



CAMERA CONTROL UNIT **CU-HD500**

OPERATING INSTRUCTIONS



Please read these operating instructions carefully for proper operation,
and keep them for future reference.

Hitachi Kokusai Electric Inc.

Declaration of Conformity

Manufacturer's Name: Hitachi Kokusai Electric Inc.
Manufacturer's Address: 4-14-1 Sotokanda, Chiyoda-ku,
Tokyo 101-8980, Japan

Representative(s) Address in the EU: Hitachi Kokusai Electric Europe GmbH
Siemensstr. 9, D-63263 Neu-Isenburg,
Germany

declares, that the product:

Product Name:	Camera Control Unit
Model Number(s):	CU-HD500E
Product Name:	Remote Control Unit
Model Number(s):	RU-1500JY

conforms to the following Standards:

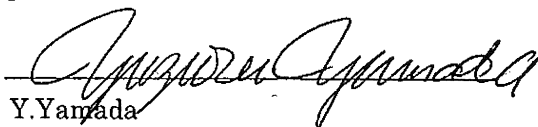
EMC: EN 55103-1:1997 class E3
EN 55103-2:1997 class E3

LVD: EN 60065:1998 + Amd1

Supplementary Information:

"The product complies with the requirements of the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC."

Signature:



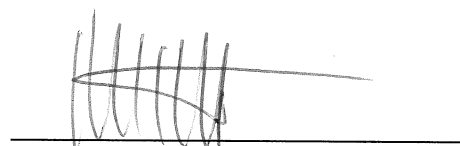
Y. Yamada

Senior Manager

Quality Assurance Department II

Quality Assurance Center

Hitachi Kokusai Electric Inc.



M. Katou

Managing Director

Hitachi Kokusai Electric Europe GmbH

Date:2010.5.21

SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and safety Instructions on your equipment. Follow recommended precautions and safe operating practices.

SAFETY ALERT SYMBOL



This is the "Safety Alert Symbol." This symbol is used to call your attention to items or operations that could be dangerous to you or other persons using this equipment. Read these messages and follow these instructions carefully.

It is essential that you read the instructions and safety regulations before you attempt to assemble or use this equipment.

The definitions of signal words are as follows:



WARNING: Personal danger

Warning notes indicate any condition or practice, which if not strictly observed, could result in personal injury or possible death.



CAUTION: Possible damage to equipment

Caution notes indicate any condition or practice, which if not strictly observed or remedied, could result in damage or destruction of the equipment.



NOTE: Notes indicate an area or subject of special merit, emphasizing either the product's capabilities or common errors in operation or maintenance.



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

AVERTISSEMENT

Afin d'éviter tout risque d'incendie ou d'électrocution, ne pas exposer l'appareil à la pluie ou à l'humidité.

Afin d'écartier tout risque d'électrocution, garder le coffret fermé. Ne confier l'entretien de l'appareil qu'à un personnel qualifié.

VORSICHT

Um Feuergefahr und die Gefahr eines elektrischen Schlags zu vermeiden, darf das Gerät weder Regen noch Feuchtigkeit ausgesetzt werden.

Um einen elektrischen Schlag zu vermeiden, darf das Gehäuse nicht geöffnet werden. Überlassen Sie Wartungsarbeiten stets nur einem Fachmann.

IMPORTANT SAFETY INSTRUCTIONS

1. Read Instructions

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

2. Retain Instructions

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

3. Heed Warnings

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

4. Follow Instructions

All operating and use instructions should be followed.

5. Cleaning

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

6. Attachments

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

7. Water and Moisture

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

8. Accessories

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

9. Moving

A product and cart combination should be moved with care.

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

10. Ventilation

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

The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

11. Power Sources

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

12. Grounding or Polarization

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

13. Power-Cord Protection

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

14. Lightning

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

15. Overloading

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

16. Object and Liquid Entry

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

17. Inflammable and Explosive Substance

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

18. Heavy Shock or Vibration

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

19. Servicing

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

20. Damage Requiring Service

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

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

21. Replacement Parts

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

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

22. Safety Check

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

23. Wall or Ceiling Mounting

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

24. Heat

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

WICHTIGE SICHERHEITSANWEISUNGEN

1. Alle Anweisungen lesen.

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

2. Die Anweisungen aufbewahren.

Die Sicherheits- und Bedienungsanleitungen sollten für den 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 Waschzubehörs, in einem nassen Keller, in der Nähe eines Schwimmbeckens usw.

8. Aufstellung

Das Erzeugnis nicht auf einen instabilen 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 eine schuko-Steckdose. Dies ist eine Sicherheitsmaßnahme. Wenn Sie den Stecker nicht in die Steckdose stecken können, so wenden Sie sich bitte an Ihren Elektriker, damit er die veraltete Schutz des Schutzkontaktsteckers unwirksam.

13. Netzkabelschutz

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

14. Blitzschlag

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

15. Überlastung

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

16. Eindringen von Fremdkörpern und Flüssigkeit

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

17. Entflammbare und explosive Substanzen

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

18. Starke Stöße oder Vibrationen

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

19. Wartung

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

Beziehen Sie sich für jegliche Wartung auf qualifiziertes Wartungspersonal.

20. Beschädigung, die Wartung erfordert

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

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

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

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

21. Ersatzteile

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

22. Sicherheitsprüfung

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

23. Anbringung an der Wand oder an der Decke

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

24. Wärme

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

MISES EN GARDE IMPORTANTES

1. Lire les instructions

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

2. Conserver ces instructions

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

3. Tenir compte des avertissements

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

4. Observer les instructions

Observer toutes les instructions de fonctionnement et d'utilisation.

