

CCD Camera

KP-M2R

FIELD-ON-DEMAND

OPERATION MANUAL

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

Hitachi Kokusai Electric Inc.

CCDカメラ

KP-M2R

フィールド・オン・デマンド

取扱説明書

この取扱説明書には、あなたや他の人々への危害や財産への損害を未然に防ぎ、この機器を安全にお使いいただくために守っていただきたい事項を示しています。ご使用になる前に、この取扱説明書をよくお読みいただき、正しい使い方でご愛用ください。

お読みになった後も、この機器のそばなどいつも手元に置いてご使用ください。

株式会社 日立国際電気

KP-M2R 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 Denshi responsible for compliance could void the user's authority to operate the equipment.

KP-M2R 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 applicable aux appareils numériques de classe A prescrites dans le règlement sur le brouillage radioélectrique édicté par le ministère des communications du canada.

KP-M2R E/K

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß CCD-Kamera KP-M2/M3 E/K in Übereinstimmung mit den Bestimmungen der Amtsblattverfügung Nr. 1046/1984 funkentstört ist. Der Deutschen Bundespost wurde das inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Hitachi Denshi(Europa) GmbH

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F. R. Germany

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

Model No. _____

Serial No. _____

IMPORTANT SAFETY INSTRUCTIONS

1. Read Instructions

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

2. Retain Instructions

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

3. Heed Warnings

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

4. Follow Instructions

All operating and use instructions should be followed.

5. Cleaning

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

6. Attachments

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

7. Water and Moisture

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

8. Accessories

Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may

fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

9. Moving

A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.



10. Ventilation

Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

11. Power Sources

This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

12. Grounding or Polarization

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

13. Power-Cord Protection

Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at 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.

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 flüssigen Reinigungsmittel oder Aerosolreiniger verwenden. Zum Reinigen einen feuchten Lappen verwenden.

6. Zubehör

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

7. Wasser und Feuchtigkeit

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

eines Schwimmbeckens usw.

8. Aufstellung

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

9. Eine Kombination von Erzeugnis und Wagen sollte vorsichtig bewegt werden. Schneller Halt, übermäßige Krafteinwirkung und unebene Oberflächen können Umkippen der Kombination von Erzeugnis und Wagen verursachen.



10. Ventilation

Schlitze und Öffnungen im Gehäuse dienen der Ventilation. Sie sind für zuverlässigen Betrieb des Gerätes und Schutz vor Überhitzung erforderlich und dürfen nicht blockiert oder abgedeckt werden. Die Öffnungen sollten niemals dadurch blockiert werden, daß das Gerät auf ein Bett, ein Sofa, einen

Teppich oder eine ähnliche Oberfläche gestellt wird. Das Gerät sollte nur dann in Einbauinstallation wie in einem Bücherschrank oder einem Gestell verwendet werden, wenn angemessene Ventilation vorgesehen ist bzw. die Anweisungen des Herstellers befolgt worden sind.

11. Stromversorgung

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

12. Erdung oder Polarisierung

Dieses Erzeugnis ist mit einem Schutzkontaktstecker mit drei Leitern ausgerüstet, mit einem Erdungskontakt. Dieser Stecker paßt nur in ein Schuko-Steckdose. Dies ist eine Sicherheitsmaßnahme. Wenn Sie den Stecker nicht in die Steckdose stecken können, so wenden Sie sich bitte an ihren Elektriker, damit er die veraltete 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 verhindert Beschädigung durch Blitzschlag und Netzspannungsspitzen.

15. Überlastung

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

16. Eindringen von Fremdkörpern und Flüssigkeit

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

17. Entflammare und explosive Substanzen

Vermeiden Sie Verwendung dieses Erzeugnisses an Orten mit Gasen bzw. entflammaren oder

explosiven Substanzen in der direkten Umgebung.

18. Starke Stöße oder Vibrationen

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

19. Wartung

Versuchen Sie nicht, dieses Erzeugnis Selbst zu warten, da Sie sich durch Öffnen bzw. Entfernen von Abdeckungen hohen Spannungen und sonstigen Gefährdungen aussetzen können. Beziehen Sie sich für jegliche Wartung auf qualifiziertes Wartungspersonal.

20. Beschädigung, die Wartung erfordert

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

- a. Wenn das Netzkabel oder der Stecker beschädigt ist.
- b. Bei Eindringen von Flüssigkeit oder Fremdkörpern in das Gerät.
- c. Wenn das Erzeugnis Regen oder Wasser ausgesetzt worden ist.
- d. Wenn das Erzeugnis bei Befolgen der Bedienungsanleitungen nicht normal funktioniert. Nur die Regelemente verstellen, die in den Bedienungsanleitungen behandelt werden, da unangemessene Einstellung anderer Regelemente Beschädigung verursachen kann und oft beträchtliche Arbeit durch einen qualifizierten Techniker erfordert, um das Erzeugnis wieder zu normalem Betrieb zurückzubringen.

e. Wenn das Erzeugnis fallen gelassen oder beschädigt worden ist.

f. Wenn das Erzeugnis eine klare Änderung in der Leistung zeigt-dies weist darauf hin, daß Wartung erforderlich ist.

21. Ersatzteile

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

22. Sicherheitsprüfung

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

23. Anbringung an der Wand oder an der Decke

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

24. Wärme

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

MISES EN GARDE IMPORTANTES

1. Lire les instructions

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

2. Conserver ces instructions

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

3. Tenir compte des avertissements

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

4. Observer les instructions

Observer toutes les instructions de fonctionnement et d'utilisation.

