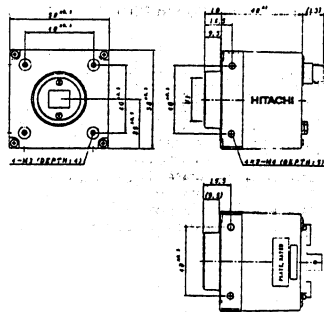


**EXTERNAL VIEW**



**Caution**  
When a heavy lens is used, or when excessive shock or vibration is applied, fix the lens to the equipment, too.

**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. Read 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, washing 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 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.

**OPERATION MANUAL**

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

**Hitachi Kokusai Electric**

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Singapore 349574  
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instructions.

- 12. Grounding or Polarization**  
This product is equipped with a three-wire grounding-type 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.
- 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.

**KP-F200 for U. S. A.**

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. These equipments 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 these products in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.  
**WARNING**  
Changes or modifications not expressly approved by HITACHI KOKUSAI ELECTRIC responsible for compliance could void the user's authority to operate the equipment.

**KP-F200 for Canada**

These products do not exceed the class A 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 applicables aux appareils numériques de classe A prescrites dans le règlement sur le brouillage radioélectrique édicté par le ministre des communications du Canada.

**Declaration of Conformity**

Manufacturer's Name: Hitachi Kokusai Electric, Inc.  
Manufacturer's Address: 14-20, Higashi-Nakano, Nakano-ku, Tokyo 164-0911, Japan  
Representative Address in the EU: Hitachi Denchi (U.K.) Ltd., Brookfield House, Seaby Road, Garforth, Wetherby, West Yorkshire LS25 1NB, England, United Kingdom  
Address, then the product: Product Name: CCD Camera; Model Number: KP-F200  
Reference to the Marketing Standard: EMC 89/320/EEC; EN 61010-1:1991  
Reference to the applicable standards: The product complies with the requirements of the Low Voltage Directive 70/150/EEC and the EMC Directive 89/320/EEC.  
Signature: [Signatures of M. Goto and M. Kuroki]  
Name: M. Goto, M. Kuroki  
Position: Gen. Manager, Quality Assurance; Sales & Marketing Director (Europe) GmbH  
Company Name: Hitachi Denchi (U.K.) Ltd.  
Address: Brookfield House, Seaby Road, Garforth, Wetherby, West Yorkshire LS25 1NB, England, United Kingdom  
Date: 2004-07-05  
VCE-000

**WICHTIGE SICHERHEITSANWEISUNGEN**

- 1. Alle Anweisungen lesen.**  
Vor Betrieb des Erzeugnisses sollten alle Sicherheits- und Bedienungsanleitungen gelesen werden.
- 2. Die Anweisungen aufbewahren.**  
Die Sicherheits- und Bedienungsanleitungen sollten für zukünftigen Bezug aufbewahrt werden.
- 3. Warnungen beachten.**  
Die Warnungen auf dem Erzeugnis und in den Bedienungsanleitungen sollten beachtet werden.
- 4. Anweisungen befolgen.**  
Alle Bedienungsanleitung- und Verwendungsanweisungen sollten befolgt werden.
- 5. Reinigung**  
Den Stecker des Geräts vor Reinigung aus der Steckdose ziehen. Keine flüchtigen Reinigungsmittel oder Aerosolreiniger verwenden. Zum Reinigen einen feuchten Lappen verwenden.

- 6. Zubehör**  
Nur vom Hersteller des Erzeugnisses empfohlene 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 Waschwassers, in einem nassen Keller, in der Nähe eines Schwimmbeckens usw.
- 8. Aufstellung**  
Das Erzeugnis nicht auf einen un stabilen 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

