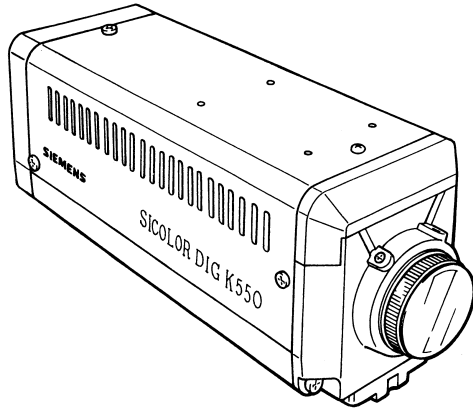CCD Color Camera

SICOLOR DIG
K550
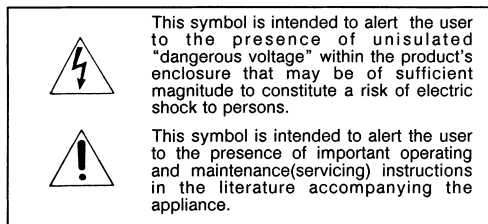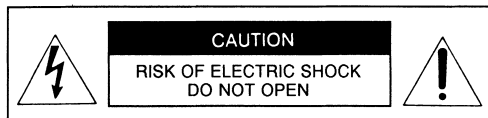

OPERATION MANUAL

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

Hitachi Denshi, Ltd.

Contents

	CAUTION	
⚡	RISK OF ELECTRIC SHOCK DO NOT OPEN	!

⚡	This symbol is intended to alert the user to the presence of unisulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
!	This symbol is intended to alert the user to the presence of important operating and maintenance(servicing) instructions in the literature accompanying the appliance.

CAUTION FOR SAFE OPERATION

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

This symbol is intended to alert the user to the presence of unisulated dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
This symbol is intended to alert the user to the presence of important operating and maintenance(servicing) instructions in the literature accompanying the appliance.

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

AVERTISSEMENT
  Afin d'eviter tout risque d'incendie ou d'electrocution, ne pas exposer l'appareil a la
  pluie ou a l'humidite.
  Afin d'ecarter tout risque d'electrocution, garder le coffret ferme. Ne confier l'entretien
  de l'appareil qu a un personnel qualifie.

VORSICHT
  Um Feuergefahr und die Gefahr eines eiektrischen Schiages zu vermeiden, darf das
  Gerat weder Regen noch Feuchtigkeit ausgesetzt werden.
Um einen elektrischen Schiag zu vermeiden, darf das Gehause richt geoffnet werden.
Uberiassen Sie Wartungsarbeiten stets nur einem Fachmann.

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.

A

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 plugs, 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.

C

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.

D

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 fur zukunftigen 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 Gerats vor Reinigung aus der Steckdose ziehen. Keine flussigen
   Reinigungsmittel oder Aerosolreiniger verwenden. Zum Reinigen einen feuchten Lappen
   verwenden.

6. Zubehor
   Nur vom-Hersteller des Erzeugnisses empfohlenes Zubehor verwenden, da es sonst zu
   Storungen kommen kann.

7. Wasser und Feuchtigkeit
   Dieses Erzeugnis nicht in der Nahe von Wasser verwenden - z.B. in der Nahe einer
   Badewanne, eines Waschbeckens, einer Kuchenspule, eines Waschzubers, in einem
   nassen Keller, in der Nahe eines Schwimmbeckens usw.

8. Aufstellung
   Das Erzeugnis nicht auf einen unstabilen Wagen, Stand, Dreifu-, Trager oder Tisch
   stellen. Das Erzeugnis kann sonst herunterfallen und ein kind oder einen Erwachsenen
   schwer verletzen. Au-erdem kann das Gerat schwer beschadigt werden. Nur mit einem
   Wagen, Stand, Dreifu-, Trager oder Tisch verwenden, der vom Hersteller empfohlen
   oder mit dem Erzeugnis verkauft worden ist. Fur jegliche Anbringung sollten die
   Anweisungen des Herstellers befolgt werden, und das vom Hersteller empfohlene
   Anbringungszubehor sollte verwendet werden.

9. Eine Kombination von Erzeugnis und Wagen sollte vorsichtig
   bewegt werden. Schneller Halt, uberma-ige Krafteinwirkung
   und unebene Oberflachen konnen Umkippen der kombination
   von Erzeugnis und Wagen verursachen.

10. Ventilation
   Schlitze und Offnungen im Gehause dienen der Ventilation. Sie sind fur zuverlassigen
   Betrieb des Gerates und Schutz vor Uberhitzung erforderlich und durfen nicht blockiert
   oder abgedeckt werden. Die Offnungen sollten niemals dadurch blockiert werden, da-
   das Gerat auf ein Bett, ein Sofa, einen

E

Teppich oder eine ahnliche Oberflache gestellt wird. Das Gerat sollte nur dann in
Einbauinstallierung wie in einem Bucherschrank 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 fur eine
Stromversorgung Sie haben, so wenden Sie sich bitte an Ihren Erzeugnishandler oder
an das lokale Elektrizitatswerk. Beziehen Sie sich fur Batteriebetrieb oder andere
Stromquellen vorgesehene Erzeugnisse bitte auf die Bedienungsanleitungen.

12.Erdung oder Polarisierung
Dieses Erzeugnis ist mit einem Schutzkontaktstecker mit drei Leitern ausgerustet, mit
einem Erdungskontakt. Dieser Stecker pa-t nur in ein Schuko-Steckdose. Dies ist eine
Sicherheitsma-nahme. Wenn Sie den Stecker nicht in die Steckdose stecken konnen, so
wenden Sie sich bitte an ihren Elektriker, damit er die veraltete Steckdose ersetzt.
Machen Sie nicht den Schutz des Schutzkontaktsteckers unwirksam.

13. Netzkabelschutz
Netzkabel sollten so verlegt werden, da- moglichst nicht darauf getreten wird und da- sie
nicht eingeklemmt werden, mit besonderer Beachtung der kabel an Steckern,
Verlangerungskabeln und dem Austritt des Kabels aus dem Erzeugnis.

14. Blitzschlag
Fur zusatzlichen Schutz des Erzeugnisses wahrend eines Gewitters oder bei
Nichtverwendung fur lange Zeit den Stecker aus der Steckdose ziehen. Dies verhutet
Beschadigung durch Blitzschlag und Netzspannungssto-e.

15. Uberlastung
Wandsteckdosen, Verlangerungskabel und eingebaute Bequemlichkeitssteckdosen nicht
uberlasten, da dies Feuer oder elektrischen Schlag verursachen kann.

16. Eindringen von Fremdkorpern und Flussigkeit
Niemals Objekte irgendwelcher Art durch die Offnungen in das Gerat schieben, da diese
unter hoher Spannung stehende Teile beruhren oder kurzschlie-en konnen, wodurch es
zu Feuer oder elektrischem Schlag kommen kann. Niemals Flussigkeiten irgendwelcher
Art auf das Erzeugnis verschutten.

17. Entflammbare und explosive Substanzen
Vermeiden Sie Verwendung dieses Erzeugnisses an Orten mit Gasen bzw.
entflammbaren oder

F

explosiven Substanzen in der direkten Umgebung.

18. Starke Sto-e oder Vibrationen

Setzen Sie das Erzeugnis beim Transport nicht starken Sto-en oder Vibrationen aus.

19. Wartung

Versuchen Sie nicht, dieses Erzeugnis Selbst zu warten, da Sie sich durch Offnen bzw.
Entfernen von Abdeckungen hohen Spannungen und sonstigen Gefahrdungen
ausserzen konnen.
Beziehen Sie sich fur jegliche Wartung auf qualifiziertes Wartungspersonal.

20. Beschadigung, 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 beschadigt ist.
b. Bei Eindringen von Flussigkeit oder Fremdkorpern in das Gerat.
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 Beschadigung verursachen kann und oft betrachtliche Arbeit durch
   einen qualifizierten Techniker erfordert, um das Erzeugnis wieder zu normalem Betrieb
   zuruckzubringen.
e. Wenn das Erzeugnis fallen gelassen oder beschadigt worden ist.
f. Wenn das Erzeugnis eine klare Anderung in der Leistung zeigt-dies weist darauf hin,
   da- Wartung erforderlich ist.

21. Ersatzteile

Wenn Ersatzteile erforderlich sind, darauf achten, da- der Wartungstechniker nur die
vom Hersteller festgelegten Ersatzteile oder Teile mit den gleichen Charakteristiken wie
die ursprunglichen Teile verwendet. Unautorisierte Ersatzteile konnen Feuer,
elektrischen Schlag oder sonstige Gefahrdungen verursachen.

22. Sicherheitsprufung

Bitten Sie den Wartungstechniker nach der Vollendung von Wartung oder
Reparaturarbeiten   an diesem Erzeugnis um die Durchfuhrung von
Sicherheitsprufungen, um zu bestimmen, da- 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. Warme

Das Erzeugnis sollte fern von Warmequellen wie Radiatoren, Heizwiderstanden, Ofen
und anderen Warme erzeugenden Erzeugnissen(einschlie-lich Verstarkern)aufgestellt
werden.

MISES EN GARDE IMPORTANTES

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

2. Conserver ces instructions
   Conserver les instructions de securite et de fonctionnement a des fins de reference ulterieure.

3. Tenir compte des avertissements
   Tous les avertissements qui figurent sur l'appareil et dans le mode d'emploi devront ^etre respectes.

4. Observer les instructions
   Observer toutes les instructions de fonctionnement et d'utilisation.

5. Nettoyage
   Avant de proceder au nettoyage, debrancher l'appareil de la prise secteur. Ne pas utiliser de produits de nettoyage liquides ou en aerosol. Nettoyer l'appareil avec un chiffon humide.

6. Fixations
   Ne pas utiliser de fixations non recommandees par le fabricant de l'appareil car elles pourraient ^etre source de danger.