5. Nettoyage

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

Nettoyer l'appareil avec un chiffon humide.

6. Fixations

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

7. Eau et humidité

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

8. Accessoires

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

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

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

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

10. Ventilation

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

11. Sources d'alimentation

L'appareil devra être alimenté exclusivement sur le type d'alimentation indiqué sur l'étiquette signalétique. Si l'on n'est pas sûr du type d'alimentation du local, consulter le revendeur de l'appareil ou la compagnie d'électricité locale.

Pour les appareils qui fonctionnent sur batterie ou sur d'autres sources, voir le mode d'emploi.

12. Mise à la terre ou polarisation

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

Ne pas rendre vaine la mesure de sécurité assurée par cette prise avec mise à la terre.

13. Protection du cordon d'alimentation

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

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

14. Foudre

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

15. Surcharge

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

16. Pénétration d'objets et de liquides

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

17. Substances inflammables et explosives

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).

IMPORTANT NOTICE

For USA

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

WARNING

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

For Canada

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

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

Contents

Outline and features	1
Warnings and cautions when using	2
Facility names and functions	4
Function menu	7
Cable check	13
Backup battery replacement	14
System Configuration	15
Service information	
Connector pin diagrams	16
Intercom system setting	20
Video frame rate setting	21
External View	22
Specification	23

Outline and features

The CU-HD500 is a camera control unit (CCU) for the newly developed multi-standard camera Z-HD5000 or SK-HD1000. The CU-HD500 provides significantly reduced power consumption and improved functionality. HD-SDI (1080i) inputs/outputs are offered as standard. A flexible system capable of providing modern SD-SDI formats can be configured.

Features

■ A flexible system capable of handling current HDTV and SDTV formats can be constructed.

Digital inputs/outputs:

HD-SDI OUT x2 [Embedded audio is optionally available]
HD-SDI or SD-SDI OUT x4 [x2/x2 Embedded audio is optionally available]
(SD-SDI 16:9/4:3 switchable)
HD-SDI or SD-SDI PIX OUT [Embedded audio is optionally available]
HD-SDI or SD-SDI RET In x2

Analog inputs

PROMPT IN x1
GL IN x1

■ High-performance down converter

- 1) Hitachi's high-speed line conversion technology yields high resolution in the SD picture. The CU-HD500 offers equivalent performance to an 840,000 pixel 3-CCD SD color camera.
- 2) Due to the use of an independent and separate processor located in the CU-HD500, detail can be adjusted for the SD video outputs without affecting the HD video signal outputs.

■ Built-in up converter

The HDTV up-converter for displaying the SDTV return signals in the HD Viewfinder is provided as standard with the CU-HD500. The up converter is of a line-correction type capable of displaying 1,080 effective scanning lines. In addition, AUX and Return color signals can be displayed in the TFT-LCD color viewfinders offered.

■ High-quality transmission using a digital optical transmission system

An HFOC (Hybrid Fiber Optic Cable) is used to connect the camera head and CCU. The signals are transmitted using an optical serial digital transmission method. (HD-SDI standard/1.5 Gbps) to ensure high-quality transmission. The effective HFOC length can be up to 1 km.

Warnings and cautions when using

CAUTION

■ Do not disassemble or modify

The camera contains precision internal components. Do not open the cover or disturb switches and controls other than designated. There is risk of impaired performance and damage.

■ Keep foreign object out of interior

Entry of water, metallic or other foreign materials can cause failure and damage.

■ Select use and storage locations carefully

Avoid using or storing the equipment in the following types of locations. Impaired performance and damage can be caused.

- Extremely hot or cold locations (exceeding 0 to 40°C), such as in enclosed vehicles.
- Subject to strong vibration.
- Humid or dusty locations.
- Salt spray or corrosive gases.
- Strong electromagnetic fields (e.g., near TV or radio transmitters).
- Where exposed to rain.

■ When connecting and disconnecting cables, grasp the connector by the body, not the attached cable. Cables can be damaged by pulling on them.

■ Fuse replacement

Important: Although spare fuses are provided, the fuse must be replaced only by a qualified service technician.

■ In event of difficulty

Disconnect from power and contact the nearest Hitachi Kokusai Electric service agency.

Warnings and cautions when using

Hybrid Fiber Optical Camera Cable & Connector Handling

CU-HD500 camera is using the optical fiber cable & connector which is required special technique for handling.

1. Cable Connector & Receptacle



(1) FCF (Fiber Cable Female)



(2) FCM (Fiber Cable Male)



(3) FCFR (Female Receptacle)



(4) FCMR (Male Receptacle)

2. Maintenance tool & information



(1) Cleaning Stick (CANARE CLETOP 2.5/2.0)

(2) CLEANING KIT

Fiber optical cable assembly manufacture "CANARE" has Cleaning kit for the optical fiber cable & connector available. Detail is in URL <http://www.canare.co.jp>

Handling Precautions

Depending on usage, fiber-optic patch cables may not be capable of offering their full designed maximum performance. To prevent any deterioration of signal quality, be sure to observe the following precautions:



- Do not bend the base of the connector less than 30mm (minimum permissible bend range).



- Avoid applying tension of 80N (8.2kgf) or more to the fiber-optic cable. Even momentary applications may damage the cable.