**NOTES TO USERS**

- a. Power supply**  
Connect 12V ± 1V DC from an external power supply.
- b. Cleaning**  
Do not touch the glass surface of the sensor to avoid dirt and scratches.  
Use a manual type blower or lens brush to clear debris from the lens and glass. Carefully wipe the glass with a cotton swab to avoid scratches.  
Even when not using the camera, attach the lens or seal to protect the glass from soiling or damage.
- c. To protect camera**  
Do not use or store the camera under direct sunlight, in environments exposed to rain, or snow, or at a place exposed to flammable or corrosive gas.  
The camera operates in the temperature range between -0 and 40C.  
If the camera is used or left at a high temperature (40C or more) for hours, the life of the camera may be shortened. When using the camera continuously for hours, avoid using the camera in such a high temperature or high humidity.  
Do not drop the camera. Do not apply strong shock or vibration to the camera.  
Before connecting or disconnecting a connector, turn off the camera. Be sure to hold the connector body to connect or disconnect the connector.
- d. Arrangement of camera**

**Phenomena inherent to CCD imaging device**  
Following are the phenomena inherent to a CCD imaging device, and not defects

- 1) Smear and blooming**  
When strong light (lamp, fluorescent lamp, reflected light, etc.) is shot, pale bands are displayed vertically above and below the light.  
In this case, change the angle of the camera so that such strong light does not enter the camera through the lens.
- 2) Fixed pattern noise**  
When the camera is operated in a high temperature, fixed pattern noise may appear on the entire screen.
- 3) Moire**  
When fine patterns are shot, moire may be displayed.

Install the cameras as far as possible from each other or operate the cameras by an external sync signal.

- a. Fixing of camera**  
When a heavy lens is used, or when excessive shock or vibration is applied, fix the lens to the equipment, too.
- f. Handling**  
Use a clean site when installing the lens or other attachment.  
Use care not to tilt the camera when attaching the lens.



- 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 Kräfteinwirkung 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 Einbaustellung wie in einem Bücherregal 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 Stromversorgung 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 Elektrizitätsamt. Beziehen Sie sich für Batteriebetrieb



- 12. Erdung oder Polarisation**  
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 Steckdose ersetzt. Machen Sie nicht den 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 Steckern, 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 vermindert Beschädigung durch Blitzschlag und Netzspannungstöße.
- 15. Überlastung**  
Wandsteckdosen, Verlängerungskabel und eingebaute Bequemlichkeitsteckdosen nicht überlasten, da dies Feuer oder elektrischen Schlag verursachen kann.
- 16. Eindringen von Fremdkörpern und Flüssigkeit**  
Niemand Objekte irgendwelcher Art durch die Öffnungen in das Gerät schieben, da diese unter hoher Spannung stehende Teile berühren oder kurzschließen

- 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 Netzabel 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 Regeleinstrumente verstellen, die in den Bedienungsanleitungen behandelt werden, da unangemessene Einstellung anderer Regeleinstrumente

- 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, die darauf hinweist, dass eine 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**  
Bitte Sie den Wartungstechniker nach der Vervollendung 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, Heizkörpern, Öfen und anderen Wärme erzeugenden Erzeugnissen (einschließlich Verstärkern) aufgestellt werden.

## GENERAL

Hitachi's KP-F200 is a 1/1.8-inch interline CCD camera designed for high resolution and versatile functions.

- High resolution : 1628(H) × 1236 (V) effective pixels
- RS-232C control

- Digital output
- Frame shutter function and multiple electronic shutter
- Frame-on-Demand function
- Partial scan

## COMPOSITION

Standard composition  
(1) Camera (with infrared cut filter)  
(2) Operation manual

	Model type	Assembly type	Shield type
2m	C-201KSM	C-201KS	C-201KSS
5m	C-501KSM	C-501KS	C-501KSS
10m	C-102KSM	C-102KS	C-102KSS

Note : In the region CE Marking required, use the Shield type cable.

