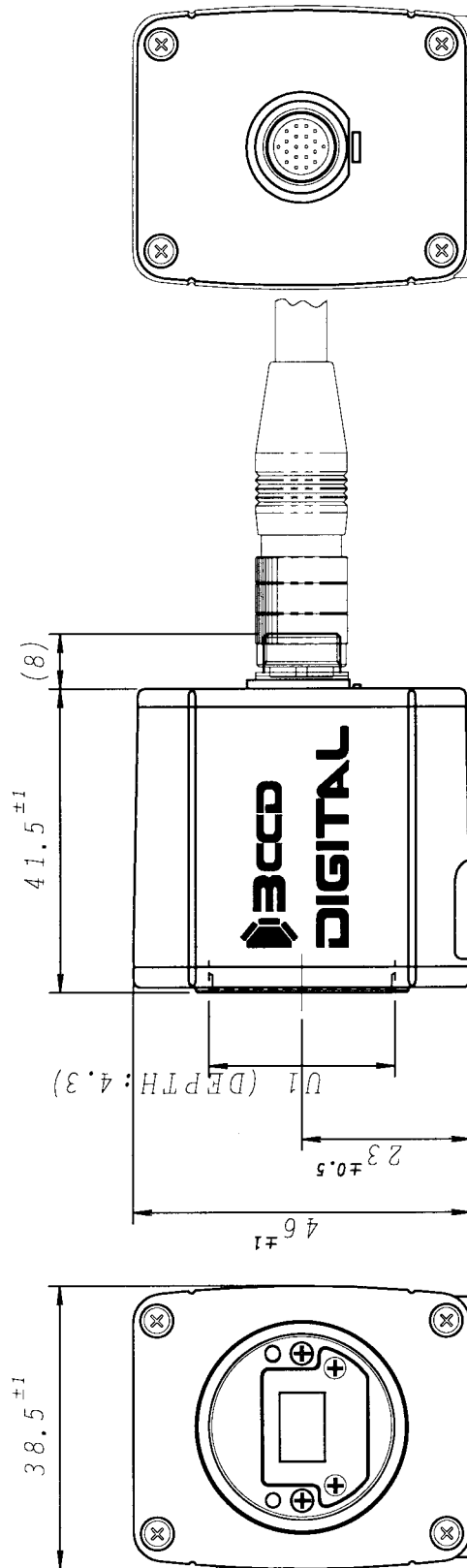
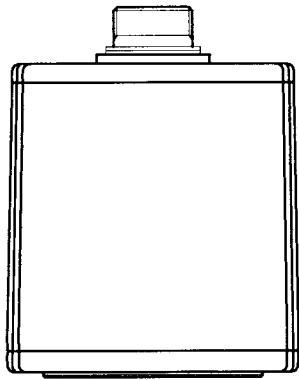
- (2) Adjust auto black balance and dark shading as described on page 26.