7. Eau et humidite
   Ne pas utiliser l'appareil a proximite d'eau-par exemple pres d'une baignoire, d'un lavabo, d'un evier ou d'un bac a lessive, dans un sous-sol humide, ou pres 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 grievement des enfants ou des adultes, et etant serieusement endommage.Utiliser exclusivement le chariot, le socle, le pied, le support ou la table recommandes par le fabricant, ou vendus avec l'appareil. Pour tout montage de l'appareil, respecter les instructions du fabricant, et utiliser a cette fin l'accessoire de montage recommande par le fabricant.

9. L'appareil monte sur son chariot devra ^etre deplace avec precaution. Des arr^ets brusques, une force excessive et des surfaces irregulieres pourraient provoquer le renversement de l'ensemble appareil-chariot.

10. Ventilation
    Les fentes et les ouvertures du coffret sont prevues pour la ventilation ainsi que pour garantir un fonctionnement en toute securite de l'appareil et le proteger de toute surchauffe, et ces ouvertures ne devront donc ^etre ni obstruees 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 confine, par exemple une bibliotheque ou une etagere, sans

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ventilation suffisante ou sans respecter les instructions du fabricant.

11. Sources d'alimentation

L'appareil devra ^etre alimente exclusivement sur le type d'alimentation indique sur l'etiquette signaletique. Sil'on n'est pas s^ur du type d'alimentation du local, consulter le revendeur de l'appareil ou la compagnie d'electricite locale. Pour les appareils qui fonctionnent sur batterie ou sur d'autres sources, voir le mode d'emploi.

12. Mise a la terre ou polarisation

L'appareil est dote d'une fiche trifilaire avec mise a la terre, dont la troisieme broche assure la mise a la terre. Cette fiche ne rentrera que dans les prises trifilaires de mise a la terre. Ceci est une mesure de securite. Si la fiche ne rentre pas dans la prise, faire remplacer la prise desuete par un electricien. Ne pas rendre vaine la measure de securite assuree par cette prise avec mise a 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 place dessus ou contre eux. Faire particulierement attention aux fiches des cordons, a la proximite des prises, et a l'endroit ou ils ressortent de l'appareil.

14. Foudre

Pour renforcer la protection de l'appareil pendant un orage, ou si l'on s'en eloigne ou qu'on reste longtemps sans l'utiliser, le debrancher de la source d'alimentation. Ceci permettra d'eviter tout dommage de l'appareil d^u a la foudre et aux surtensions de ligne.

15. Surcharge

Ne pas surcharger les prises, rallonges et prises multiples car cela pourrait entra^iner un risque de feu ou de choc electrique.

16. Penetration 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 pieces, ce qui pourrait provoquer un feu ou un choc electrique. Ne jamais renverser de liquide d'aucune sorte sur l'appareil.

17. Substances inflammables et explosives

Eviter d'utiliser l'appareil en presence de gaz, ainsi qu'a proximite immediate de substances inflammables et explosives.

18. Chocs ou vibrations violents

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

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19. Reparations
Ne pas tenter de reparer l'appareil soi-m^eme car le fait d'ouvrir ou de retirer les caches
risque d'exposer l'utilisateur a des tensions dangereuses notamment. Confier toute
reparation a un personnel qualifie.

20. Dommages necessitant reparations
Debrancher l'appareil de la source d'alimentation et confier les reparations a un
personnel qualifie dans les cas suivants :

a. Lorsque le cordon d'alimentation ou sa fiche sont endommages
b. Si du liquide s'est renverse sur l'appareil ou que des objets sont tombes dedans
c. Si l'appareil a ete expose a la pluie ou a l'eau.
d. Si l'appareil ne fonctionne pas normalement lorsqu'on observe les instructions
   d'utilisation. Ne regler que les commandes couvertes par le mode d'emploi ; en effet,
   un reglage incorrect des autres commandes pourrait entra^iner des dommages et
   necessiteront souvent des travaux de reparation co^uteux par un technicien qualifie
   pour remettre l'appareil en etat de marche.
e. Si l'appareil est tombe ou qu'il a ete endommage.
f. Si l'appareil affiche une nette modification de ses performances, cela signifie qu'il a
   besoin d'^etre repare.

21. Pieces de rechange
Si l'on a besoin de pieces de rechange, veiller a ce que le technicien de reparation utilise
exclusivement les pieces de rechange specifiees par le fabricant ou des pieces ayant les
m^emes caracteristiques que les pieces d'origine. Les pieces de rechange non
autorisees risquent de provoquer un feu, un choc electrique et autres dangers.

22. Verification de securite
Apres tout travail d'entretien ou de reparation de l'appareil, demander au technicien de
reparation d'effectuer les verifications de securite pour s'assurer que l'appareil est en bon
etat de marche.

23. Montage au mur ou au plafond
L'appareil ne pourra ^etre monte au mur ou au plafond que de la maniere recommandee
par le fabricant.

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

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Over view

The K550 is a color television camera utilizing a 1/2-inch CCD (charge coupled device) solid-state pickup element and digital signal processing circuits.
The camera is an excellent choice for surveillance and other applications.

Features

High sensitivity and resolution

   The combined CCD with on-chip microlenses and low noise circuit design provide high sensitivity down to 1.5 lx (F1.2). Horizontal resolution from the 440,000 picture element (pixel) CCD is 460 TV lines.

High picture quality

- High picture quality is obtained by digital signal processing (DSP) utilizing LSI (large scale integration) circuit construction.
- Clear images result from the DSP contour correction and 2H vertical enhancer.
- Wide dynamic range is achieved by contrast correction (black stretch and white compression).

Versatile functions

- Multiple video memory functions (sensitivity boost and electronic zoom)
- Backlight compensation (automatic and manual settings)
- Auto-tracking white balance
- Electronic shutter (maximum 1/10000 second)
- Text display (character generator)
- Internal/external synchronization (sync)
- Use either C or CS mount lenses

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Important precautions

Power supply
- Refer to the Main Specifications and be sure to use the specified power supply.
- After switching on power, several seconds are required before a picture appears on the monitor.

Handling
- Do not remove the covers or disassemble the product.
- Be sure to switch off power before connecting and disconnecting cables. Grasp connectors by the connector structure (not the attached wires).
- When attaching and removing the lens, use care moisture or dust does not enter the camera interior.

Installation and storage sites
Avoid using or storing the camera in the following types of locations.
- In direct sunlight or where likely to be directly contacted by rain or snow
- Locations containing inflammable or corrosive gases
- Extremely hot or cold locations (operating ambient temperature is -10 to 50)
- Humid or dusty locations
- Where subject to strong vibration or physical shock
- In locations subject to strong electromagnetic or magnetic fields

Long term stable performance
When used under high ambient temperature for long periods of time, the internal components can deteriorate and the operating life shortened. Be sure the ambient temperature is less than 50C in installations intended for long term continuous operation.

Cleaning
Use a photographers air blower or lens brush to clear dust from the lens or optical filter.
If soiling is severe, the cover can be cleaned with a cloth moistened with a dilute neutral detergent solution. Afterwards, wipe with a dry cloth.
Do not use alcohols, petroleum distillates, liquid cleaners or sprays.

CCD characteristics

The following effects can occur with CCD elements and do not indicate malfunction.

Smear and blooming

When a strong light, such as a lamp or reflected sunlight, strikes the CCD, a band appears to extend above and below the image of the light. Install and aim the camera in a manner that avoids directly picking up strong light sources within the scene.
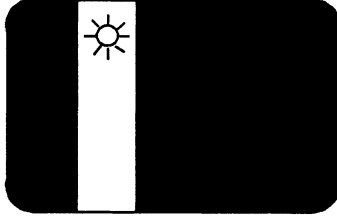
Fixed pattern

Fixed pattern noise can occur in the picture when the camera is used at high ambient temperature. The effect is most pronounced at high sensitivity settings.

Moire pattern

Moire is a phenomenon whereby interference between two patterns produces a third "phantom" pattern. The CCD pixels are arranged in a pattern and when another pattern (e.g., a performer wearing a finely striped necktie) is picked up, interference between the patterns can produce the moire effect.

Burn damage

When used for extended periods under very strong light, the CCD internal spectral filter can be discolored. Avoid using the camera for long periods of time in locations subject to strong light.

Section names and functions

Tripod adaptor holes
See camera installation on page 10.

Lens mount screws

Lens mount ring
See flangeback adjustment on page 9.

C mount adaptor
See lens mount on Page 7.

Tripod adaptor

Threaded hole for mounting camera
1/4" 20UNC (depth: 8 mm)

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Setup buttons
Use when setting up and adjusting the camera with reference to the on-screen menus. See page 12.

Video Output Terminals

Lens type switch
Set to DC or Video according to the type of auto-iris lens.
DC: Set to this position when using a lens that functions from a DC control voltage input.
Video: Use this position when the lens functions from a video signal input. See page 8.

Genlock input Terminals
Connect black burst (BB) or composite video (VBS) signal when operating from external sync.

Lens terminals
When using an auto-iris lens, connect the lens cable to this terminal.

Remote Terminals
Use for remote operations.

Alarm input Terminal
This is performed with cycle memory unit, only K550M.

Genlock 75 ohm switch
External sync termination on/off switch. Set to on except for loop through connection.

**Pilot lamp**
DC input Terminals

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Connections

Video output connection

Connect the video output of the camera to the video input of a monitor or other equipment. When using a "loop through" connection of two or more monitors, set the 75Ω switch of only the final monitor to on. Determine the type of cable according to the distance of the connected equipment. The maximum cable lengths indicated below are recommended for avoiding appreciable picture degradation.