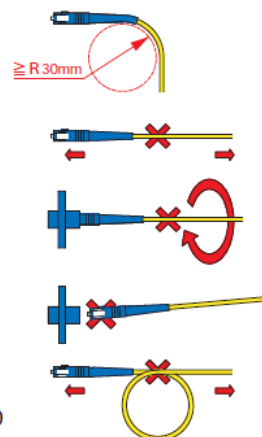
- Do not twist the fiber-optic patch cable while connected to equipment.



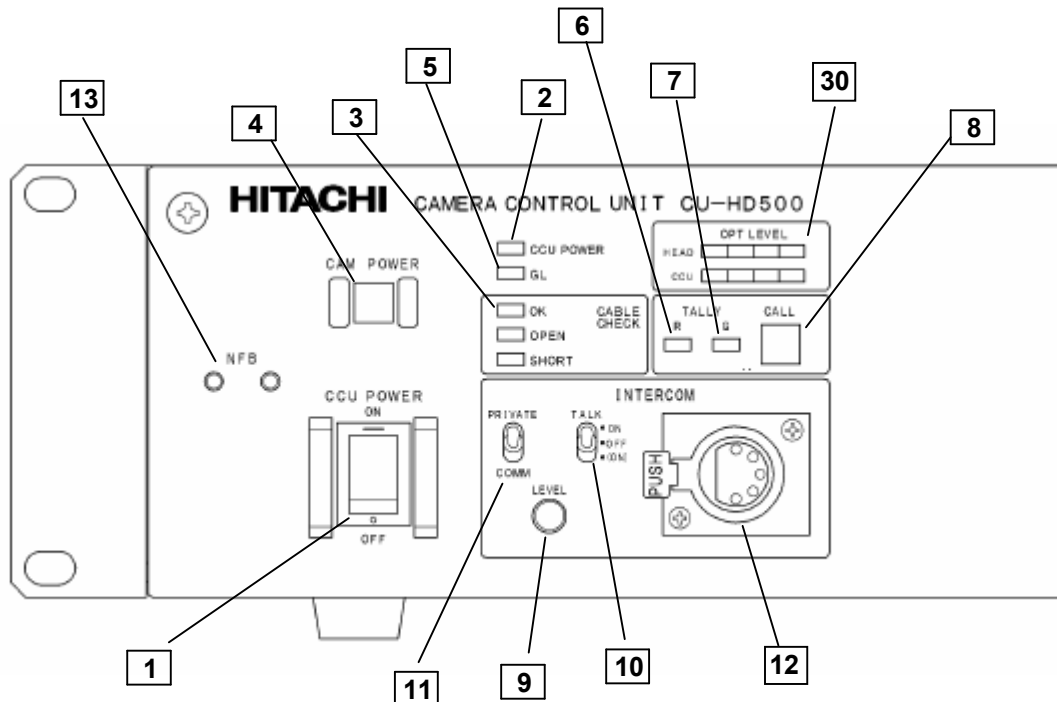
- When connecting cables to equipment or adapters, be sure to insert the connector straight into its corresponding jack and not at an angle. Also, fully insert the connector until its white line disappears.



- During installation, take care not to allow kinks to develop in the cable.



Facility names and functions (Front)



1 CCU POWER switch

CCU power on/off switch.

2 CCU POWER LED

Lights when power is on.

3 CABLE CHECK LED

OK: CAMERA POWER switch 4 can be operated.

OPEN: Fiber cable not connected.

SHORT: Excess current in fiber cable.

Note: CAMERA POWER switch 4 is inoperative when OPEN, SHORT LED is lighted.

4 CAMERA POWER switch

Camera power on/off switch; lights at power on. When the camera power is off, only one channel intercom (CH1) is available.

Press the switch for 3 sec. or more, the camera power turns off.

5 GL ON LED

Note: When a different frame rate signal is input for genlock, the LED blinks and the signal is ignored.

6 R TALLY LED

Lights at red tally input or when sending CALL signal from camera.

7 G TALLY LED

Lights at green tally input.

8 CALL button

Press to call the camera.

9 INTERCOM LEVEL control

Adjusts intercom listening volume.

10 TALK ON/OFF switch

Intercom microphone on/off switch.