### Optional accessories

- (1) Tripod adaptor TA-F120
- (2) 12 pin plug HR10A-10P-12S(01)
- (3) D.U.T connector (26 pins) DX30AM-50P or equivalent
- (4) Dummy glass (AR coated) ARC1214
- (5) Junction box JU-F1\*
- (6) Camera cable HR10A-7P-6P
- (7) 6 pin plug

\*12-pin connector output pin differences

Pin	JU-F1	KP-F200 output
4	VIDEO 1	VIDEO
6	HD/TRIG-B	HD(Input)
9	VIDEO 2	TRIG-B

## 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 ultérieures.
- 3. Tenir compte des avertissements**  
Tous les avertissements qui figurent sur l'appareil et dans le mode d'emploi doivent 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.
- 11. Sources d'alimentation**  
L'appareil devra être alimenté exclusivement sur le type d'alimentation indiqué sur l'étiquette signalétique. S'il 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 se rendre jamais 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, débrancher la source d'alimentation. Ceci permettra d'éviter tout dommage de l'appareil dû à la foudre et aux surtensions de ligne.

- 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 adultes, et étant sérieusement endommagé. Utiliser exclusivement le chariot, le socle, le pied, le support ou la table recommandés par le fabricant, et 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 doivent 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.
- 15. Surcharge**  
Ne pas surcharger les prises, rallonges et prises multiples car cela pourrait entraîner un risque de feu ou de choc électrique.
- 16. Pénétration d'objets et de liquides**  
Ne jamais enfoncer d'objets d'aucune sorte dans les ouvertures de l'appareil car ils pourraient toucher des points de tension dangereuse ou court-circuiter des pièces, ce qui pourrait provoquer un feu ou un choc électrique. Ne jamais renverser de liquide d'aucune sorte sur l'appareil.
- 17. Substances inflammables et explosives**  
Eviter d'utiliser l'appareil en présence de gaz, ainsi qu'à proximité immédiate de substances inflammables et explosives.
- 18. Chocs ou vibrations violents**  
Lorsqu'on transporte l'appareil, ne pas le soumettre à des chocs ou des vibrations violents.
- 19. Réparations**  
Ne pas tenter de réparer l'appareil soi-même car le fait d'ouvrir ou de retirer les caches risque d'exposer l'utilisateur à des tensions dangereuses notamment. Confier toute réparation à un personnel qualifié.
- 20. Dommages nécessitant réparations**  
Débrancher l'appareil de la source d'alimentation et confier les réparations à un personnel qualifié dans les cas suivants :  
a. Lorsque le cordon d'alimentation ou sa fiche sont endommagés

## REAR PANEL SWITCH

Remote on/off, mode1 and mode2 switches are located on the rear panel.

(1) Remote on/off switch

(2) Mode switch



SW POS.	MODE 1	SW POS.	MODE 1	SW POS.	MODE 1
0	Normal mode	8	Partial scan (Normal mode) (READ POS.:UPPER)	C	Normal mode
1	Normal shutter mode	7	Partial scan (One trigger mode) (READ POS.:CENTER)	D	Normal mode
2	One trigger mode	8	Partial scan (One trigger mode) (READ POS.:UPPER)	E	Normal mode
3	Two trigger mode	9	Normal mode	F	Normal mode
4	Fixed shutter mode	A	Normal mode		
5	Partial scan (Normal mode) (READ POS.:CENTER)	B	Normal mode		

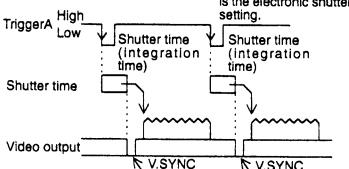
MODE2 SW POS.	MODE1 SW POS.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0,2,3,9 and F		00B	10B	20B	30B	40B	50B	60B	70B	80B	90B	100B	110B	120B	130B	140B	150B
1, 4		1/24	1/80	1/125	1/250	1/1000	1/2000	1/10000	1/50000	1/50000	1/50000	1/50000	1/50000	1/50000	1/50000	1/50000	1/50000
5 and 8		16H	32H	64H	128H	256H	512H	512H	512H	512H	512H	512H	512H	512H	512H	512H	512H

Various mode 2 settings  
Mode 1 positions 0,2,3,9 and F : Gain setting  
1,4 : Shutter speed setting  
5 and 8 : Partial scan width setting

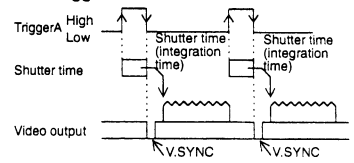
The rear panel mode 2 switch setting remains held in memory. For example, after setting Gain, that setting remains stored even if the front panel mode 1 switch setting is changed.