  3V-2V   : 150 meters
  5C-2V   : 200 m
  7C-2V   : 300 m
  10C-2V   : 400 m
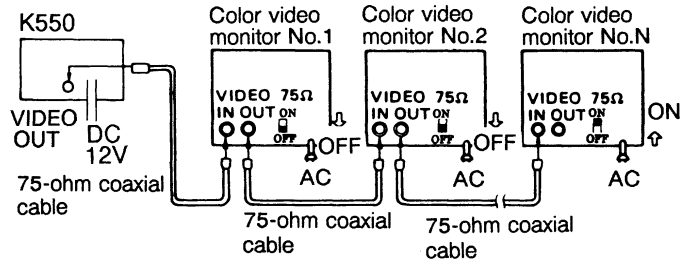
External sync input connection

The camera is automatically set for external sync by connecting a black burst (BB) or composite video (VBS) signal to the Genlock input terminals. When using a "loop through" sync connection to two or more cameras, set the 75Ω switch of only the final camera to on.

6
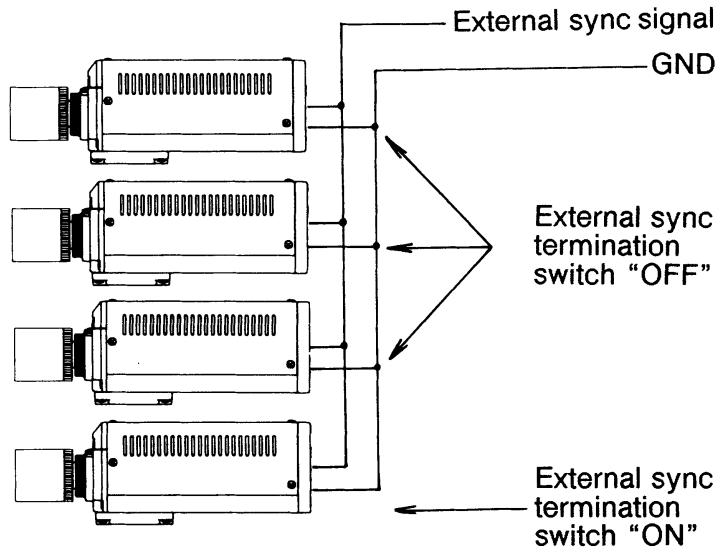
Lenses

Note when selecting the lens
1) Observe the maximum size limit (A in the figure) when installing the lens. Internal damage can occur if a larger lens is used.
2) Avoid using a lens that is heavier than the camera. If unavoidable, be sure to provide a supporting means for the lens.

> Caution: A heavy lens can disturb the balance with respect to the camera and possibly result in damage.

A

A: C-mount lens: 8.0mm or less
CS-mount lens: 4.5mm or less

Lens

Flange surface of lens
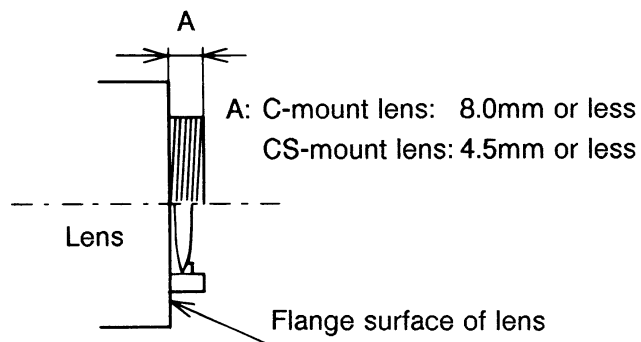
Lens mount
An adaptor for a C mount lens is attached when the camera is shipped from the factory. The adaptor can be removed to allow using a CS mount lens. Remove the adaptor by turning it strongly counter-clockwise.
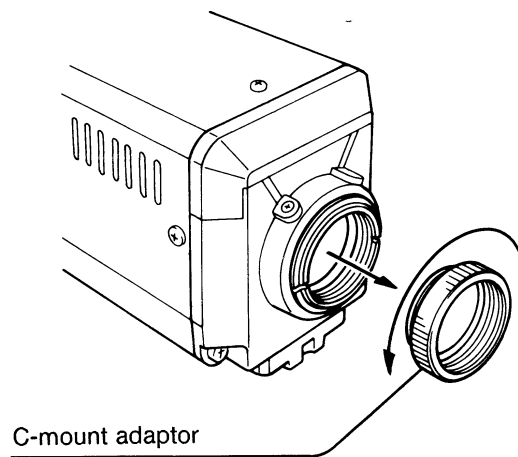
C-mount adaptor

Store the C mount adaptor for possible future use.

Store the C mount adaptor for possible future use.

7

Lens switch

When using an auto-iris lens, set the switch according to the lens type.

VIDEO : Set to this position when using a video signal input system lens.

DC : Set to this position when using a DC control voltage input system lens.

LENS

DC

VIDEO

Lens Terminals

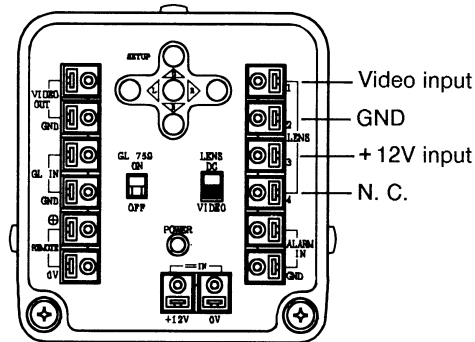When using an auto-iris lens, install the accessory lens Terminals on to the lens cable as follows. Refer to the lens operating instructions regarding the lens cable signals and wire colors.

Video signal input system lens
(Set lens switch to VIDEO.)

Video input
GND
+12V input
N. C.

Note: Set the lens detector response as close as possible to AVE (Average). Hunting can occur if set to Peak.

DC control voltage input system lens
(Set lens switch to DC.)

- Drive coil ⊕
- Drive coil ⊖
- Damping coil ⊖
- Damping coil ⊕
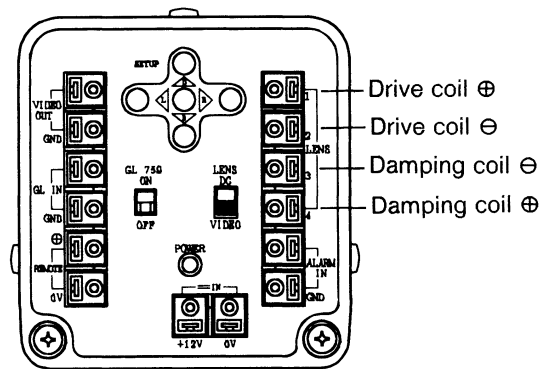
Flangeback adjustment

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

1. Fixed focus lens

Set the lens focus ring to infinity and pickup an object at least 20 meters distant. Loosen the (two) lens mount setscrews and adjust the focus by turning the lens and lens mount ring. After adjusting, tighten the lens mount setscrews.

2. Zoom lens

1) Set the lens to maximum telephoto and pickup an object at least 3 meters distant. Loosen the (two) lens mount setscrews and adjust the focus by turning the lens and lens mount ring.

2) Set the lens to maximum wide angle and pickup the same object. While using care not to disturb the focus ring, adjust the focus by turning the lens and lens mount ring. Repeat these steps until focus is obtained at both the telephoto and wide angle settings. After adjusting, tighten the lens mount setscrews.

9
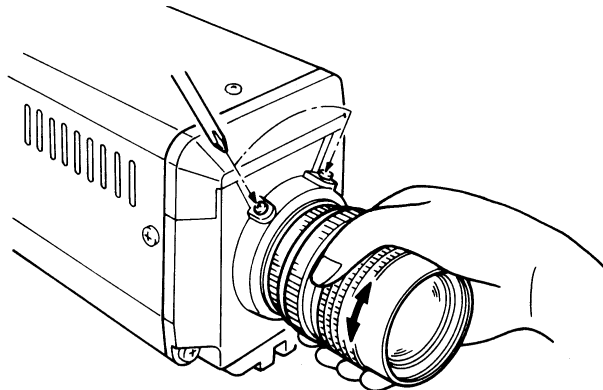
Camera mounting

Important: Be sure to use the proper mounting screw. See below.

Type : U1/4-20

Length: 8 mm maximum

If the camera mounting screw of the tripod adaptor exceeds 8
mm, the camera can be damaged internally. Conversely, if the
screw is too short, the camera will not be securely fastened and
there is risk of dropping, damage and possible injury.
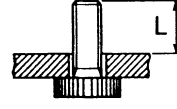
Note: If suspending the camera, use a light weight lens (less than 400g).
      Also select a site where vibration is absent.

If the camera is to be suspended from the ceiling, change the position of the tripod adaptor
from the bottom to the top of the camera, as indicated in the figure.

10
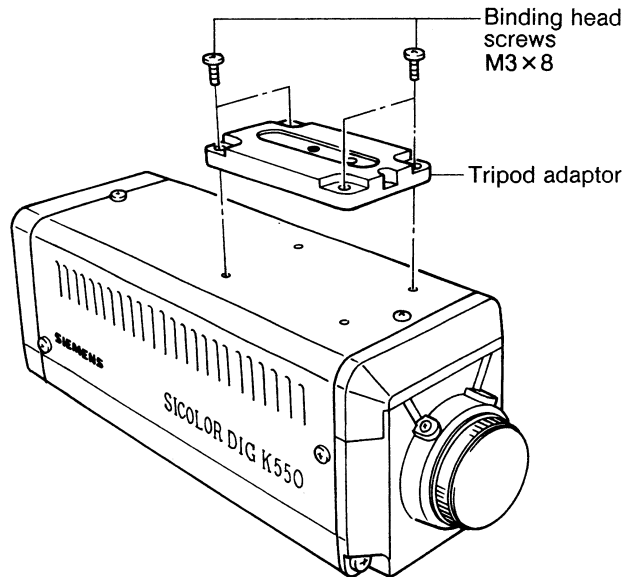
Setting menu description

The camera settings and adjustments can be changed to accommodate usage conditions.
When connected to a monitor, convenient on-screen menus facilitate checking and
changing the settings and adjustments. The setting menus are composed as follows.
Setting menu composition

| Main menu (Page 13) | Display mode settings
Select certain modes
● Text display on/off | ● Light control mode select
● AGC on/off
● Shutter speed select |

| Light control (Page 14) | White balance (Page 20) | Sync mode (Page 24) | Exposure control (Page 25) |