5. Nettoyage

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

6. Fixations

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

7. Eau et humidité

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

8. Accessoires

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

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

9. L'appareil monté sur son chariot devra être déplacé avec précaution. Des arrêts brusques, une force excessive et des surfaces irrégulières pourraient provoquer le renversement de l'ensemble appareil-chariot.



10. Ventilation

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

respecter les instructions du fabricant.

11. Sources d'alimentation

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

12. Mise à la terre ou polarisation

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

13. Protection du cordon d'alimentation

Acheminer les cordons d'alimentation de façon qu'on ne risque pas de marcher dessus ou de les coincer sous un objet placé dessus ou contre eux. Faire particulièrement attention aux fiches des cordons, à la proximité des prises, et à l'endroit où ils ressortent de l'appareil.

14. Foudre

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

15. Surcharge

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

16. Pénétration d'objets et de liquides

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

17. Substances inflammables et explosives

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

18. Chocs ou vibrations violents

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

19. Réparations

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

20. Dommages nécessitant réparations

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

- a. Lorsque le cordon d'alimentation ou sa fiche sont endommagés
- b. Si du liquide s'est renversé sur l'appareil ou que des objets sont tombés dedans
- c. Si l'appareil a été exposé à la pluie ou à l'eau.
- d. Si l'appareil ne fonctionne pas normalement lorsqu'on observe les instructions d'utilisation. Ne régler que les commandes couvertes par le mode d'emploi ; en effet, un réglage incorrect des autres commandes pourrait entraîner des dommages et nécessiteront souvent des travaux de réparation coûteux par un technicien qualifié pour remettre l'appareil en état de marche.
- e. Si l'appareil est tombé ou qu'il a été endommagé.
- f. Si l'appareil affiche une nette modification de ses performances, cela signifie qu'il a besoin d'être réparé.

21. Pièces de rechange

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

22. Vérification de sécurité

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

23. Montage au mur ou au plafond

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

24. Chaleur

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

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1. GENERAL

The KP-M2R are compact, lightweight, black and white cameras. The KP-M2R uses the latest high grade 1/2-inch image size CCD. The CCD has sensitivity in the near-infrared spectrum.

The total pixel number of each CCD is 410,000 (490,000 for CCIR).

2. MAJOR FEATURES

- Compact: 44(W)×29(H)×72(D)mm
Lightweight: 120g approx.
- Variable speed electronic shutter function
- Internal/external synchronization, interlaced/non-interlaced operation
- Field-on-Demand function
- Frame and field integration modes switchable

3. COMPOSITION

Standard composition

- (1) Camera body (with dummy glass)
- (2) Operation manual

Optional accessories

- | | |
|--------------------|--------------------|
| (1) Tripod adaptor | TA-M1 |
| (2) 12-pin plug | HR10A-10P-12S (01) |
| (3) AC adaptor | AP-130 |
| (4) Junction box | JU-M1A |
| (5) Camera cable | 2m: C-201KSM |
| | 5m: C-501KSM |
| | 10m: C-102KSM |

4. NOTES TO USERS

4-1 Power supply

Connect $12V \pm 1V$ DC from an external power supply.

4-2 To protect CCD (sensor)

- Do not touch the glass surface of the sensor to avoid dirt and scratches.
- If the glass surface of the sensor should become dusty or dirty, wipe off dust or dirt carefully with a cotton-tipped applicator. Never use dry cloth or paper. The surface may be scratched and further the sensor may be damaged by static electricity.
- Be sure to mount a lens or the supplied mount cap on the camera to protect the sensor from dust.

4-3 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 -10 and 50°C .
If the camera is used or left at a high temperature (40°C 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.

4-4 Arrangement of camera

When several cameras are installed very close with each other, the cameras may interfere with each other to cause noise. Install the cameras as far as possible from each other or operate the cameras by an external sync signal.

4-5 Fixing of camera

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

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.

5. NAME OF EACH SECTION

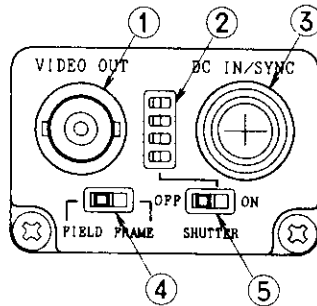


Fig. 1

(Rear)

(1) VIDEO OUT (BNC) connector

A composite video signal (VS) is fed from this connector. Connect a 75-ohm coaxial cable between the connector and a video monitor or other video equipment.

(2) Shutter speed select switches

Use these switches to set a shutter speed.

(3) DC IN/SYNC connector

This connector is for a 12V DC input, a composite video signal (VS) output and an external sync signal input.

(4) FIELD/FRAME integration mode select switch

Use this switch to select an integration mode. This switch is set to FRAME at factory.

(5) SHUTTER ON/OFF switch

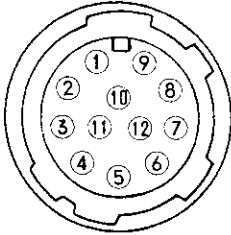
Set the SHUTTER ON/OFF switch to ON to establish the shutter mode.