## FRAME-ON-DEMAND-FUNCTION

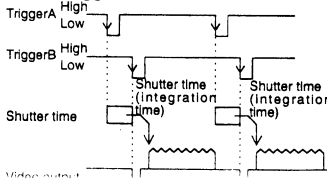
### ● Fixed shutter mode



### ● ONE trigger mode



### ● TWO trigger mode



- 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 nécessiter 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).

## RS-232C CONTROL

The RS-232C control mode is produced by connecting the serial interface (D-sub 9 pin) of a personal computer with the camera rear panel 6 pin connector and setting the camera rear panel Remote on/off switch to on.  
The RS-232C setting status can be stored in memory.

- **FD(Frame on Demand)**  
Fixed shutter, TWO Trigger, ONE Trigger
- **Gain**  
0 ~ 15dB
- **Partial scan**  
Normal, ONE Trigger
- **Black level**  
Normal, ONE Trigger
- **Shutter speed**  
1/24, 1/60, 1/125, 1/250, 1/1000, 1/2000, 1/10000, 1/50000

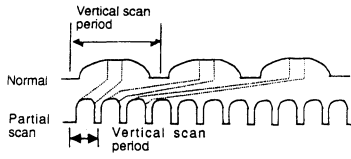
Remote ON/OFF switch	Camera setting (operation) state
ON	Remote setting
OFF	Back switch setting (MODE1, MODE2)

If a REMOTE ON/OFF switch is ON while remote cable is removed, camera will operate in the state of the last remote setup.

The default value of the black level differs by a camera.  
Consult dealer regarding protocol.

## PARTIAL SCAN FUNCTION

The frame rate is increased by reading part of the CCD image.



### (1) Normal mode (CENTER) frame rate

Operating range (V direction)	Period T (msec)	Frame rate(frame/sec)	Remarks
16H	4.9	205	Shutter speed 1/250, 1/1000, 1/2000, 1/10000, 1/50000 and shutter off
32H	5.4	186	
64H	6.3	158	
128H	8.3	121	
256H	12.1	82	
512H	19.8	50	

### (2) Normal mode (UPPER) frame rate

Operating range (V direction)	Period T (msec)	Frame rate(frame/sec)	Remarks
16H	4.9	204	Shutter speed 1/250, 1/1000, 1/2000, 1/10000, 1/50000 and shutter off
32H	5.4	186	
64H	6.4	157	
128H	8.3	121	
256H	12.1	82	
512H	19.8	50	

### (3) ONE Trigger mode (CENTER) frame rate

Operating range (V direction)	Trigger period T (ms)
16H	Exposure time +4.9 ≤ T ≤ 41.73
32H	Exposure time +5.4 ≤ T ≤ 41.73
64H	Exposure time +6.3 ≤ T ≤ 41.73
128H	Exposure time +8.3 ≤ T ≤ 41.73
256H	Exposure time +12.1 ≤ T ≤ 41.73
512H	Exposure time +19.8 ≤ T ≤ 41.73

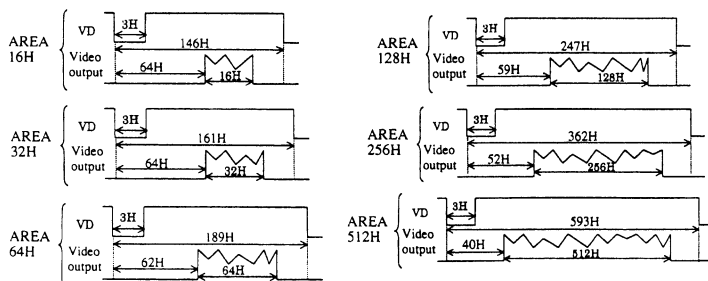
### (4) ONE Trigger mode (UPPER) frame rate