Light amount control mode switching
● LENS (Auto iris)
● AES (Automatic electronic shutter)*
● AES & LENS (Automatic electronic shutter + auto iris)*
● Critical photometric area display and switching*
Video signal level adjustment*
contrast on/off/auto select

* Effective only when using DC control lens

White balance mode select
● Auto-tracking (ATW)
● Preset (AWC)
● Manual (R/B gain adjust)

Sync mode display
(sync mode auto-setting)
H. sync phase
Subcarrier phase
(coarse/fine adjust)

● Sensitivity auto/manual select
● Noise reduction on/off select
● Electronic zoom wide to 4x tele
Pan left/right
Tilt up/down

11

Menu operations

Five rear panel Setup buttons are used to shift the cursor and select items from the menus.

```
        SETUP  ①
    ③  ◁⑤▷  ④
           ②
```
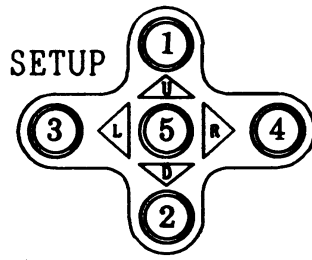
(1) Up button   Shifts the cursor upwards

(2) Down button   Shifts the cursor downwards

(3) Left button   Shifts the cursor toward the left

(4) Right button   Shifts the cursor toward the right

(5) Set button   Press center button to display the main menu or check the setting and

                            proceed to the next item.

Sens Up function

Factory setting is OFF. Set to MANUAL or AUTO according to conditions. However, in the MANUAL or Auto setting, the LIGHT CONTROL, AGC, WHITE BALANCE and SHUTTER SPEED cannot be changed. To change these settings, set EXPOSURE MODE to OFF. See Page 25.

Main menu

1) Press the Set button for longer than 2 seconds to display the MAIN MENU on the monitor screen.

```
◁◁◁◁  MA I N  MENU  ▷▷▷▷

▷ SET          : CLOSE      ⋯⋯ Memory write Open (enable)/Close (inhibit) setting
  TEXT  DISPLAY  : OFF       ⋯⋯ Display on/off setting
  L IGHT  CONTROL : LENS     ⋯⋯ Light control mode setting
  AGC          : ON          ⋯⋯ AGC on/off setting
  WH I TE  BALANCE : ATW     ⋯⋯ White balance mode setting
  SHUTTER  SPEED : 1∕50      ⋯⋯ Shutter speed setting
  SYNC  MODE     : I NT      ⋯⋯ Sync mode setting
  EXPOSURE  CONTROL  MENU    ⋯⋯ Sensitivity boost and electronic zoom setting menus
  END                        ⋯⋯ End
```

Main menu

2) Check the present settings at the MAIN MENU.

3) If changes are unnecessary, shift the cursor to the END position and press the Set button to return the normal video screen.

Note: In absence of button operation, the menu display is extinguished automatically after about 5 minutes.

Saving changes

1) Use the up/down buttons to shift the cursor to the SET position.

2) Use the left (or right) button to change the SET indication from CLOSE to OPEN (to enable memory write).

```
◁◁◁◁  MA I N  MENU  ▷▷▷▷

▷ SET              : OPEN
  TEXT  D I SPLAY  : OFF
  L IGHT  CONTROL : LENS
  AGC              : ON
  WH I TE  BALANCE : ATW
  SHUTTER  SPEED : 1∕50
  SYNC  MODE     : I NT
  EXPOSURE  CONTROL  MENU
  END
```

Main menu

Note: If left at CLOSE, changes will be deleted when the camera power is cut off (returning operation to the previous settings).

3) When a setting is changed (e.g., from ON to OFF) and the cursor shifted to the next item or the Set button pressed, the new setting is stored in the internal non-volatile memory. Afterwards, when the camera power is cut off and returned, operation proceeds at the most recent settings.

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Text display

A maximum of 24 alphanumeric characters (1 line) can be displayed on the screen. TEXT DISPLAY ON/OFF can be selected at the MAIN MENU.

1)Press the Set button for longer than 2 seconds to display the MAIN MENU.
2)Change the SET indication from CLOSE to OPEN (to enable memory write).
3)Press the Down button to position the cursor at TEXT DISPLAY.
4)Press the Right (or Left) button to select TEXT DISPLAY ON/OFF.

Note: Characters can not be input by rear panel set up buttons.
      Input the characters by remote control from a personal computer.
After adding and changing text
Be sure to again set the display position (LOCATE) after adding to or changing the text.

Light control menu

The LIGHT CONTROL mode can be selected for the following 3 modes.
The usable mode differs according to type of auto iris lens type. Refer to the table and select the appropriate mode.

	LIGHT CONTROL mode		
Lens drive type	LENS	AES	AES&LENS
VIDEO	○	×	×
DC	○	○	○

○: Usable mode
×: Avoid using, hunting can occur

The factory setting is LENS. To change the setting, select the mode with the left/right buttons and press the Set button.

● Light control mode selection
1) Press the Set button for longer than 2 seconds to display the MAIN MENU.

2) Position the cursor at SET and press the left (right) direction button to change CLOSE to OPEN in order to save the setting.

3) Position the cursor to LIGHT CONTROL and press the Set button to display the LIGHT CONTROL MENU.

```
◁◁  LIGHT  CONTROL  MENU  ▷▷       

MODE  ▷LENS  AES  AES&LENS   ····· Light control mode (selectable)

CONTRAST      :OFF            ····· Contrast off/on/auto select

AREA  SELECT  :NO. 1          ····· Sensing area number
                   ↓
LEVEL   (−) ·····0····· (+)   ····· Image (light) level adjust scale

RET  END                      ····· Return, end
```

Light control menu

Three control modes are available in combination with the AGC operation.

The LENS mode is established at factory. To change the LENS mode to other mode, move the cursor to the desired control mode by the left or right button, and press the set button.

To use the LENS mode, move the cursor to LENS, and press the set button.

①LENS mode:

　In this mode, quantity of light can be controlled only by the lens iris.

②AES mode:

　In this mode, quantity of light can be controlled only by the automatic electronic shutter of the CCD imaging device.

　An optimum video signal level is maintained for a fixed iris lens.

　When an auto iris lens is used, the lens iris is automatically opened to a maximum, and only the automatic electronic shutter operates.

　A shutter speed is selectable from the standard (1/50s) to 1/10,000s.

　Therefore, the automatic electronic shutter operates under the illumination condition within the range of 160 times, compared with the quantity of light, and this mode may not be effective in the outdoors where illumination changes largely. In such cases, change to other mode.

　When the lens iris is opened to a maximum in this mode, the depth of focus may become shorter than the auto iris lens used in other mode, and objects in the distance are out of focus. The depth of focus is in inverse proportion to the opening of a lens iris.

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When an automatic electronic shutter is activated, the following phenomena may be observed.
In such cases, change to other mode.

● Strong smear or blooming is observed when objects are illuminated by strong illumination like a spot light.
● Flickers or change in color are observed on the screen.

③AES & LENS mode:
In this mode, the automatic electronic shutter operation has priority to control the quantity of light.
When illumination becomes bright, automatic electronic shutter control is performed from the standard (1/50s) to the set shutter speed with the lens iris opened to a maximum.
When illumination becomes brighter, the shutter speed is fixed to the set shutter speed, and the quantity of light is controlled only by the lens iris.
When illumination becomes dark gradually, the quantity of light is controlled by the inverse operation.

```
◁◁  L I G H T   C O N T R O L   M E N U   ▷▷

MODE    LENS AES▷AES&LENS     ⋯⋯ Automatic electronic shutter + lens iris mode
                 1／1000SEC    ⋯⋯ Limit shutter speed (switchable)

CONTRAST      : OFF

AREA  SELECT  : NO. 1
                  ↓
LEVEL   (−) · · · · ·0· · · · · (+)

RET  END
```

Light control menu

Shutter speed limit setting
The shutter speed limit for the AES & LENS mode is set. Factory setting is 1/1000 second.
At the LIGHT CONTROL MENU, select AES & LENS. Select the limit with the left/right buttons and press the Set button to change the setting.
If the setting not to be changed, simply press the Set button.

● Contrast compensation
Factory setting is OFF.
If strong illumination such as a spotlight or outdoor light is present in the background, causing the scene to darken, by setting the contrast compensation function (black stretch, white compression), the dark components are enhanced in order to brighten the

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image. At the same time, high luminance components are compressed, thus avoiding obscured black and white fogging in the resulting image. Engaging the function also engages gamma correction.

When area 1 is selected at the LIGHT CONTROL MENU while this function is engaged, the function is automatically switched OFF if strong light enters the background. Conversely, the function is automatically switched ON when strong forward light is present.

If the selected area is from 2 to 8, the function is engaged (fixed at ON during AUTO) or disengaged (fixed at off) according to the setting at the menu.


Note when setting CONTRAST

Set the CONTRAST to OFF in cases where a person or object passing directly in front of the camera cuts off the incident light to the extent the AGC operates. If set to ON or AUTO, the CONTRAST is automatically switched OFF when the AGC begins to raise the gain. This can cause a slight change in picture brightness, which is not due to malfunction.

● Area check and change

Light control uses 8 measuring areas. The factory setting is area 1 (center weighted light metering).

After setting the CONTRAST, press the Set button while the AREA SELECT NO. is flashing to display the area to display the area select screen.