6. SIGNAL CONNECTION TO DC IN/SYNC CONNECTOR

Signal connection to each pin

Pin No.	Internal sync mode	External sync mode				
		HD-VD	Field-on-demand			
			ONE trigger	TWO-trigger	Fixed shutter	Ext. shutter
1	GND	GND	GND	GND	GND	GND
2	+12V	+12V	+12V	+12V	+12V	+12V
3	Video output (GND)	Video output (GND)	Video output (GND)	Video output (GND)	Video output (GND)	Video output (GND)
4	Video output (Signal)	Video output (Signal)	Video output (Signal)	Video output (Signal)	Video output (Signal)	Video output (Signal)
5	—	HD input (GND)	—	—	—	HD input (GND)
6	—	HD input (Signal)	—	—	—	HD input (Signal)
7	—	VD input (Signal)	Trigger A input (Signal)	Trigger A input (Signal)	Trigger A input (Signal)	VD input (Signal)
8	—	—	—	Trigger B input (GND)	—	Trigger B input (GND)
9	—	—	—	Trigger B input (Signal)	—	Trigger B input (Signal)
10	GND	GND	GND	GND	GND	GND
11	+12V	+12V	+12V	+12V	+12V	+12V
12	—	VD input (GND)	Trigger A input (GND)	Trigger A input (GND)	Trigger A input (GND)	VD input (GND)

Optional 12-pin plug: HR10A-10P-12S(01)



Viewed from this side →

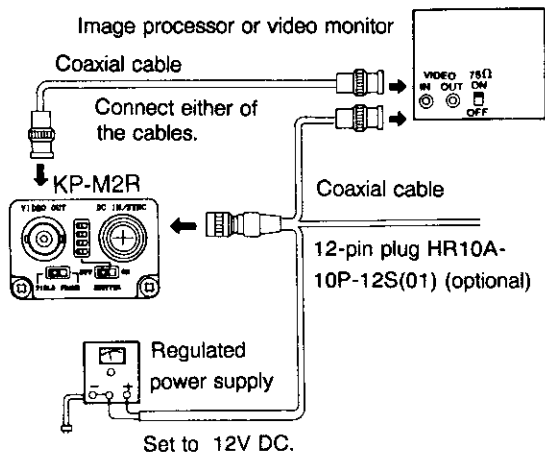


Note:

- The video signal cannot be fed simultaneously from both the VIDEO OUT connector and the DC IN/SYNC connector. If both the outputs are connected simultaneously, a proper picture cannot be obtained.
- Supply 12V DC in the range between 11 and 13V.

7. HOW TO CONNECT CABLES

7-1 Basic connection



When connecting more than one monitor, set the 75-ohm termination switch of the last unit only to ON.

When operating the camera in external sync drive mode, input the sync signal(HD/VD).

- Available voltage range is 11 to 13V.
- Before turning on an external power supply unit, be sure to check the polarities of the power supply.

Note: The video signal cannot be fed simultaneously from both the VIDEO OUT connector and the DC IN/SYNC connector.

Fig. 2

7-2 Connection of options

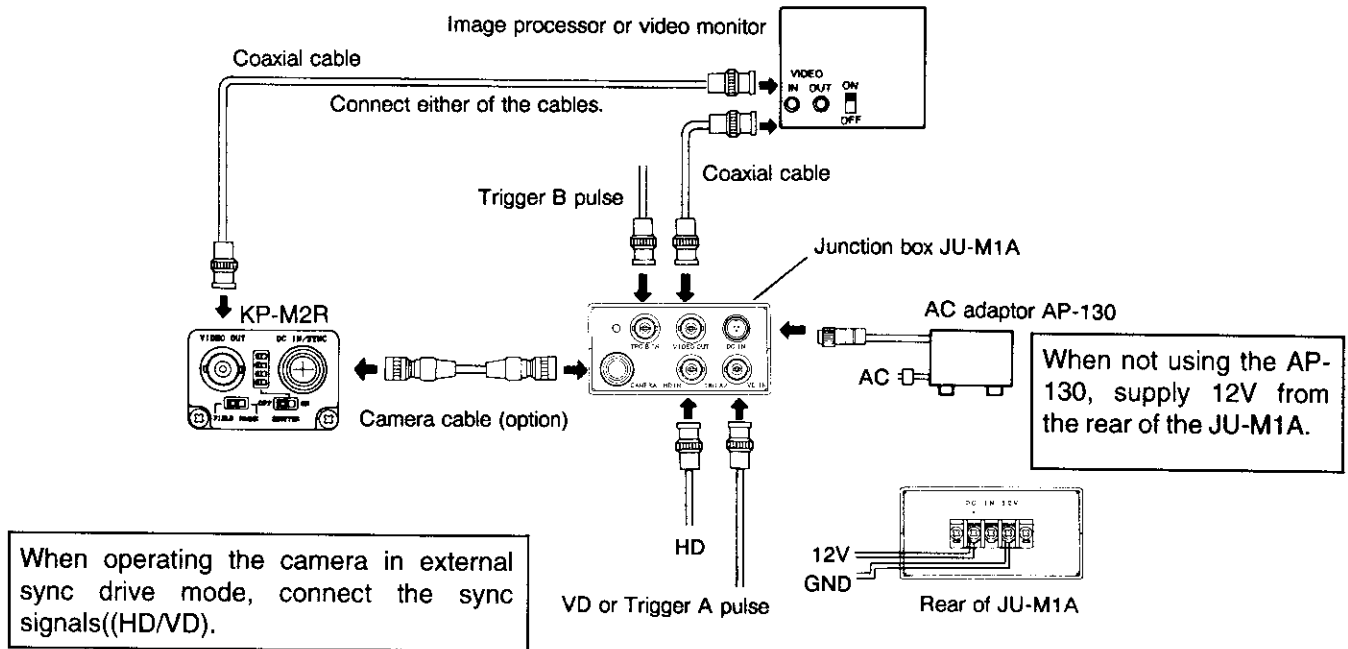
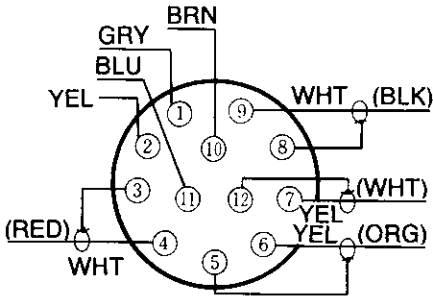