Operating range (V direction)	Trigger period T (ms)
16H	Exposure time +4.9 ≤ T ≤ 41.73
32H	Exposure time +5.4 ≤ T ≤ 41.73
64H	Exposure time +6.4 ≤ T ≤ 41.73
128H	Exposure time +8.3 ≤ T ≤ 41.73
256H	Exposure time +12.1 ≤ T ≤ 41.73
512H	Exposure time +19.8 ≤ T ≤ 41.73

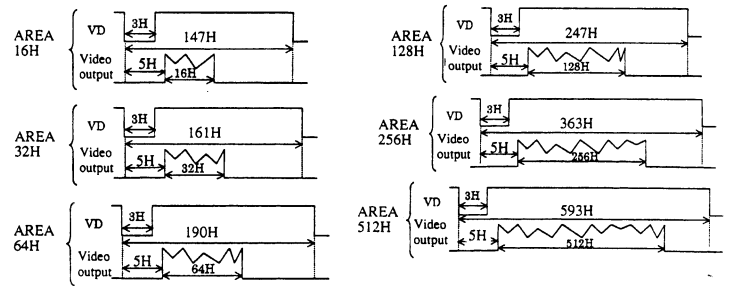
**Note**  
The first frame image may be disrupted during partial scan operation. There is the possibility that S/N gets worse a little.

## PARTIAL SCAN TIMING CHART

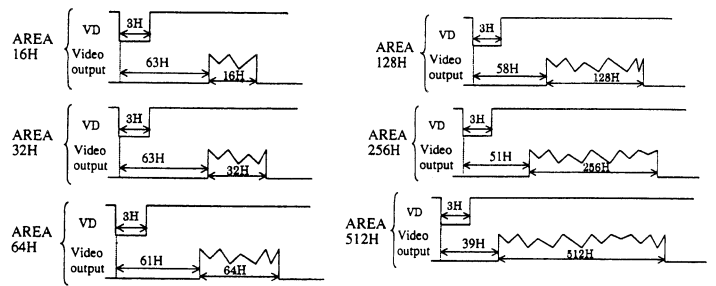
### (1) Partial scan normal mode (CENTER)



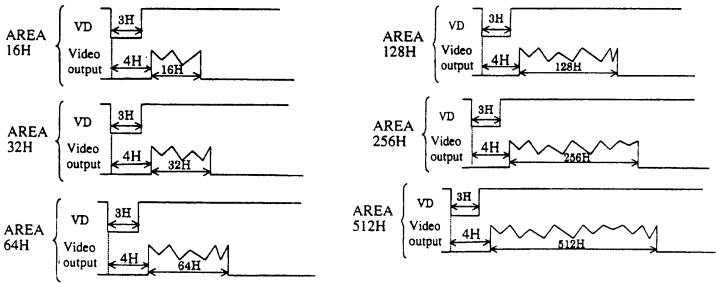
### (2) Partial scan normal mode (UPPER)