11 PRIVATE/COMM switch

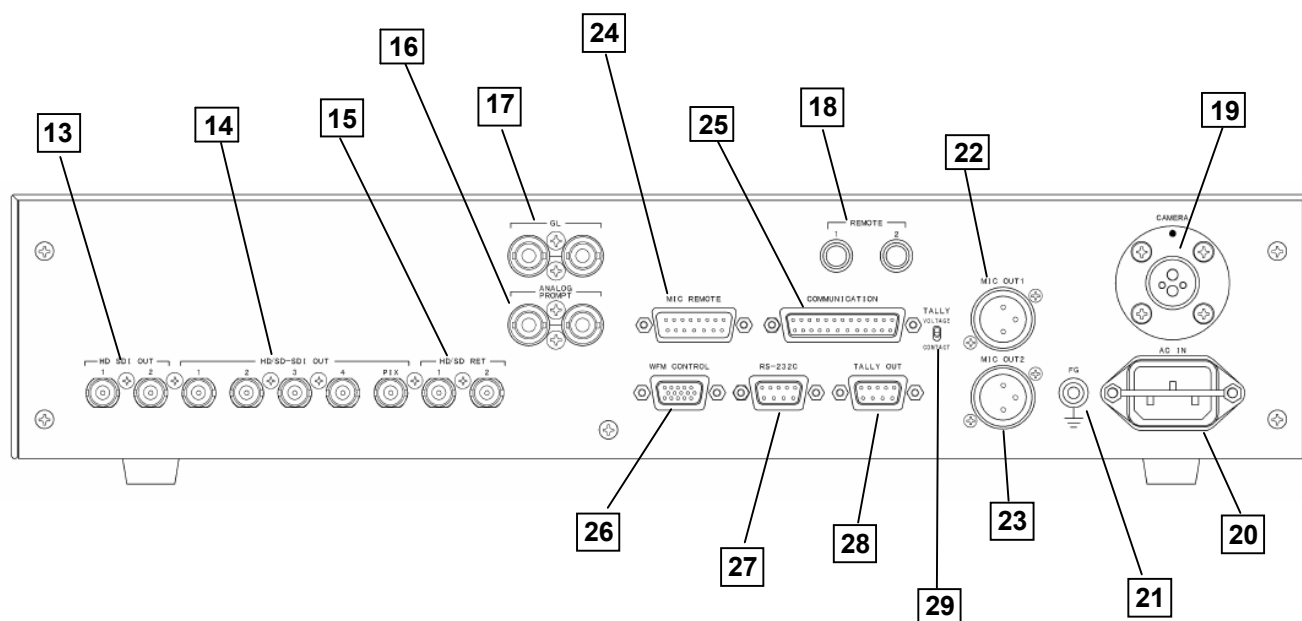
PRIVATE: Communicate with camera only
COMM: Communicate with entire system

12 Intercom connector (XLR, 5P)

Connection for optional MT-12MF headset.

13 NO FUSE BREAKER (NFB)

Facility names and functions (Rear)



13 HD SDI OUT connectors (BNC)

Outputs three lines of digital serial HDTV video signals.

14 HD/SD SDI connectors (BNC)

Outputs four lines of digital serial HDTV/SDTV video signals.

Select the HD-SDI or SD-SDI by the user function menu.

The character is superimposed in PIX output.

15 D.RET input connectors (BNC)

Inputs for digital serial AUX video signals.

A signal selected among these four inputs is sent to the camera viewfinder or the Camera's RET connector

The signal can be selected by user function menu..

Important notice

When using return video, please input correct format signal which is selected on the return assignment menu

16 PROMPT connectors (BNC)

Input for the prompter video signal. The signal is sent to the CA-HF1000 PROMPT out connector.

17 Genlock connectors (BNC)

Input for tri-level sync signal or black burst signal for genlock operation.

18 REMOTE connector

Connection for the optional camera control panel or setup control unit.

19 Fiber connector

Connect Fiber cable.

20 AC IN connector

Input for AC power supply.

21 FG terminal

Frame ground terminal.

22 MIC OUT1 connector (XLR 3 pin)

Outputs MIC1 audio signals from a camera or the CA-HF1000 at 0 dBm.

23 MIC OUT2 connector (XLR 3 pin)

Outputs MIC2 audio signals from the CA-HF1000 at 0 dBm.

24 MIC REMOTE connector

This connector is used to select the MIC1 and MIC2 amplifier gains.

Facility names and functions (Rear & Front)

25 COMMUNICATION connector

Intercom and tally inputs from external system.

26 WFM CONTROL connector

This connector is used to select the display mode of the waveform monitor.

27 RS-232C connector

Use for camera control via RS-232C.

28 TALLY OUT connector

Contact outputs for tally signals.

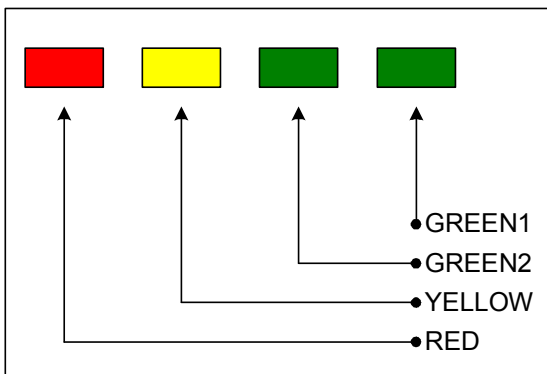
29 TALLY CONTACT/VOLTAGE

The TALLY input can be contact or voltage supply.

Set the TALLY switches according to the systems connected to CU-HD500 rear panel COMMUNICATION connector.

30 Receiver Level LED (Front)

The strength of the arriving light signal via fiber cable is indicated by position of lighting LED.



Indicate the receiver level approximately

GREEN1: -3dBm to -8dBm (Normal)

GREEN2: -8dBm to -11dBm

YELLOW: -11dBm to -14dB (Warning)

RED: under -14 dB (Alarm)