Use the 4 directional buttons to select the desired area from 1 to 8.
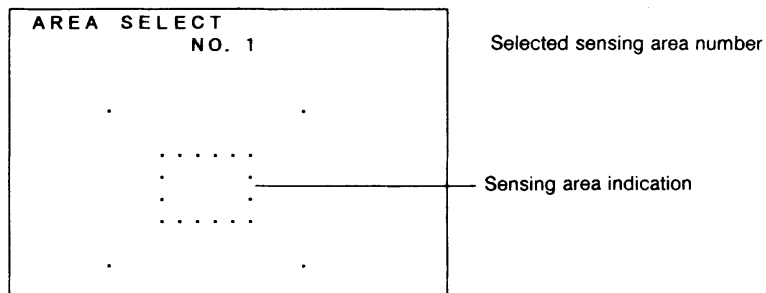
Sensing area indication

| Right button: | Ascending sequence 1-2-3-4-5-6-7-8 |
Left button :	Descending sequence 8-7-6-5-4-3-2-1
Up button :	Sequence 1-4-5
Down button :	Sequence 1-2-3-6-7-8

The selected area is highlighted on the screen to allow the most suitable area to be selected while observing the monitor. After determining the area, press the Set button.

Note: Select from among 8 areas when using a DC control voltage input type lens;
select from among 3 horizontal areas (dotted outline in figure) when using a video signal
input type lens.

```
AREA  SELECT
        NO.

     5            4


     2     1      3


     6     7      8
```
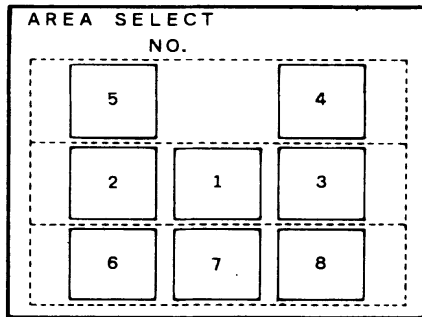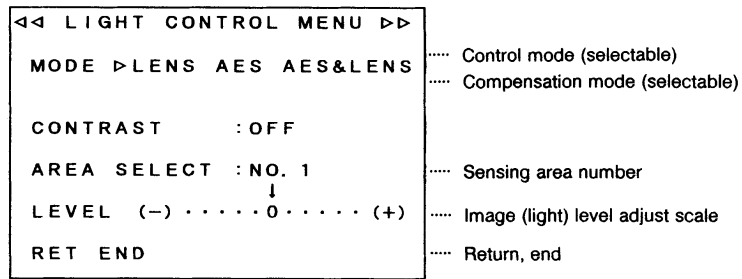
Sensing area positions

● Video level setting

Set the video level only when using a DC control voltage input type lens. The factory
setting is standard.

To change the setting, press the left (right) direction button, adjust the video level, then
press the Set button. If the setting is not to be changed, press the Set button and shift to
RET.

```
◁◁  LIGHT  CONTROL  MENU  ▷▷

 MODE  ▷LENS  AES  AES&LENS    ····· Control mode (selectable)
                               ····· Compensation mode (selectable)

 CONTRAST      :OFF

 AREA  SELECT  :NO. 1          ····· Sensing area number
                  ↓
 LEVEL  (−) ·····0·····(+)     ····· Image (light) level adjust scale

 RET  END                      ····· Return, end
```

Light control menu

Note: If using a video signal input type lens, refer to the lens operating instructions and
           adjust the lens sensitivity.

Photometric area setting screen

The standard area No.1 is set at factory. When the set button is pressed while No.1" is
blinking, the critical photometric area is displayed. The critical photometric area is
indicated by dots. When this area is changed, a video signal level is changed according to
the illumination of this area.

The desired photometric area can be selected from among the areas No.1 thru No.8.
Therefore, select the photometric area so that the optimum video signal level can be
obtained.

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When the set button is pressed with the desired photometric area displayed, the video
signal level adjustment scale appears.

Backlight correction
When strong backlight enters the lens, the lens iris closes accordingly, and the other
objects become dark.
The backlight correction function is provided for this camera. With this function, the signal
level for such a strong backlight is automatically corrected, and the other objects do not
become dark.
When strong light enters the upper half portion of the critical photometric area No.1 with the
photometric area set to No.1, the backlight correction function is activated automatically.
The backlight correction function is activated in any light control mode.
When strong light enters the critical photometric area, effective backlight correction is
performed by selecting a photometric area far from the position of strong light.
If video signal level is not appropriate when the backlight correction function is being
activated, adjust the video signal level.

AGC setting
AGC ON/OFF
1)Press the Set button for longer than 2 seconds to display the MAIN MENU.
2) Position the cursor at SET and press the left (right) direction button to change CLOSE to
   OPEN in order to save the setting.
3) Set the cursor to the AGC (gain indication flashes). Press the left (right) direction button
   to shift the setting in sequence from off to on.
At the AGC ON setting, when the average scene brightness declines below the fully open
point of an auto-iris lens (about 20 lux with an F1.2 lens), the circuit gain is automatically
raised within the set maximum range to suitably correct the video level.
The factory setting is ON (21dB).
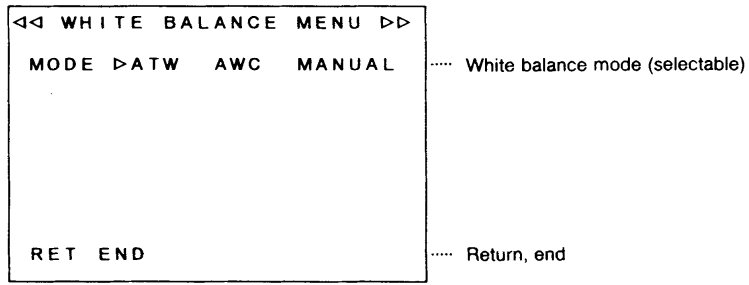
```
◁◁◁◁  MA I N   MENU  ▷▷▷▷

SET            : OPEN
TEXT  D I SPLAY  : OFF
L I GHT  CONTROL : LENS
▷ AGC           : ON
WH I TE  BALANCE : ATW
SHUTTER  SPEED : 1／50
SYNC  MODE     : I NT
EXPOSURE  CONTROL  MENU
END
```

Main menu
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Note: Although the sensitivity increases when the maximum gain is increased, noise can
     increase in dark scenes or during sensitivity boost operation.

     If noise is objectionable during sensitivity boost operation, reduce the maximum gain
     or set AGC to OFF.

     When set to 31dB, if the scene darkens to where the gain reaches 21dB, video level
     fluctuation can occur.

     To avoid this fluctuation, set the AGC to 21dB.

     Maximum gain of AGC can not be changed by rear panel Setup buttons.

     Change maximum gain of AGC by remote control from a personal computer.

White balance menu

1) Press the Set button for longer than 2 seconds to display the MAIN MENU.
2) Position the cursor at SET and press the left (right) direction button to change CLOSE to
   OPEN in order to save the setting.
3) Position the cursor to WHITE BALANCE and press the Set button to display the WHITE
   BALANCE MENU.

```
◁◁  WHITE  BALANCE  MENU  ▷▷

MODE  ▷ATW    AWC    MANUAL      ⋯⋯ White balance mode (selectable)




RET  END                          ⋯⋯ Return, end
```

White balance menu

Three white balance control modes can be selected according to conditions.

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ATW: Auto-tracking white balance
   The white balance mode is set to auto-tracking at the factory. Set the cursor to ATW and
   press the Set button.
   ATW and preset (AWC) modes, the white balance is automatically controlled in the color
   temperature range of 2500 K to8000 K.

Note: The ATW may not operate correctly in the following types of cases. In such cases,
       adjust the white balance manually.

- When a large part of the scene is occupied by a single color or the color white is nearly
  absent from the scene.

- Illumination is from multiple light sources with different color temperatures.

- Special types of lighting, such as sodium lamps, are used.

- The background is completely red or blue color.

AWC: Preset white balance

1) Press the left (right) direction button to set the cursor to AWC, then press the Set button
   (SET AWC flashes).

```
◁◁  WHITE  BALANCE  MENU  ▷▷

MODE   ATW ▷AWC   MANUAL

SET  AWC                         ····· Setting in progress



RET  END                         ····· Return, end
```

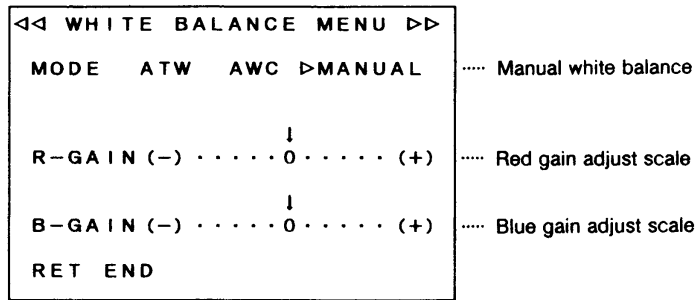AWC menu

2) Arrange to have a white object present in the scene and illuminated by the normal
   lighting to be used in the particular installation. Press the Set button to begin automatic
   white balance adjustment. The adjustment is complete when SET AWC extinguishes.
   Automatic adjustment takes several seconds, but if not completed in about 10 seconds,
   perform the following steps.

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a) Press the up (down) direction button to return to the white balance mode.

b) Press the left (right) direction button to set the cursor to AWC, then press the Set button.

c) Again pickup a white object, but which fills a larger portion of the scene, then press the Set button.

MANUAL: Manual white balance

1) Press the left (right) direction button to set the cursor to MANUAL, then press the Set button. R-GAIN and B-GAIN adjust scales appear and the cursor is positioned at the center 0.

```
┌──────────────────────────────────┐
│ ◁◁  WHITE  BALANCE  MENU  ▷▷      │
│                                  │
│  MODE    ATW    AWC ▷MANUAL      │ ····· Manual white balance
│                                  │
│                    ↓             │
│  R−GAIN (−) ····· 0 ····· (+)    │ ····· Red gain adjust scale
│                                  │
│                    ↓             │
│  B−GAIN (−) ····· 0 ····· (+)    │ ····· Blue gain adjust scale
│                                  │
│  RET  END                        │
└──────────────────────────────────┘
```

Manual white balance menu

2) When the red gain cursor flashes, adjust by pressing the left (right) direction button, then press the Set button to store the red gain setting.