Fig. 3

7-3 Optional cables

Cables dedicated for connecting the camera head and the junction box JU-M1 are available as option.



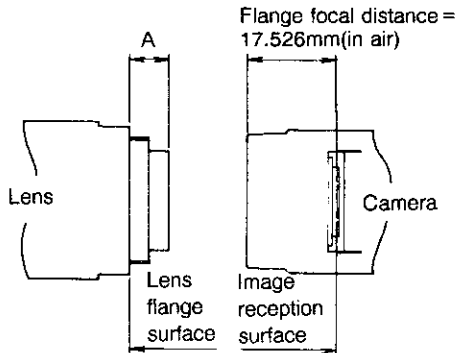
Length	Type
2m	C-201KS
5m	C-501KS
10m	C-102KS

Fig. 4

- Voltage drop due to a cable is about 0.01V per meter.
- The H phase delays by about 5ns per meter.
- When an optional cable is used, the video signal cannot be fed from the VIDEO OUT connector.
- When using a cable only to supply power, use the cable C-201KS (2m).

8. OPTICAL SYSTEM

- Image size.
KP-M2:1/2-inch
KP-M3:1/3-inch
- The flange focal distance is 17.526mm (in air).
- 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.



Note

Flange focal distance cannot be adjusted.

Fig. 5

9. GLASS

This camera is provided with a dummy glass.

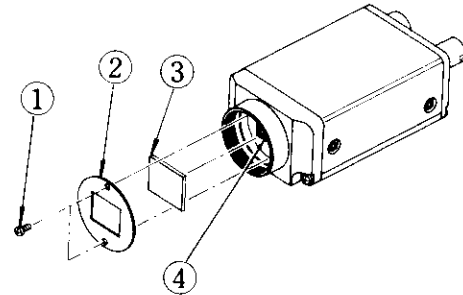
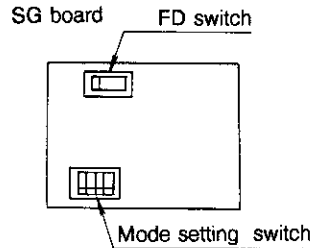
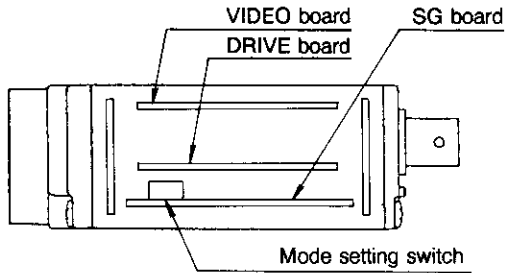
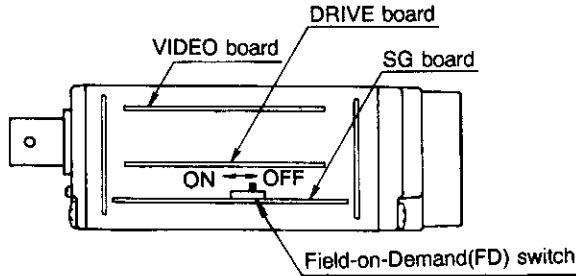


Fig. 6

How to remove the dummy glass.

- (1) Remove two screws shown in Fig. 6, and filter holder (2) will come off.
- (2) Remove the dummy glass (3) from filter frame (4).
- (3) Then, reinstall and secure filter holder (2) with two screws (1).

10. ARRANGEMENT OF INTERNAL SWITCHES



	Normal mode	ONE trigger mode	TWO-trigger mode	Fixed shutter mode	Ext. shutter control mode
Mode setting switch					
FD switch	OFF (Setting at factory)	ON	ON	ON	OFF

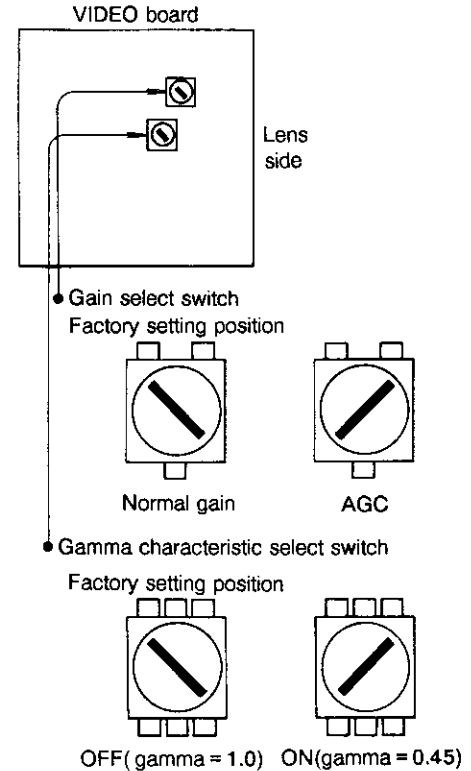


Fig. 7

11. GAMMA CHARACTERISTIC SELECT SWITCH

The camera is provided with the gamma characteristic select switch. This switch is set to OFF at the factory. (For the location of the switch, refer to Fig. 7 on page 11.)