### (3) Partial scan ONE Trigger mode (CENTER)

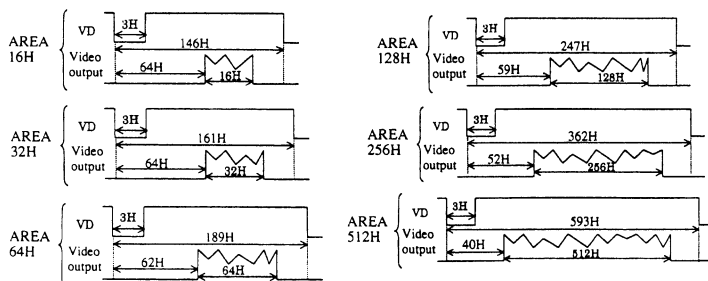


### (4) Partial scan ONE Trigger mode (UPPER)



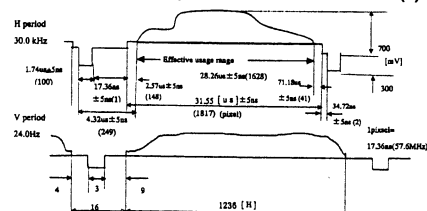
## PARTIAL SCAN TIMING CHART

### (1) Partial scan normal mode (CENTER)

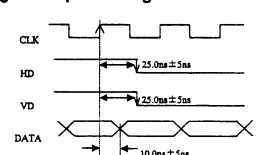


## INPUT/OUTPUT SIGNAL LEVELS AND TIMING

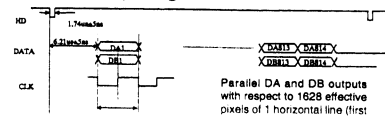
### (1) Analog output signal



### (3) Digital output Timing

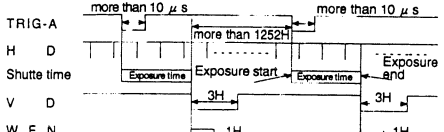


### (2) Digital output signal

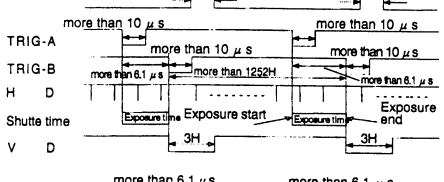


Parallel DA and DB outputs with respect to 1628 effective pixels of 1 horizontal line (first)

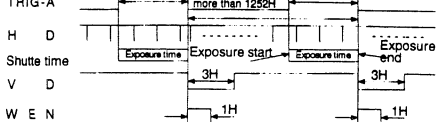
**(4) TRIG-A input and HD & VD phase during Fixed shutter mode**  
 Transmit: Please refer to the CONDITION OF EXTERNAL SIGNAL INPUT.  
 Please use the Low period of TRIG-A in 100 microseconds or more at the time of the HD reset ON.



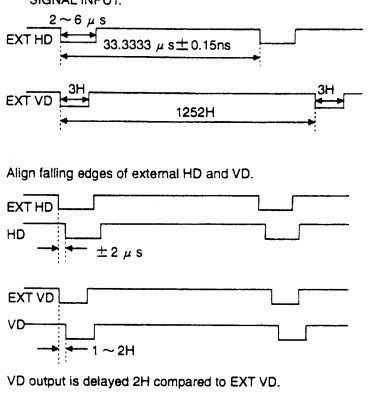
**(5) TRIG-A & B input phase and HD & VD phase during Two trigger mode**  
 Transmit: Please refer to the CONDITION OF EXTERNAL SIGNAL INPUT.  
 Please use the Low period of TRIG-A and TRIG-B in 100 microseconds or more at the time of the HD reset ON.  
 WEN pulse does not OUTPUT it at the time of the TWO trigger mode.



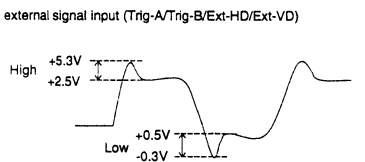
**(6) One trigger mode**  
 Transmit TRIG-A: Please refer to the CONDITION OF EXTERNAL SIGNAL INPUT.  
 Please use the High period of TRIG-A in 100 microseconds or more at the time of the HD reset ON.