3) Similarly, when the blue gain cursor flashes, adjust by pressing the left (right) direction button, then press the Set button to store the blue gain setting.

4) To readjust the red, press the up (down) direction button to flash the red scale cursor, then adjust as described above.

5) After adjusting, press the Set button to flash RET, then again press the Set button to return to the MAIN MENU.

6) Press the left (right) direction button to flash END, then press the Set button to return to the normal video screen.

Shutter speed setting

Shutter speed selection

1)Press the Set button for longer than 2 seconds to display the MAIN MENU.

2) Position the cursor at SET and press the left (right) direction button to change CLOSE to
   OPEN in order to save the setting.

3) Position the cursor to SHUTTER SPEED to flash the shutter speed indication.
   Use the left (right) direction button to select a shutter speed from 1/50 to 1/10000
   second, then press the Set button.

Left button (ascending sequence):

1/50→1/120→1/250→1/500→1/1000→1/2000→1/4000→1/10000

Right button (descending sequence):

1/10000→1/4000→1/2000→1/1000→1/500→1/250→1/120→1/50

The factory setting is 1/50.

```
◁◁◁◁  MAIN  MENU  ▷▷▷▷

SET            :OPEN
TEXT DISPLAY  :OFF
LIGHT CONTROL:LENS
AGC            :ON
WHITE BALANCE:ATW
▷SHUTTER SPEED:1/50
SYNC MODE      :INT
EXPOSURE CONTROL MENU
END
```

Main menu

Note

When the SHUTTER SPEED is set from 1/120 to 1/10000 second, setting the SENS UP
to MANUAL or AUTO causes the SHUTTER SPEED to be fixed at 1/50.

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Sync mode

1) Press the Set button for longer than 2 seconds to display the MAIN MENU.
2) Position the cursor at SET and press the left (right) direction button to change CLOSE to OPEN in order to save the setting.
3) Position the cursor to SYNC MODE and press the Set button to display the menu.

```
◁◁  SYNC  MODE  MENU  ▷▷

MODE  ▷INT    VBS




RET  END                    ····· Return, end
```
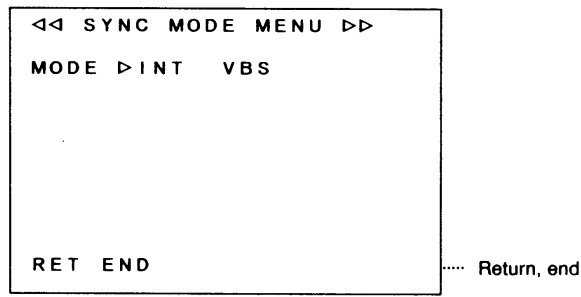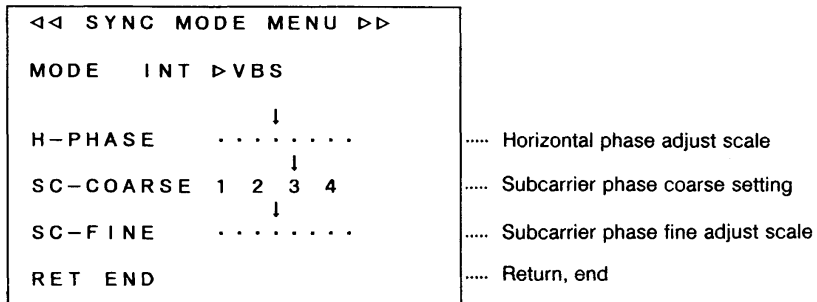
Sync mode menu (internal sync)

To operate from external sync, supply a composite color, black burst (VBS) signal.
Internal/external sync is switched automatically.

● Sync mode setting
When an external sync signal input is supplied, the cursor automatically shifts from INT to VBS.

1) If the VBS input includes the color subcarrier, simply press the Set button.

```
◁◁  SYNC  MODE  MENU  ▷▷

MODE    INT  ▷VBS
                ↓
H−PHASE     · · · · · · · ·     ····· Horizontal phase adjust scale
                ↓
SC−COARSE  1  2  3  4          ····· Subcarrier phase coarse setting
                ↓
SC−FINE     · · · · · · · ·     ····· Subcarrier phase fine adjust scale

RET  END                       ····· Return, end
```
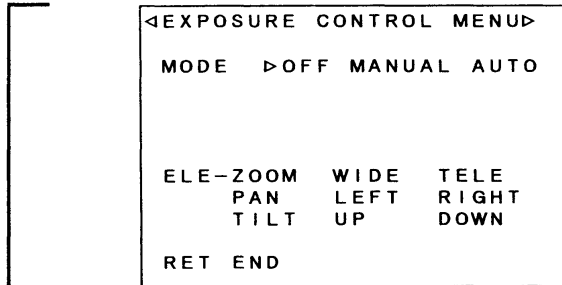
Sync mode menu (VBS external sync)

2) The horizontal phase (H-PHASE) adjust cursor flashes. While observing with an oscilloscope, press the left (right) direction button to align the horizontal phase of the external sync input and camera video signals, then press the Set button. The adjustable range is 0 to 4 microseconds (s).
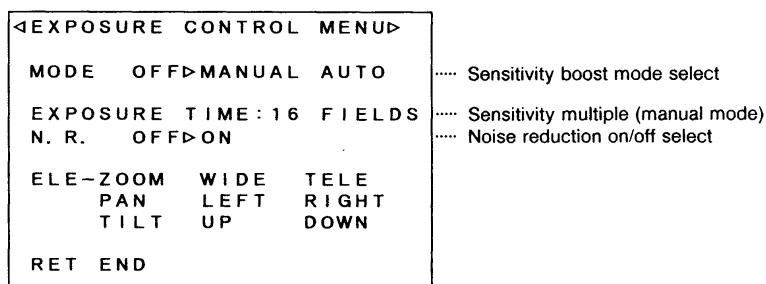
24

Exposure control menu

Exposure setting
The Sens Up function increases the CCD exposure time and stores the image in an internal video memory.
1)Press the Set button for more than 2 seconds to display the MAIN MENU.
2) Position the cursor at SET and press the left (right) direction button to change CLOSE to OPEN in order to save the setting.
3) Position the cursor to the EXPOSURE CONTROL MENU and press the Set button to display the menu indicated in the figure.

```
◄EXPOSURE  CONTROL  MENU►

MODE    ▷OFF  MANUAL   AUTO




ELE−ZOOM   WIDE     TELE
      PAN    LEFT    RIGHT
      TILT    UP     DOWN

RET  END
```

Off mode display

```
◄EXPOSURE  CONTROL  MENU►          ⋯⋯ Sensitivity boost mode select

MODE    OFF▷MANUAL  AUTO

EXPOSURE  TIME:16  FIELDS    ⋯⋯ Sensitivity multiple (manual mode)
N. R.    OFF▷ON                    ⋯⋯ Noise reduction on/off select

ELE−ZOOM   WIDE     TELE
      PAN    LEFT    RIGHT
      TILT    UP     DOWN

RET  END
```

Manual mode display

● Sensitivity boost
Three modes are provided, which can be selected according to conditions.
OFF: Sensitivity boost not used. Factory setting.
MANUAL: Sensitivity boosted by a set fixed amount.
AUTO: When the scene darkens, the sensitivity is automatically boosted in the range set in the Manual mode. Suitable for continuous surveillance under changing illumination, e.g., day and night.
1)When the cursor flashes at the mode select item of the EXPOSURE CONTROL MENU, press the left (right) direction button to select the mode.
When set to MANUAL or AUTO, the sensitivity multiple and noise reduction settings are displayed.

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2) To change the multiple, set the cursor to MANUAL and press the Set button (the multiple cannot be changed in the AUTO or OFF modes).

When the multiple (16) flashes, it can be changed by using the left (right) direction button. Since the video level also changes, set the multiple for the optimum brightness, then press the Set button.

Facrory setting is 16.

Left button (ascending sequence):

×2→×4→×6→×8→×10→×12→×14→×16→×18→×20→×22→×24→×26→×28→×30→×32

Right button (descending sequence):

×32→×30→×28→×26→×24→×22→×20→×18→×16→×14→×12→×10→×8→×6→×4→×2

Notes

At the MANUAL and AUTO settings, the light control, AGC, WHITE BALANCE and SHUTTER SPEED settings cannot be changed. Set the sensitivity mode to OFF to enable changing these settings.

At high sensitivity multiples, fast moving objects can be blurred in the image. In such cases, use a lower sensitivity multiple.

- Remote operation via the Remote connector has priority.
- Although the picture data increases at high sensitivity, noise also increases. High ambient temperature can also increase noise. As required, set noise reduction (NR) to ON.
- White specks can appears in the image at high sensitivity. This is not due to malfunction.

---

3) Select the sensitivity mode according to conditions. Press the up direction button, then select the mode with the left (right) button. Use the AUTO mode for continuous day and night observation.

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● Noise reduction

This function reduces noise in the picture during high sensitivity operation. Factory setting is ON.

Noise reduction can be set during the MANUAL or AUTO sensitivity mode.

At the sensitivity select menu, MANUAL or AUTO. Press the up (down) button to flash NR, then press the left (right) button to select ON/OFF. Finally, press the Set button.

Note: Even when set to ON, noise reduction does not operate when the sensitivity is not boosted (2 or greater).

Residual images can occur with fast moving objects. If objectionable, set NR to OFF.

● Electronic zoom

The image stored by an internal video memory can be magnified up to 4 without using a zoom lens.

The magnified image center can also be shifted left and right (PAN) and up and down (TILT) to allow enlarging a desired location.

Note: Image resolution declines as the electronic zoom magnification increases.

```
◄EXPOSURE  CONTROL  MENU►

MODE   ▷OFF  MANUAL  AUTO



▷ELE−ZOOM   WIDE    TELE      ····· Magnification
        PAN    LEFT    RIGHT     ····· Horizontal position
        TILT    UP      DOWN      ····· Vertical position

RET  END
```

ELE-ZOOM

Set the cursor to ELE-ZOOM and press the right direction button (TELE flashes). Hold the button depressed to zoom the image up to 4 times magnification.