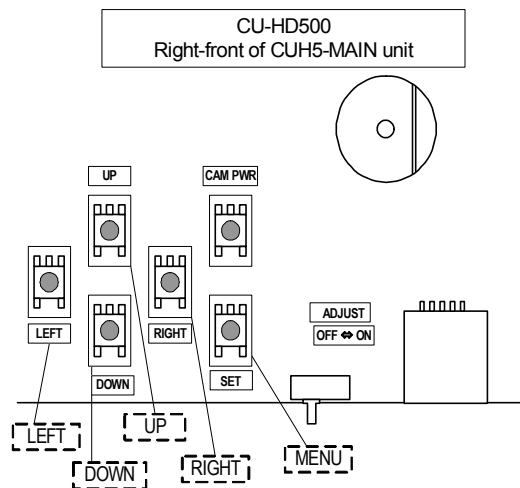
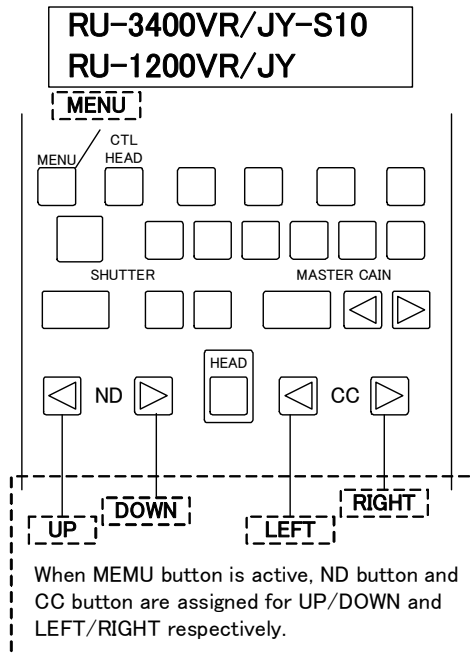
Function menu

Function menu

Use the camera control panel or the setup control unit connected to the CU-HD500 rear side to display the function menus.

The function menus include the CCU menu to set the CU-HD500 and the camera menu to set a camera.

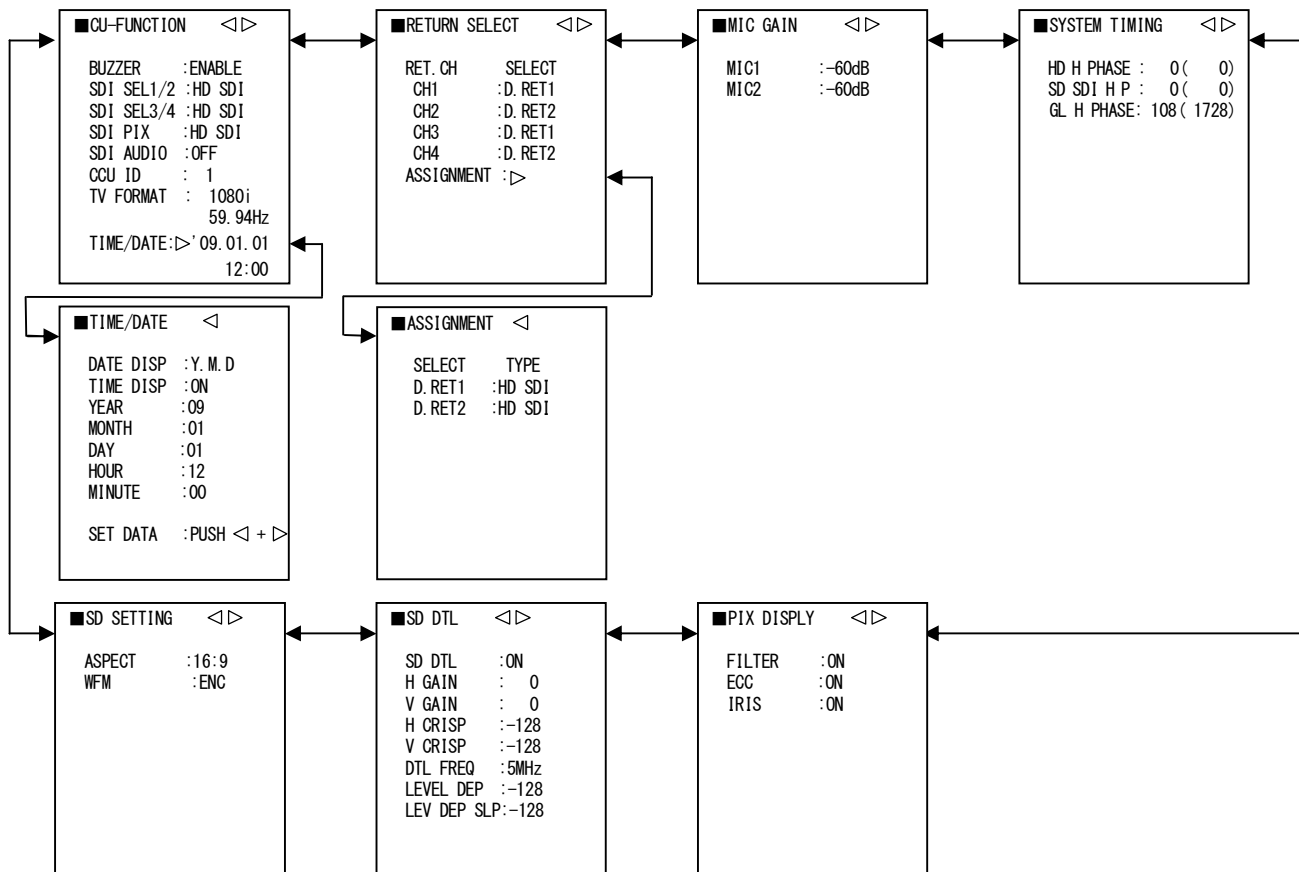
(And also the function menus control the button of the CUH5-MAIN unit inside the CU-HD500.)



Function menu

CCU menu

If the FUNC button of the camera control panel is pressed with the color bar ON, the CCU menu is displayed.



Camera menu

The camera menu appears when the color bar is off. Contents differ by the camera. Refer to the camera operating instructions.