**(7) External HD & VD input levels and phase**  
 Level: Please refer to the CONDITION OF EXTERNAL SIGNAL INPUT.



**CONDITION OF EXTERNAL SIGNAL INPUT**



**(2) Signal connection to DIGITAL OUT : EIA644**

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	DATA DB-D0(+)	2	DATA DB-D0(-)	26	DATADA-D0(+)	27	DATADA-D0(-)
3	DATA DB-D1(+)	4	DATA DB-D1(-)	28	DATADA-D1(+)	29	DATADA-D1(-)
5	DATA DB-D2(+)	6	DATA DB-D2(-)	30	DATADA-D2(+)	31	DATADA-D2(-)
7	DATA DB-D3(+)	8	DATA DB-D3(-)	32	DATADA-D3(+)	33	DATADA-D3(-)
9	DATA DB-D4(+)	10	DATA DB-D4(-)	34	DATADA-D4(+)	35	DATADA-D4(-)
11	DATA DB-D5(+)	12	DATA DB-D5(-)	36	DATADA-D5(+)	37	DATADA-D5(-)
13	DATA DB-D6(+)	14	DATA DB-D6(-)	38	DATADA-D6(+)	39	DATADA-D6(-)
15	DATA DB-D7(+)	16	DATA DB-D7(-)	40	DATADA-D7(+)	41	DATADA-D7(-)
17	DATA DB-D8(+)	18	DATA DB-D8(-)	42	DATADA-D8(+)	43	DATADA-D8(-)
19	DATA DB-D9(+)	20	DATA DB-D9(-)	44	DATADA-D9(+)	45	DATADA-D9(-)
21	TX2	22	RX2	46	CLK OUT(+)	47	CLK OUT(-)
23	GND	24	GND	48	VD OUT(+)	49	VD OUT(-)
25	HD OUT(+)			50	HD OUT(-)		

Connect the ground terminal of a frame grabber or other equipment to the shield of the digital out cable.  
 The digital out cable should be comprised of a twisted pair of wires having 100 Ω characteristic impedance and an outer sheath shield type conductor.



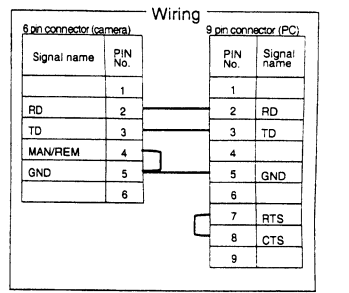
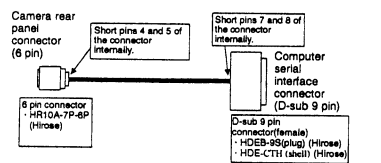
**(3) Signal connection to REMOTE connector**

Pin No.	Signal
1	—
2	RD
3	TD
4	MANU/REM
5	GND
6	—

● Connect the cable between the camera Remote connector and the personal computer serial interface connector (D-SUB 9 pin).  
 ● Notes: At the camera Remote plug, connect pin 4 Manual/remote and pin 5 ground.  
 At the computer serial interface connector (D-SUB), short pins 7 (RTS) and 8 (CTS).  
 In the region CE marking required, use the Shield type cable.

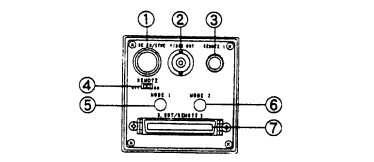
**REMOTE CABLE WIRING**

The cable indicated below is used for remotely controlling the camera.  
 Connect (camera side): HR10-7R-6SA (hirosee) or equivalent Plug (cable side) : HR10A-7P-6P (Hirosee) or equivalent  
 Note: At the camera Remote plug, connect pin 4 Manual/remote and pin 5 ground.  
 At the computer serial interface connector (D-SUB), short pins 7 (RTS) and 8 (CTS).



Note: TD: Transmit data from PC to camera.  
 RD: Transmit data from camera to PC  
 In the region CE marking required, use the Shield type cable.

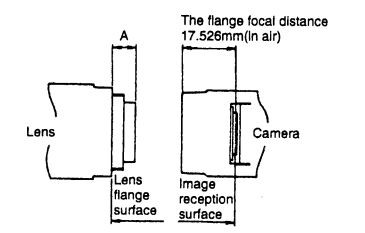
**NAME OF EACH SECTION**



- DC IN/SYNC connector  
12 V DC input, composite video (VS) signal output, used for external sync and drive signal input.
- VIDE OUT(BNC)  
Composite video (VS) signal output.
- RS-232C connector (REMOTE)  
Connect to computer for camera settings.
- REMOTE ON/OFF switch  
Selects RS-232C control
- MODE 1 switch  
Selects e. g., trigger input
- MODE 2 switch  
Selects e. g., electronic shutter speed, gain.
- DIGITAL OUT connector  
Used for digital and digital sync signal output.