Press the left direction button (WIDE flashes). Hold the button depressed to unzoom the image.

If PAN and TILT have been set, the image center automatically returns to the screen center by zoom operation. Press the Set button to set and shift the cursor to PAN.

PAN (shift zoom center horizontally)

Set the cursor to PAN and press the right button (RIGHT flashes). Hold the button depressed to shift the image center toward the right.

Press the left button (LEFT flashes). Hold the button

depressed to shift the image center toward the left.

Press the Set button to set and shift the cursor to PAN.

TILT (shift zoom center vertically)

Set the cursor to TILT and press the right button (DOWN flashes). Hold the button depressed to shift the image center downwards.

Press the left button (UP flashes). Hold the button depressed to shift the image center upwards.

Press the Set button to set (RET flashes).

Notes:	PAN and TILT cannot be set when the image is not magnified.
	The shiftable PAN and TILT range is somewhat inside the standard (1) range of view.

Notes:	Do not use with a video signal input system lens.
	Use a manual iris lens or DC control voltage input system lens.
	Avoid using the electronic zoom in dark locations (where Exposure and AGC operate) since the image level compensation may not function correctly.
	Be sure to set the EXPOSURE MODE to MANUAL when the electronic zoom.

Color temperature and white balance

Color temperature is one of the properties of light. The unit is Kelvin(K), with 0 K equivalent to -273°C.
The color temperature of a light source is related to the type of illumination and sky conditions. It is not directly related to brightness. A high color temperature is bluish, while a low color temperature is reddish.
Since the response of the human eye is adaptive, changes in color are not sensed even with changes in ambient illumination. However, a camera reproduces color temperature differences to result in different color appearance compared to direct viewing by eye. White balance adjustment serves to compensate for these differences in color temperature. This camera is provided with automatic tracking (ATW), preset (AWC) and MANUAL white balance modes. The ATW mode is set at the factory.

Color temperature, illumination and sky

Color temperature (K)	Sky conditions	Illumination
10,000	Clear blue sky	
8,000	Tine overcast	
7,000	Cloudy, bright	
	rain	Xenon arc
	Midday	
5,000	Noon sunlight	
	2 hour after sunrise	Fluorescent lamp
4,000		
3,500	1 hour after sunrise	
		Halogen lamp
3,000		100W and 500W gas filled bulb
		100W tungsten lamp
2,500		60W tungsten lamp
2,000		
	Around sunrise	
		Candle

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Remote control operation

The K550 contains a built-in RS-232C driver that allows menu operations by remote control. The following items can be set by remote (e.g., computer) control.

- ID number:ON/OFF
- Composing ID number

In addition to composing text, a camera identification number can be assigned.

- TEXT DISPLAY:ON/OFF
- Locating text
- Composing text

A maximum of 24 alphanumeric characters (1 line)can be displayed on the screen.

- LIGHT CONTROL MODE select
     :LENS/AES/AES&LENS
- CONTRAST select:OFF/ON/AUTO
- AREA SELECT NO. select: 18
- ALC-LEVEL adjustment

- AGC:ON/OFF
- AGC ON mode max gain select: 15,18,21,31(dB)
- AGC OFF mode fixed gain select:0,3,6,12(dB)
- AGC OFF mode variable gain adjustment:021(dB)
- WHITE BALANCE MODE:ATW/AWC/MANUAL
- White balance mode MANUAL:R-GAIN/B-GAIN
- SHUTTER SPEED select:1/50,1/120,1/250, 1/500,1/1000, 1/2000,1/4000,1/10000 (sec)

- H-PHASE adjustment
- SC-PHASE COARSE select
- SC-PHASE FINE adjustment

- EXPOSURE CONTROL MODE select: OFF/MANUAL/AUTO
- EXPOSURE TIME select:2,4,6,8,...28,30,32 (fields)
- N.R.:OFF/ON

- ELE-ZOOM adjustment:WIDE/TELE
- ELE-ZOOM PAN adjustment:LEFT/RIGHT
- ELE-ZOOM TILT adjustment:UP/DOWN

- Gamma:ON/OFF(Factory setting is ON)
- Color saturation adjustment
- Pedestal level adjustment
- Enhancer adjustment

> The enhancer is fixed during EXPOSURE operation. Even if the setting is adjusted, the enhancer function does not change.

- Negative/Positive select

> The data transfer rate can be selected for either 9600 bps or 2400 bps.
> To change the setting from 9600bps to 2400bps, switch off the camera power. then hold the right direction button depressed and switch the power on.
> This will change the setting to 2400bps.
> Conversely, to change the setting from 2400bps to 9600bps, hold the left direction button depressed while switching the power on.

Initialize

The following items are changed by the Initialize command.

- ID indication: On (however, when power is cut, then returned, the state prior to Initialize is returned)
- TEXT DISPLAY: Off (however, when power is cut, then returned, the state prior to Initialize is returned)
- LIGHT CONTROL MODE:LENS
- Shutter limit no.of AES&LENS mode :1/1000 sec
- CONTRAST :OFF
- AREA SELECT NO.:NO.1
- ALC-LEVEL:Cursor is returned to center
- AGC ON max gain :31dB
- WHITE BALANCE MODE:ATW
- If Manual, R and B gain: Standard (Cursor is returned to center)
- SHUTTER SPEED :1/50
- H-PHASE:Cursor is returned to on the forth dot from left.
- SC-PHASE COARSE:3
- SC-PHASE FINE: Cursor is returned to on the forth dot from left.
- EXPOSURE MODE:OFF
- EXPOSURE TIME:2 fields
- N.R.:OFF
- ELE-ZOOM: WIDE (standard 1)
- Gamma:ON
- Negative/Positive:Positive

> Initialize by simultaneously pressing the up, down, left and right buttons for longer than 3 seconds.

Main specifications

1 Color system   PAL
2 Pickup element   Interline transfer type CCD
  Total pixels   795(H)596(V)
  Effective pixels   752(H)582 (V)
  Scanning area   6.47 (H)×4.83 (V) mm
  Cell size   8.6 (H)×8.3 (V) m
3 Scanning system   2:1 interlace
4 Scanning frequency   Hor.   15.625 kHz
                        Vert.   50 Hz
5 Sync system   Internal/external(automatic switching)
6 Signal processing   Internal digital processing
                        (input: 9 bits, output: 8 bits)
7 Video signal output   VBS 1.0 Vp-p/75 Ω
8 External sync input   Black burst or VBS
                        Sync: 0.3 Vp-p/75 Ω
                        Burst: 0.3 Vp-p/75 Ω
                        Video: Less than 0.7 Vp-p/75 Ω
                        fsc = 4.433618 MHz ± 100 Hz
                        Includes 75Ω termination on/off switch

9 Resolution

	Standard sensitivity	Sensitivity boost
Hor.	460 lines	440 lines
Ver.	350 lines	260 lines

10 S/N (luminance signal)

                        More than 50 dB (AGC, enhancer and gamma OFF)
                        More than 48 dB (AGC OFF, enhancer:ON, gamma:ON)
11 Minimum illumination
  Standard sensitivity 1.5 lx (F1.2, 3200 K, AGC 21dB)
  Maximum (32) sensitivity
                        0.02 lx (F1.2, 3200 K, AGC 31dB)
12 Scene illumination range
                        0.02 to 1,000,000 lux (when using auto-iris lens)
13 Sensitivity setting AGC ON/OFF selectable
                        Max. gain at AGC ON settable
                        Sensitivity settable up to 32 ×
14 White balance   Selectable auto-tracking (ATW), preset (AWC), MANUAL
15 Electronic shutter lens outputs
                        Video signal input type lens
                        Luminance signal 1.0 Vp-p/ high impedance
                        Power supply 12 VDC 60 mA
                        Iris control voltage input type lens

Coupling coil impedance

Damper: 1150 Ω ±10 %

Drive : 190 Ω ±10 %

16 Backlight compensation

Activated automatically with the photometric area No. 1.

17 Electronic shutter speeds

1/50, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 second

18 Text display   24 alphanumeric characters

19 Noise reduction   Effective only in the long exposure mode

ON/OFF settable

20 Electronic zoom   Up to 4×, selectable enlarge position H resolution loss with magnification (approx.50% at 2× zoom)

21 Lens mount   C/CS mount

22 Ambient temperature

-10 to +50°C, less than 95 %RH

Note: If used continuously, be sure to operate at less than 50°C for long term stable performance.

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23 Storage ambient   -20 to +60°C

24 Power supply   DC12V, Approx. 450mA

25 Power consumption   5.4 W

26 External dimensions   64 (W)×68 (H)×160 (D) mm

27 Mass   Approx. 540 g

Supplied accessories

Operation manual   1

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Contents

Remote interface and video output switches(see Insert)

Remote interface switching
       Camera disassembly
       Remote interface switch setting
Video out switching
       Camera disassembly
       Video output switch setting

Option unit connection(see Insert)

2 wire unit installation
       Camera disassembly
       2 wire unit and adaptor board assembly
       2 wire unit installation
       Assemble the camera
       Video output switch setting for 2 wire output

Remote interface and video output switches

Camera internal switches can select the remote interface system and video output format.

1. Take off top cover

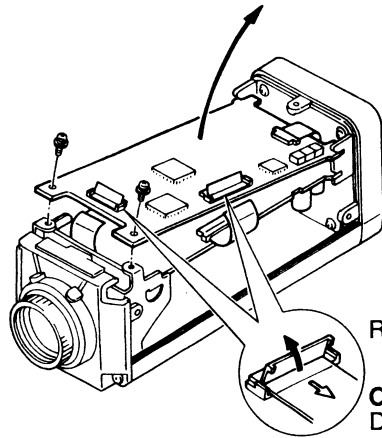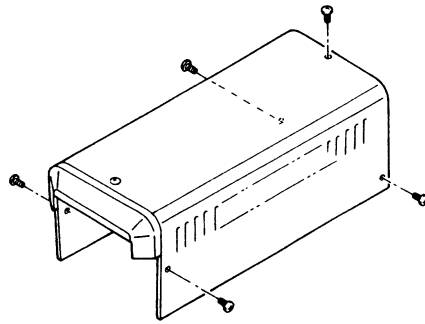   Take out 5 screws and remote the top cover.