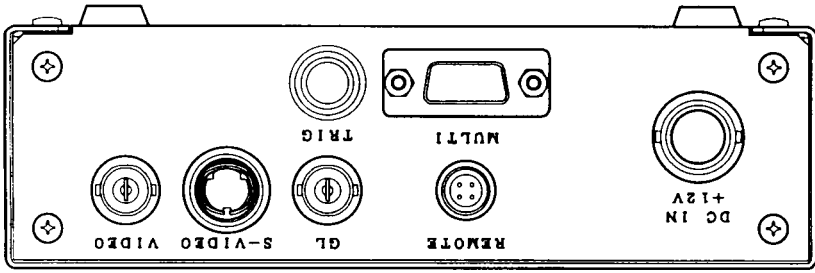
# Dimensions

- MASS : APPROX. 90 g
- COLOR : GRAY
- UNIT : mm



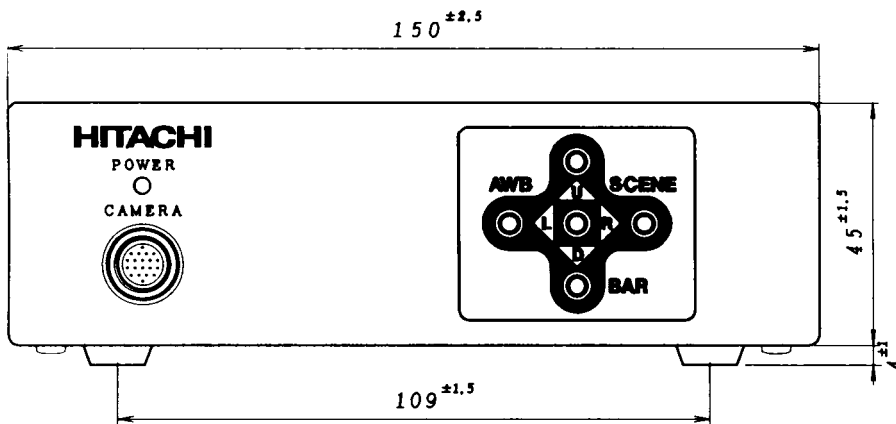
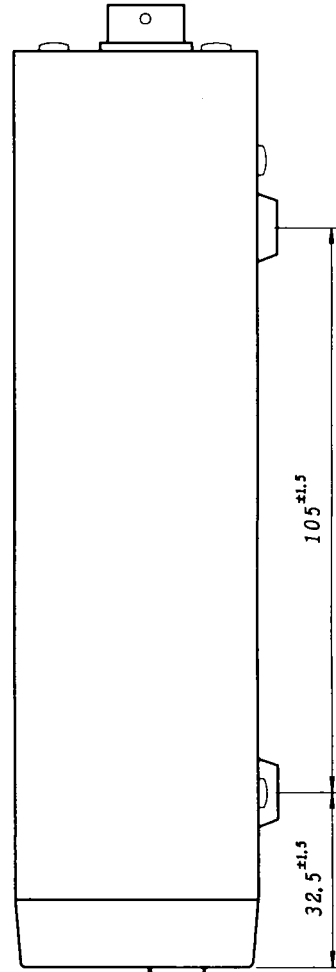
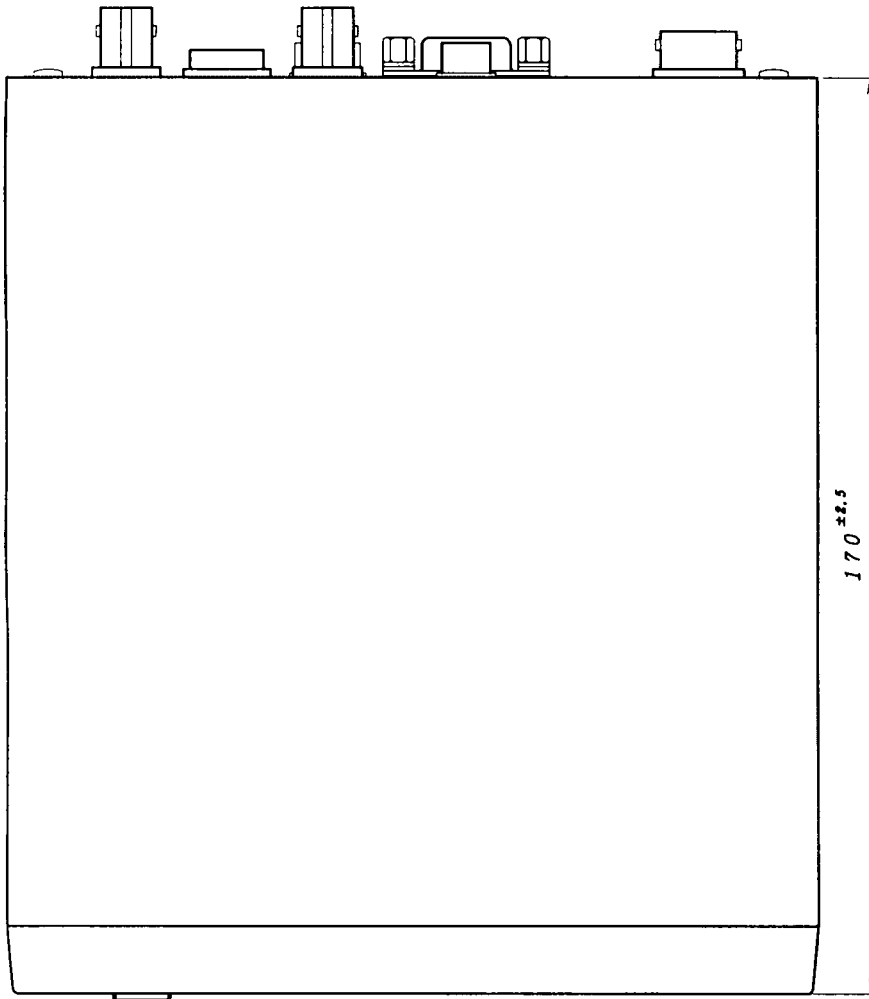
- MASS : APPROX. 90g
- COLOR : GRAY
- UNIT : mm





MASS: APPROX. 950 g

UNIT: mm





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