Function menu

CU-FUNCTION menu

■CU-FUNCTION ◀▶

BUZZER : ENABLE
SDI SEL1/2 : HD SDI
SDI SEL3/4 : HD SDI
SDI PIX : HD SDI
SDI AUDIO : OFF
CCU ID : 1
TV FORMAT : 1080i
59.94Hz
TIME/DATE: ▶ 09.01.01
12:00

Item	Setting	Factory setting	Description
BUZZER	ENABLE, DISABLE	ENABLE	Sets buzzer operation during call input. ENABLE : Buzzer sounds. DISABLE : Buzzer does not sound.
SDI SELECT1/2	HD SDI, SD SDI	HD SDI	Sets output signal of HD/SD-SDI OUT connector.
SDI SELECT3/4	HD SDI, SD SDI	HD SDI	Sets output signal of HD/SD-SDI OUT connector.
SDI PIX	HD SDI, SD SDI	HD SDI	Sets output signal of HD/SD-SDI OUT(PIX) connector.
SDI AUDIO	ON, OFF	OFF	Sets the embedded audio ON/OFF of the HD-SDI /SD-SDI output.
CCU ID	1 ~ 12	1	Set the CCU ID. This ID is required for the SETUP CONTROL UNIT to identify the CCU when the SETUP CONTROL UNIT is used.
TV FORMAT			Used to display the TV FORMAT submenu
TIME/DATE	▶		Used to display the TIME/DATE submenu.

TIME/DATE menu

■TIME/DATE ◀

DATE DISP : Y. M. D
TIME DISP : ON
YEAR : 09
MONTH : 01
DAY : 01
HOUR : 12
MINUTE : 00

SET DATA : PUSH ◀+▶

Item	Setting	Factory setting	Description
DATE DISP	OFF, Y.M.D, M.D.Y, D.M.Y	Y.M.D	Sets the date display. When ON is selected, the CU-FUNCTION menu displays the date.
TIME DISP	OFF, ON	ON	Sets the time display. When ON is selected, the CU-FUNCTION menu displays the time.
YEAR	00 ~ 99	-	Sets the year of the date.
MONTH	00 ~ 12	-	Sets the month of the date.
DAY	00 ~ 31	-	Sets the day of the date.
HOUR	00 ~ 23	-	Sets the hours of the time.
MINUTE	00 ~ 59	-	Sets the minutes of the time.
SET DATA	PUSH ◀+▶	-	Press the ◀ and ▶ buttons together to enable the TIME/DATE setting.

Function menu

RETURN SELECT menu

```

■RETURN SELECT<▷
RET. CH      SELECT
CH1          :D. RET1
CH2          :D. RET2
CH3          :D. RET1
CH4          :D. RET2
ASSIGNMENT   :▷
    
```

Item	Setting	Factory setting	Description
CH1	D,RET1, D,RET2,	D.RET1	Selects the RET signal when the RET1 transmission signal switch of the CA-HF1000 is set to 1.
CH2		D.RET1	Selects the RET signal when the RET2 transmission signal switch of the CA-HF1000 is set to 2.
ASSIGNMENT	▷	-	Used to display the ASSIGNMENT submenu.

ASSIGNMENT menu

```

■ASSIGNMENT <◁
SELECT      TYPE
D. RET1     :HD SD1
D. RET2     :SD SD116:9
    
```

Item	Setting	Factory setting	Description
D.RET1	HD SDI, SD SDI16:9,	HD SDI	The transmission signal set to digital return 1 is selected.
D.RET2	SD SDI 4:3,	HD SDI	The transmission signal set to digital return 2 is selected.

MIC GAIN menu

```

■MIC GAIN <▷
MIC1        : -60dB
MIC2        : -60dB
    
```

Item	Setting	Factory setting	Description
MIC1 GAIN	-10dB, -20dB, -30dB, -40dB, -50dB, -60dB, -70dB	-60dB	Sets the sensitivity of the MIC1 line.
MIC2 GAIN	-10dB, -20dB, -30dB, -40dB, -50dB, -60dB, -70dB	-60dB	Sets the sensitivity of the MIC2 line.

Control the MIC GAIN when it controls remotely the camera.

Not control the MIC GAIN when display the “*” sign.

Display the “*” sign when it doesn’t control remotely the camera.

Function menu

SYSTEM TIMING menu

■SYSTEM TIMING ◀▶

HD H PHASE : 0 (0)
SD SDI H P : 0 (0)
GL H PHASE : 108 (1728)

Item	Setting	Factory setting	Description
HD H PHASE	-128(-512)to+127(511)	0	Adjust HD-SDI output phase to VBS.
SD SDI H P	-128(-256)to+127(255)	0	Adjust SD-SDI output phase to VBS
GL H PHASE	-128(-2048)to+127(2047)	108(1728)	Adjust HD/SD-SDI output phase to genlock signal.

PIX DISPLAY menu

■PIX DISPLY ◀▶

FILTER : ON
ECC : ON
IRIS : ON

Item	Setting	Factory setting	Description
FILTER	OFF, ON ON/OFF	ON	Sets the types of the PIX OUT optical filter display and ECC filter display. For details, see the filter display below.
ECC	OFF, ON	ON	Display the Electric Color Correction filter.
IRIS	OFF, ON	ON	Display the F-value of the lens iris.