2. Remove PROC/MEN unit

   Take out 2 screws and disconnect 2 flat cables.

   Lift and slide the board toward the front to remove.

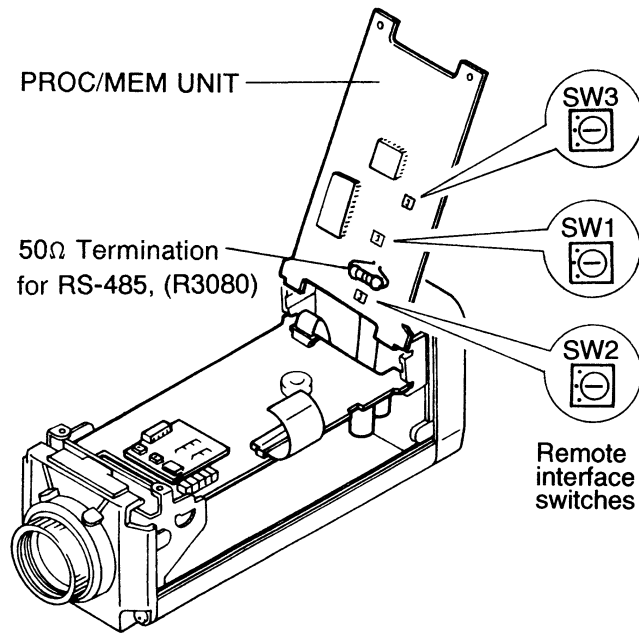Remote interface selection

   Refer to the next page.

Raise to release lock

Caution:
Do not raise the lock lever
more than 90 degrees.
The lever can be damaged.

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Change switch settings

Refer to the following description and figures and change the switch setting as required.

Refer to the figure and set the remote interface switches according to the remote interface system.


Remote interface system	Remote interface switches position			Camera rear input terminals	NOTE
	SW1	SW2	SW3		
RS-232C				RS-232C / GND	
RS-485				RS-485 (A) / RS-485 (B)	Ⓐ
TTL				TTL / GND	

Note: Factory setting is for RS-232C.

[A] : When remotely operation multiple cameras via RS-485, except for the final camera, remove the 50Ω termination(R3080).

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Video output selection

● The camera video output format can be selected for VBS, Y/C, or 2-wire output(optional unit).

● Refer to the figure and set the video output switches as required.

REG/SG UNIT

SW2 SW1

VIDEO output switches
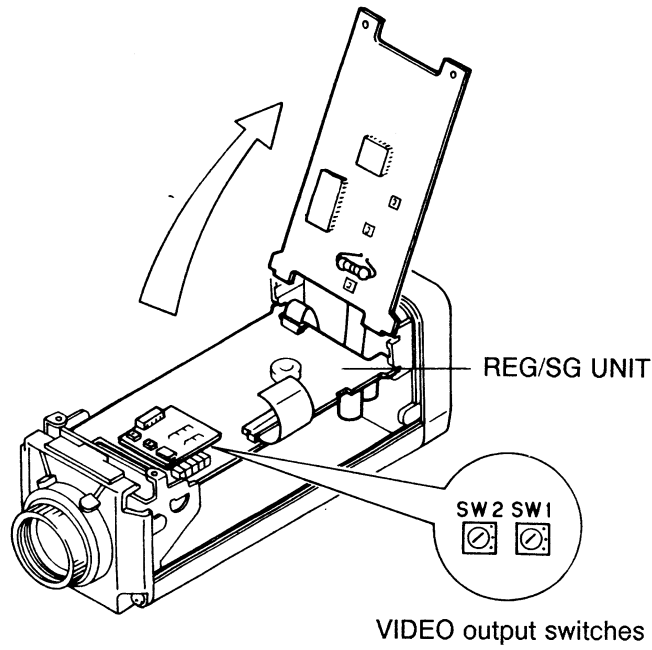
Video output format	VIDEO output switches position		Camera rear output terminals	NOTE
	SW1	SW2		
VBS/GL in			VIDEO out — VBS output / GND (VBS), GL in — GL in / GND (GL)	Ⓐ
Y/C			VIDEO out — Y out / GND(Y), GL in — C out / GND(C)	
2 wire output			VIDEO out — 2 wire (A), GL in — 2wire (B)	Ⓑ

Note: Factory setting is VBS/GL in.

        Be sure the rear panel GL 75Ω switch is OFF except when setting VBS/GL in.

[A]:   External sync operation only with VBS/GL in.

[B]:   Optional 2-wire output unit is needed.

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Option unit connection

Camera disassembly

1) Remove top cover.

   Take out 5 screws and remove the top cover [A].

2) Remove the PROC/MEN unit [B].

   Take out 2 screws and disconnect 3 flat cables.   Raise the board towards the lens

   side and slide it forward to remove the board.

3) Remove the REG/SG unit [C].

   Take out 2 screws and disconnect 1 flat cable.   Remove the lead connector [E],[D].

   Raise the board towards the lens side and slide it forward to remove the board.
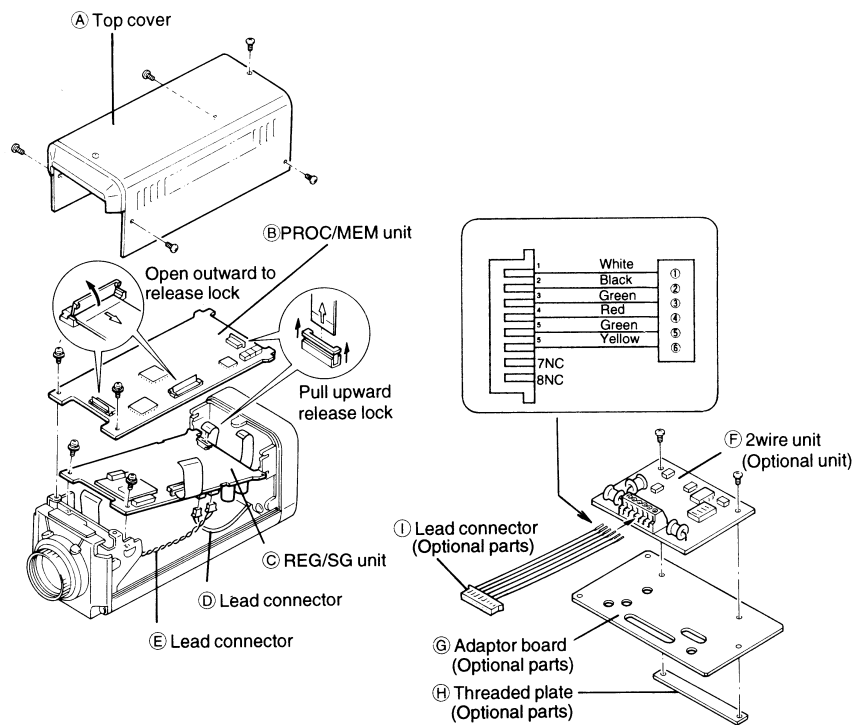

Notes:

1. Release the connector lock mechanism when disconnecting the flat cables.

2. Do not open the connector lock lever more than 90 degrees(lever can be damaged).

---

2 wire unit and adaptor board assembly

Assemble the 2 wire unit and adaptor board, then install in the camera.

1) Overlap the 2 wire unit [F] and adaptor board [G], then secure with 2 screws and

   threaded plate [H].

2) Engage lead connector [I] with the 2 wire unit [F].

Ⓐ Top cover

ⒷPROC/MEM unit

Open outward to release lock

Pull upward release lock

Ⓒ REG/SG unit

Ⓓ Lead connector

Ⓔ Lead connector

White
Black
Green
Red
Green
Yellow
7NC
8NC

① ② ③ ④ ⑤ ⑥

Ⓕ 2wire unit (Optional unit)

Ⓘ Lead connector (Optional parts)

Ⓖ Adaptor board (Optional parts)

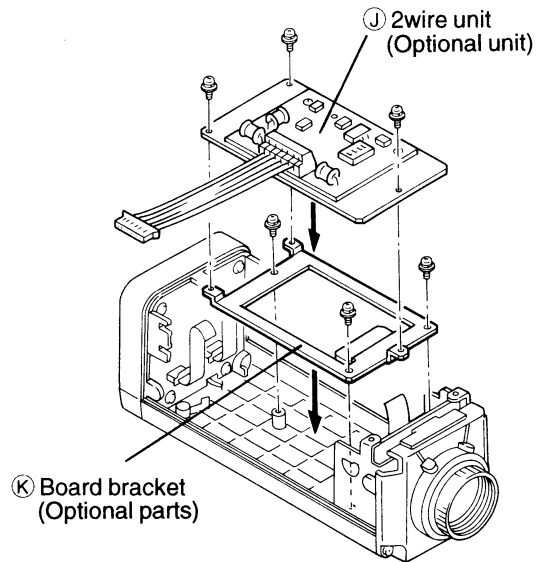Ⓗ Threaded plate (Optional parts)

2 wire unit installation

1) Install the 2 wire unit.

Secure board bracket [K] to the bottom frame with 3 screws.

Attach the 2 wire [J] to the board bracket with 3 screws.

Ⓙ 2wire unit
(Optional unit)

Ⓚ Board bracket
(Optional parts)

2) Assemble the camera.

Connect the lead connector [I] to the REG/SG unit [C].

3) Set video output switch for 2 wire output(see Video output selection).

Note:
Be sure to disconnect the lead connector [I] when not using the 2 wire output format.

Ⓑ PROK/MEM unit

Ⓒ REG/SG unit

Ⓘ Lead connector

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