**OPTICAL SYSTEM**

Flange focal distance  
 Image size: 1/1.8-inch  
 The flange focal distance is 17.526mm (in air)  
 Flange focal distance cannot be adjusted.



Note:  
 Select such a lens as the length (A) from the flange surface of the lens to the end of the screw side is 8mm or less.

**SPECIFICATIONS**

- Pickup element  
Total pixels  
Effective pixels  
Pixel pitch
- Imaging area
- Scanning system
- Aspect ratio
- Frame rate
- Horizontal scanning frequency
- Vertical scanning frequency
- Synchronization
- Lens mount
- Flange focal distance
- Video output
- Digital output

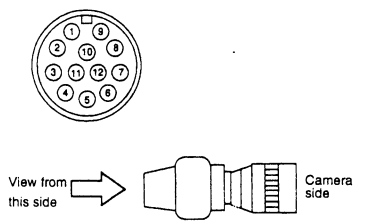
- Analogue output 1.0 Vp-p 75 Ω unbalance  
 Video : 0.7Vp-p  
 Sync : 0.3Vp-p  
 When carrying out the capture of the analog signal, please consult our stations.
- External sync input  
HD/VD negative  
Input impedance: 10 k Ω  
Frequency deviation: ± 1 %  
Please refer to the CONDITION OF EXTERNAL SIGNAL INPUT.
  - Electronic shutter speed  
Selectable by external switches:  
Off (frame rate), 1/24, 1/60, 1/125, 1/250, 1/1000, 1/2000, 1/10000, 1/50000 second.  
Set by external switch.
  - Gamma compensation  
γ = 1
  - Frame-on-demand  
External switch setting on/off and modes (fixed shutter, two trigger, and one trigger).  
(a) Signal system

**SIGNAL CONNECTION TO CONNECTOR**

(1) Signal connections to DC IN and SYNC (DC IN/SYNC)

Pin No.	Internal SYNC mode	External SYNC mode			
		HD/VD	Fixed shutter/ ONE Trigger	TWO trigger	
1	GND	GND	GND	GND	
2	+12V	+12V	+12V	+12V	
3	GND	GND	GND	GND	
4	VIDEO	VIDEO	VIDEO	VIDEO	
5	GND	EXT-HD (GND)	GND	GND	
6	—	EXT-HD (SIGNAL)	—	—	
7	—	EXT-VD (SIGNAL)	TRIG-A (SIGNAL)	TRIG-A (SIGNAL)	
8	GND	GND	GND	TRIG-B (GND)	
9	—	—	WEN (SIGNAL)	TRIG-B (SIGNAL)	
10	GND	GND	GND	GND	
11	+12V	+12V	+12V	+12V	
12	GND	EXT-VD (GND)	TRIG-A (GND)	TRIG-A (GND)	

DC IN/SYNC  
 HR10A-10P-12S(01)  
 Product : 23810AX



Please do not unplug and insert each cable, write a power supplied to a camera.

- External switch setup  
 ① Fixed shutter mode  
 ② ONE Trigger mode  
 ③ TWO Trigger mode
- Power supply voltage 12 ± 1 VDC
  - Current consumption Approx. 450mA
  - Ambient, operating 0 to +40°C(+32 to ; 104 F), less than 90 % RH
  - Ambient, storage -10 to +50°C(+14 to +122 F), less than 70 % RH  
 Note: If operated continuously, be sure to use at less than +40°C(104 F) for long term stable performance.
  - Vibration endurance 3G (3 directions, 30 minutes each)
  - Shock endurance 30G (vertical, horizontal, once each face)
  - External dimensions 58(W) × 58(H) × 48 (D) mm
  - Mass Approx. 220 g
  - RS-232C control

- Control system Start-stop synchronization system
- Transmission rate 9600 bps
- Samn Data length 8 bits
- Start bit 1 bit
- Stop bits 2 bit
- Parity None
- It transfer LSB first
- Communication control method  
 Overall control of transmission is from the communication software. Data send/receive (BSC handshake) by sending text data to the camera control CPU

\* specifications are subject to change without notice.