(1) Gamma: OFF (Gamma=1.0)

In this mode, a linear output signal in accordance with the brightness of an object can be obtained.

(2) Gamma: ON (Gamma=0.45)

This mode is suitable for viewing a picture on a monitor screen.

12. GAIN SELECT SWITCH

The gain of the camera can be switched between the normal gain mode and the AGC mode. This switch is set to the normal gain mode at the factory.

(For the location of the switch, refer to Fig. 7 on page 11.)

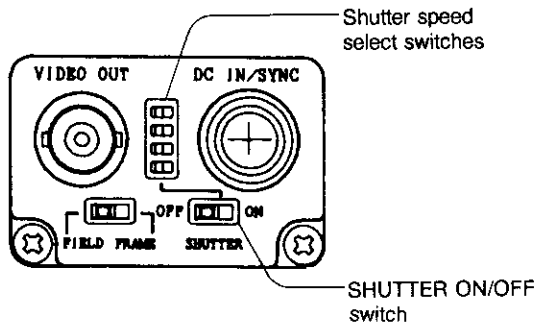
(1) Normal gain mode

In this mode, the video gain is fixed. (The noise amount is also fixed.)

(2) AGC mode

When the illumination on an object becomes lower than the rated level, gain is automatically increased. As gain increases, noise also increases.

13. HOW TO USE ELECTRONIC SHUTTER



Set the SHUTTER ON/OFF switch to ON, then set a shutter speed with the shutter speed select switches. (The shutter operates in the field integration mode.)

Setting of shutter speed

Speed(second)	※ 1	※ 2	1/125	1/250
Setting				
position				

1/500	1/1000	1/2000	1/4000	1/10000

- ※ 1 1/60(EIA), 1/50(CCIR)
- ※ 2 1/100(EIA), 1/120(CCIR)

The higher the shutter speed, the greater the effect. However, since sensitivity lowers, adjust the lens iris or increase illumination. When the shutter is used, the flicker of an object may be emphasized. In such a case, use a light such as a DC lighting lamp which causes no flicker.

14. EXTERNAL SYNCHRONIZATION (2:1 INTERLACED)

When operating the camera by external drive signals, connect sync drive signals (HD,VD) to the DC IN/SYNC connector, then the mode is automatically switched from the internal sync mode to the external sync mode.

- Input signals

HD and VD signals

HD EIA : $f(H)=15.734\text{kHz} \pm 1\%$

CCIR : $f(H)=15.625\text{kHz} \pm 1\%$

VD EIA : $f(V)=59.94\text{Hz}$ [$f(V)=f(H) \div 262.5$]

CCIR : $f(V)=50\text{Hz}$ [$f(V)=f(H) \div 312.5$]

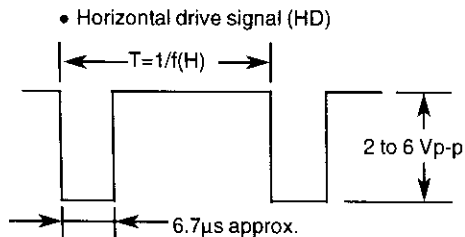
- Input level

HD 2 to 6Vp-p, negative

VD 2 to 6Vp-p, negative

- Input impedance 1k ohms

- Input waveforms



- Vertical drive signal (VD)

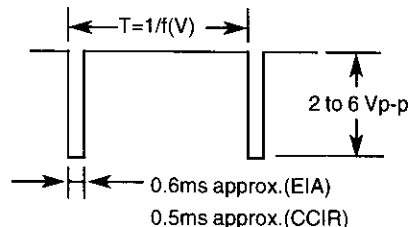
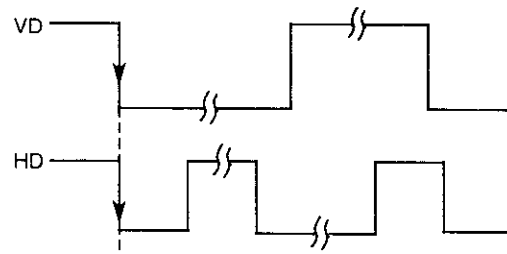


Fig. 8

- Phase relationship between horizontal drive signal (HD) and vertical drive signal (VD)



Adjust the phases so that the falling edges of HD and VD are in phase ($0 \pm 5\mu\text{s}$).

Fig. 9

15. NON-INTERLACED OPERATION

When non-interlaced external sync drive signals (HD/VD) are connected from an external unit, the mode is automatically switched to non-interlaced scanning mode. When the following external sync drive signals are connected, the camera operates in the non-interlaced mode.

- Input signals HD EIA : $f(H)=15.734\text{kHz}\pm 1\%$
CCIR : $f(H)=15.625\text{kHz}\pm 1\%$
VD EIA : $f(V)=f(H)\div(260\text{ to }1023)\text{ (Hz)}$
CCIR : $f(V)=f(H)\div(310\text{ to }1023)\text{ (Hz)}$
- Input level 2 to 6Vp-p, negative
- Input impedance 1k ohms
- Waveforms of external drive signals (non-interlaced scanning)
The waveforms are the same as those of 2:1 interlaced external sync drive signals. Refer to Fig 8.