SD-DTL menu

■SD DTL ◀▶

SD DTL : ON
H GAIN : 0
V GAIN : 0
H CRISP : -128
V CRISP : -128
DTL FREQ : 5MHz
LEVEL DEP : -128
LEV DEP SLP : -128

Item	Setting	Factory setting	Description
SD DTL	OFF, ON	ON	Enable the DTL function of SDTV.
H GAIN	-128 to +127	0	Adjust the SDTV Horizontal DTL level.
V GAIN	-128 to +127	0	Adjust the SDTV Vertical DTL level.
H CRISP	-128 to +127	-128	Set the operation threshold level of horizontal DTL in order to prevent to emphasize noise.
V CRISP	-128 to +127	-128	Set the operation threshold level of vertical DTL in order to prevent to emphasize noise.
DTL FREQ	4MHz, 5MHz, 6MHz, 7MHz, 8MHz	5MHz	Set the Horizontal DTL boost frequency.
LEVEL DEP	-128 to +127	-128	Dark component DTL level adjustment slice.
LEV DEP SLP	-128 to +127	-128	Dark component DTL level adjust slope.

Function menu

SD-SETTING menu

■SD SETTING◀▶	
ASPECT	: 16 : 9
WFM	: ENC

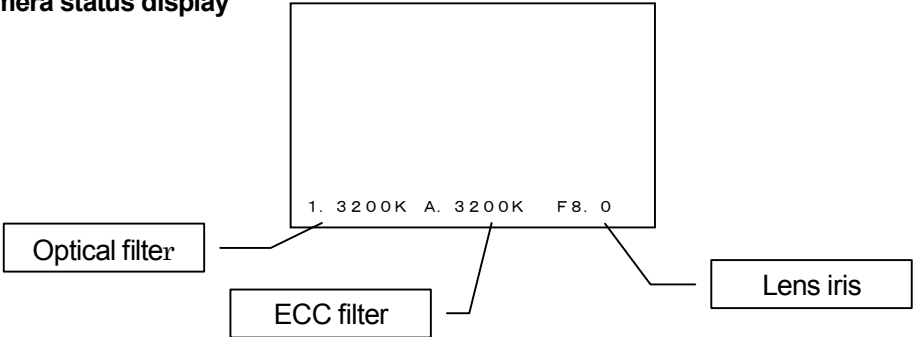
Item	Setting	Factory setting	Description
ASPECT	16:9,4:3	16:9	Select the SD aspect ratio.
WFM	R, G, B, ENC, SUP, SEQ	ENC	Set the WFM CONTROL (Control Signal output). SD-SDI, the HD-SDI output, and WFM CONTROL are connected with a SDI Waveform monitor, the control synchronizes with the Waveform monitor. *Please see 19 page "Service information - WFM CONTROL" in detail.

ECC filter indication

When the FILTER setting is ON, the ECC filter is displayed at the lower center of the screen. The display depends on the optical filter position.

ECC_FILTER	A.3200K B.4300K C.5600K D.6300K E.8000K	Displays ECC filter information with optical filter 1.
------------	---	--

PIX OUT camera status display



Cable check

Cable check

LED lights when cable is connected. For safety, the camera power defaults to off according to the result.

Indication	Content
Screen: CHECK CAMERA CABLE CAMERA CABLE SHORT LED: SHORT lights	The power line may be short-circuited. Camera power defaults to off and camera power switch is rendered inoperative.
Screen: CAMERA CABLE OPEN LED: OPEN lights	Cable is not connected. Camera power defaults to off and camera power switch is rendered inoperative.

The camera power switch defaults to off (LED extinguished) and is inoperative.

Backup battery replacement

Backup battery replacement

The backup battery is already installed at the factory.

If the time/date information no longer appears, set the power switch to on. If the PIX OUT shows “BACKUP BATT EMPTY” for about 6 seconds, the battery needs to be replaced.

And the date and time need to be set at the TIME/DATE menu.



WARNING

Be sure to replace the battery with a type CR2032 lithium battery. Using another type of battery can damage the camera and pose a fire hazard.

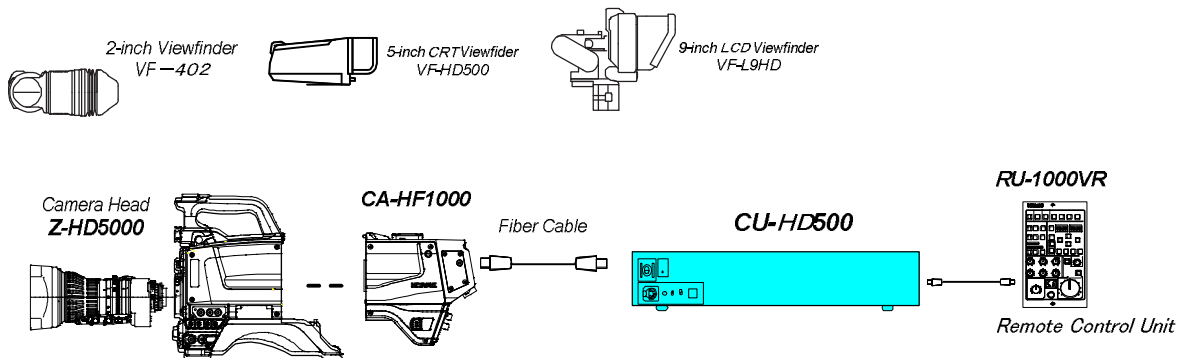
Also be sure to dispose of the depleted battery as prescribed by local ordinance (e.g., return it to the dealer). Do not dispose of the battery with combustible waste, as this may pose a fire, safety and environmental hazard.