16. FIELD-ON-DEMAND FUNCTION

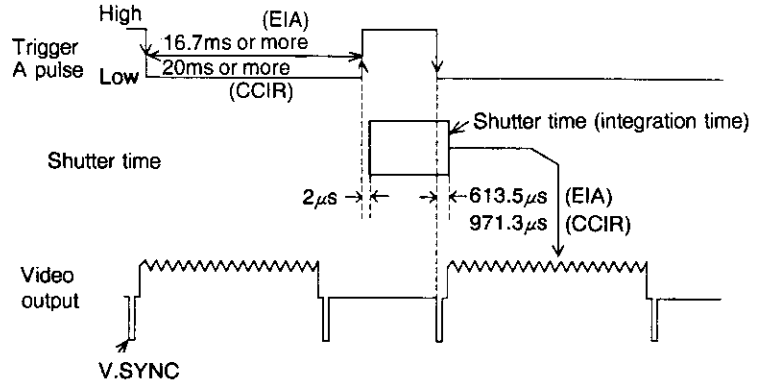
The KP-M2/M3 is provided with the Field-on-Demand function to record a picture obtained at an optional timing by triggering to an image memory, etc. Four modes are switchable by the internal switch.

- 1) ONE trigger mode
- 2) TWO-trigger mode
- 3) Fixed shutter mode: 1/1600s (EIA)/1/1000s (CCIR)
- 4) External shutter control mode

For the switch position and setting, see Fig. 7 on page 11.

Set the electronic shutter to OFF.

16.1 ONE trigger mode



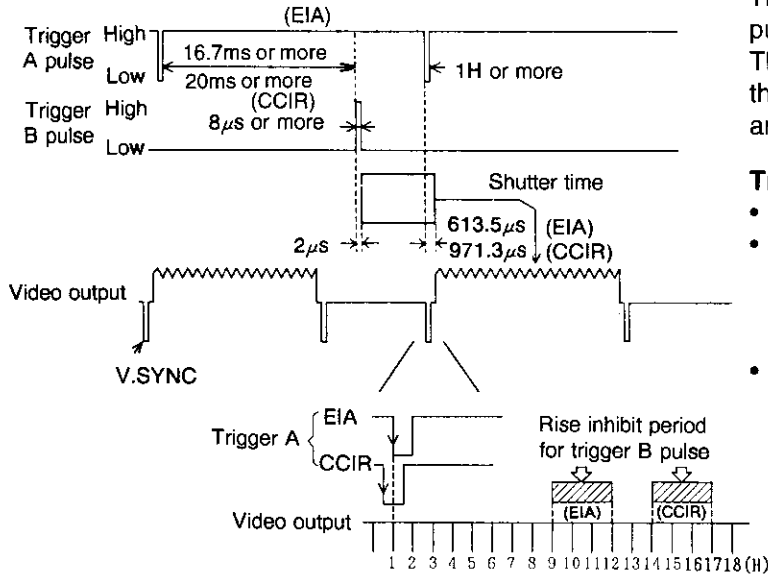
The shutter is started by the rising edge of the trigger A pulse, and V. SYNC is reset by the falling edge of the trigger A pulse. (After reset, the first field is delivered) A shutter time is controlled by the duration when the trigger pulse is high.

Only one field image is delivered by one trigger pulse, and a sync signal lasts till the next pulse.

Trigger pulse

- 5Vp-p +0.5/-1.0Vp-p
- Low period: EIA:16.7ms or more
 CCIR:20ms or more
- High period: 8μs or more

16.2 TWO trigger mode



V.SYNC is reset by the falling edge of the trigger A pulse. (After reset, the first field is delivered.)

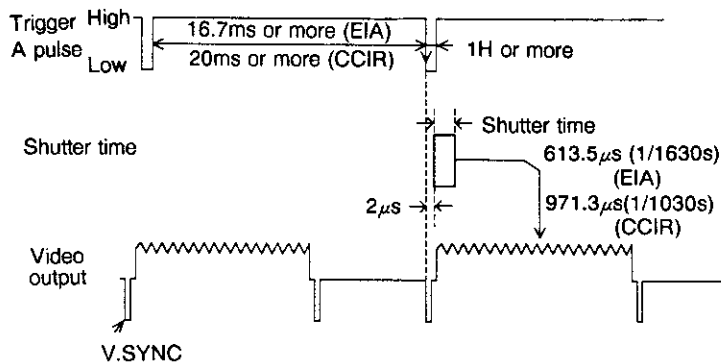
The shutter is started by the rising edge of the trigger B pulse.

The trigger B pulse is inhibited from the falling edge of the trigger A pulse to 9 to 12H (EIA)/14 to 17H (CCIR), and a correct picture is not obtained.

Trigger pulses

- 5Vp-p +0.5/-1.0Vp-p
- Trigger A: Low period: EIA: 63.5μs or more
CCIR: 64μs or more
High period: EIA: 16.7ms or more
CCIR: 20ms or more
- Trigger B: Low period: Not specified
High period: 8μs or more

16.3 Fixed shutter mode: 1/1600s (EIA)/1/1000s (CCIR)



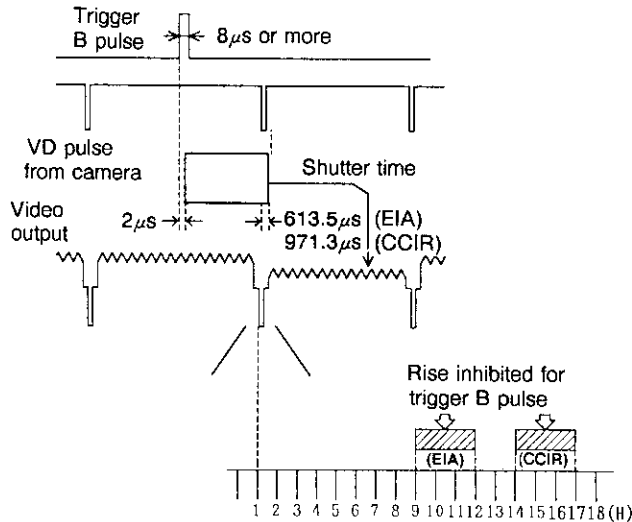
Trigger pulse

- 5Vp-p +0.5/-1.0Vp-p
- Low period: EIA: 63.5μs or more
CCIR: 64μs or more
- High period: EIA: 16.7ms or more
CCIR: 20ms or more

The shutter is started by the falling edge of the trigger A pulse, and at the same time V.SYNC is reset. (After reset, the first field is delivered.)

In this mode, the shutter speed is fixed to 1/1600s (EIA)/1/1000s (CCIR). Only one field is delivered by one trigger pulse, and a sync signal lasts till the next pulse.

16.4 External shutter control mode



The shutter is started by the rising edge of the trigger B pulse. The shutter is effective only for the next field of the pulse input. When the trigger B pulse is not supplied, the normal exposure results.

The V.SYNC pulse of the camera is not reset.

Trigger pulse

- 5Vp-p +0.5/-1.0Vp-p
- Low period: Not specified
- High period: 8 μs or more

17. SPECIFICATIONS

- | | | | |
|---|---|---|--|
| <p>(1) Imaging device:
 Total number of pixels

 Pixel pitch

 Number of effective pixels</p> | <p>Interline transfer CCD
 EIA: 811(H)×508(V)
 CCIR: 795(H)×596(V)
 EIA: 8.4μm(H),
 9.8μm(V)
 CCIR: 8.6μm(H),
 8.3μm(V)

 EIA: 768(H)×494(V)
 CCIR: 752(H)×582(V)
 EIA: 6.45mm×4.84
 mm
 CCIR: 6.47mm×4.83mm
 (1/2-inch size)
 Based on EIA or CCIR
 system(at normal
 operation)
 C mount
 17.526mm

 EIA: 15.734kHz
 CCIR: 15.625kHz

 EIA: 59.94Hz
 CCIR: 50Hz</p> | <p>(8) Sync system:

 (9) Internal sync
 scanning system:
 Number of horizontal
 lines

 (10) External sync input
 HD/VD:
 Input impedance:
 Frequency deviation:

 (11) Number of horizontal lines within range where
 external synchronization is possible
 2:1 interlaced

 Non-interlaced</p> | <p>Automatic switching
 between internal sync
 and external sync modes

 2:1 interlaced

 EIA: 525 TV lines
 CCIR: 625 TV lines
 $f(v)=2f(H)/525(625 \text{ for CCIR})$

 2 to 6Vp-p
 1k ohms
 ±1%

 521 to 2047 TV lines/2
 fields(1 field: 61 to 15Hz)
 CCIR:
 621 to 2047 TV lines/2
 fields(1 field: 51 to 15Hz)
 EIA:
 260 to 1023 TV lines/field
 (1 field: 61 to 15Hz)</p> |
|---|---|---|--|

	CCIR: 310 to 1023 TV lines/field (1 field: 51 to 15Hz) 1.0Vp-p, 75 ohms, unbalanced Video: 0.7Vp-p Sync: 0.3Vp-p, negative				OFF(normal exposure) Set to OFF at the factory. Field or frame integration mode Set to frame integration mode at the factory.
(12) Video output:			(18) Integration mode:		
(13) Horizontal resolution	EIA: 570 TV lines CCIR: 560 TV lines EIA: 485 TV lines CCIR: 575 TV lines		(19) Gamma correction:		Gamma=1.0 or correction Set to 1.0 at the factory. Fixed gain or AGC Set to fixed gain at the factory.
Vertical resolution			(20) AGC:		
(14) Sensitivity:	30 lx, f4, 3200K		(21) Field-on-Demand function		
(15) Minimum illumination:	0.3 lx, f1.4, AGC and GAMMA: ON, without IR cut filter		• ON/OFF switchable by internal switch		
(16) S/N:	56dB		• Switchable modes:ONE trigger, TWO-trigger, 1/1600s (EIA)/1/1000s (CCIR) fixed shutter, external shutter control, OFF (normal exposure)		
(17) Electronic shutter:	1/10000, 1/4000, 1/2000, 1/1000, 1/500, 1/250, 1/125, 1/120(CCIR), 1/100(EIA) OFF(normal exposure) Set to OFF at the factory.		* Set to OFF at the factory		
			(22) Power requirement:		12V DC \pm 1V
			(23) Power consumption:		180mA approx.
			(24) Ambient temperature		
			and humidity		
			Operating		-10 to 50 C, 90% RH or less
			Full specification		0 to 40 C, 50 to 70% RH

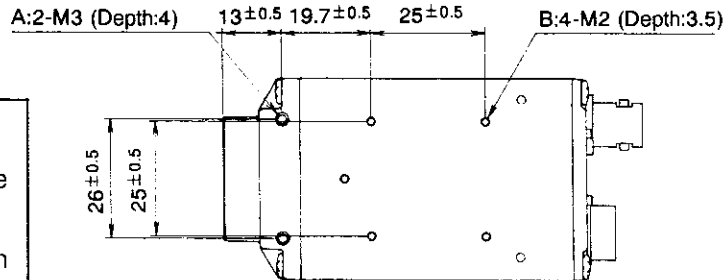
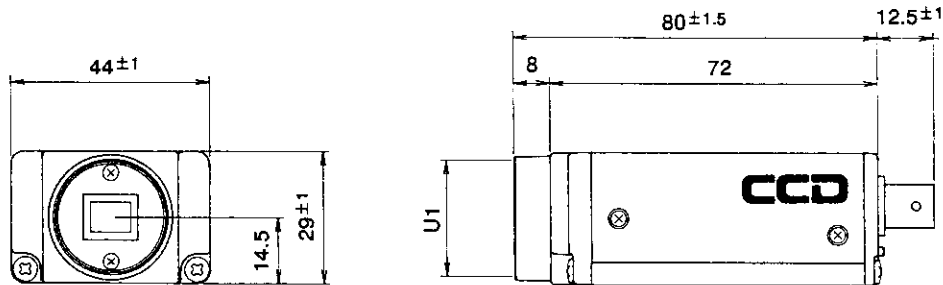


- Storage: -20 to 60 C, 70% RH or less
- (25) Resistance to vibration:** 68.6m/s²(10 to 60Hz, amplitude: 0.98 mm constant, 60 to 200Hz, amplitude: variable) (10 to 200Hz sweep: 1 min, XYZ, 30 min.)
- (26) Resistance to shock** 686m/s²
(Drop test, once each top, bottom, left and right)
- (27) Dimensions:** 44(W)×29(H)×72(D) mm
- (28) Mass:** 120g approx.

※ Specifications are subject to change without notice.

18. EXTERNAL VIEW

• Camera KP-M2R



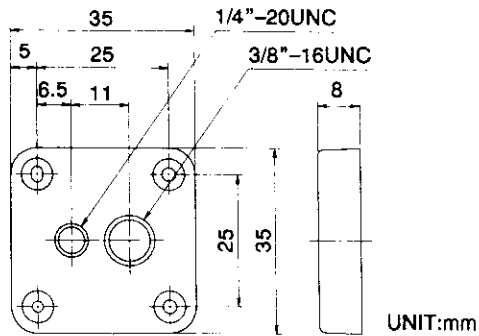
Caution

For installation of the camera, use camera mounting holes A or B.

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

UNIT:mm

• Tripod adaptor TA-M1



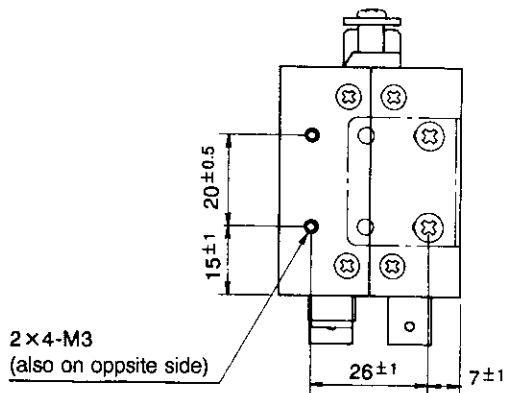
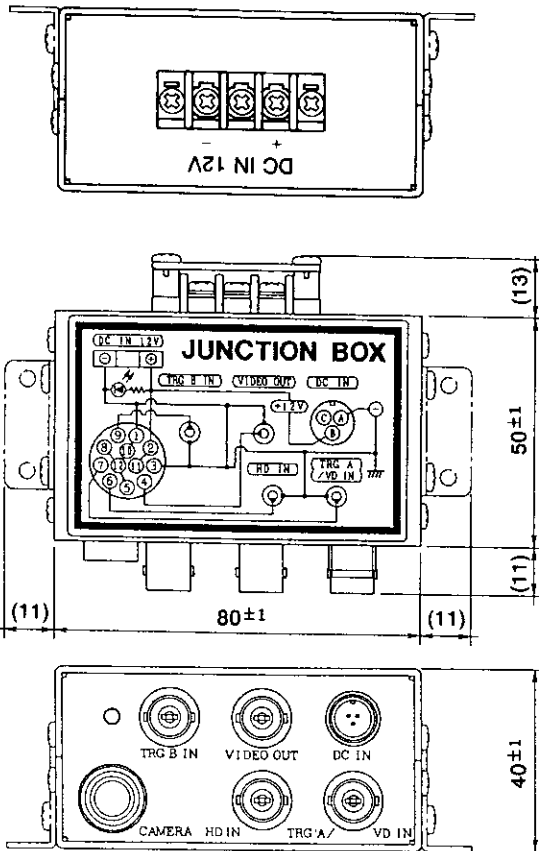
Secure the adaptor to camera mounting holes B, using four supplied screws(M2×5).

Note:

If the screws are too long, they will cause trouble to the camera.

Be sure to check the length before use.

● Junction box JU-M1A



UNIT:mm

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