Backup battery

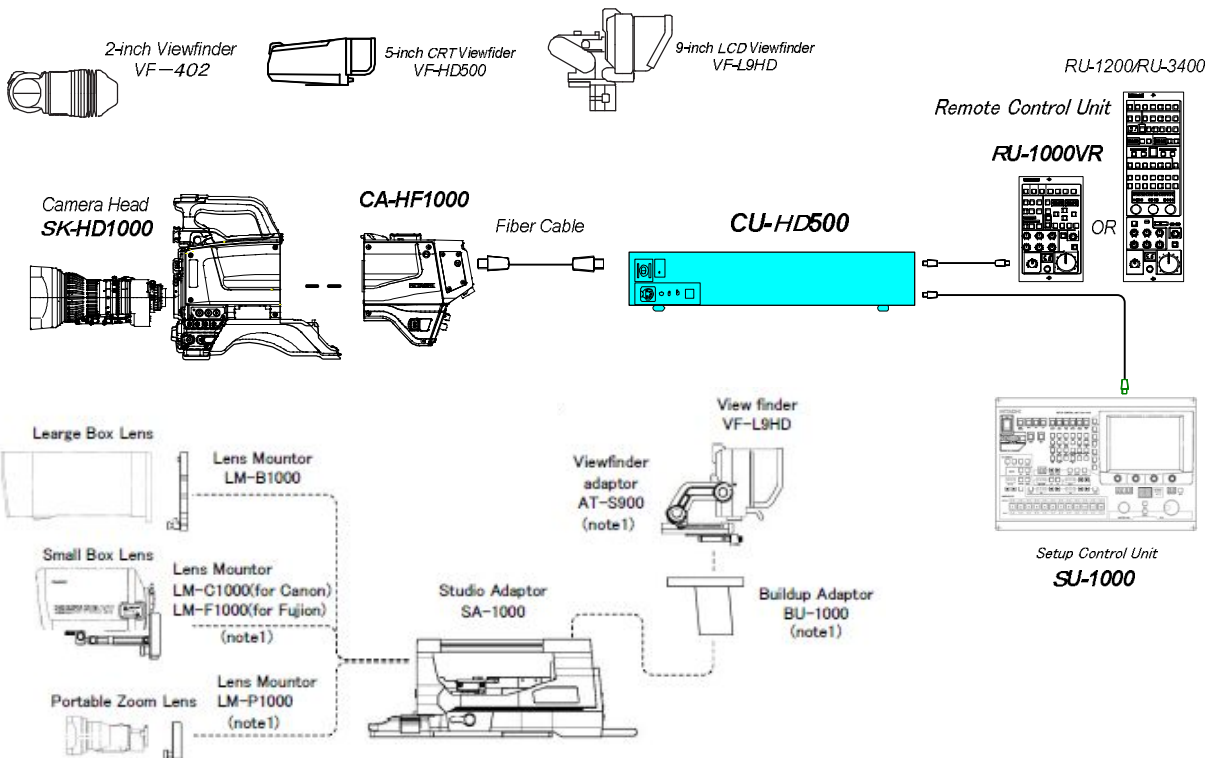


System Configuration

HD Camera Z-HD5000 Camera System Configuration



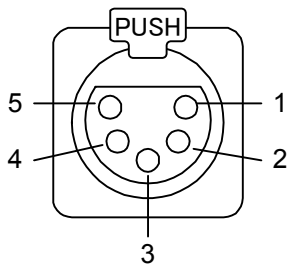
HD Camera SK-HD1000 Camera System Configuration



Service information

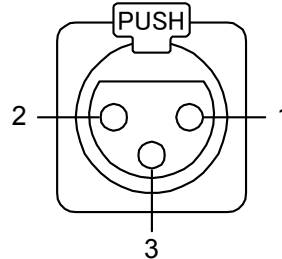
Connector pin diagrams

INTERCOM (5 pin XLR female:HA16PRH-5S)



Pin	Signal
1	TALK (C)
2	TALK (H)
3	RECEIVE (C)
4	RECEIVE L (H)
5	RECEIVE R(H)

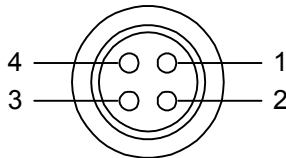
MIC OUT 1,2 (3 pin XLR male:HA16RM-3SE)



Pin	Signal
1	MIC GND
2	MIC(H) IN
3	MIC(C) IN

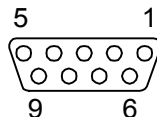
Remote 1,2 (4 pin female:HR10A-7R-4S(73))

Combined connector: HR10A-7P-4P

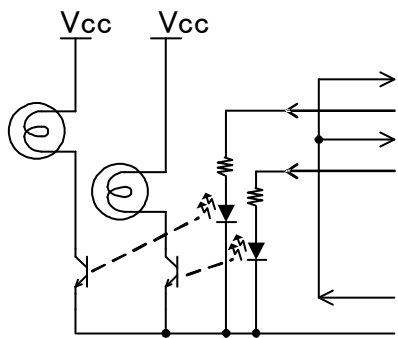


Pin	Signal
1	+12V output
2	DATA input
3	DATA output
4	DATA ground

TALLY OUT(9pin D-sub female:RDED-9S-LNA(4-40)(55))



Application circuit example



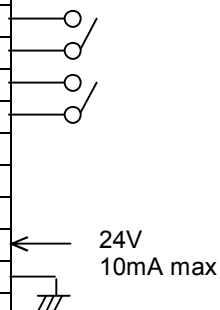
Plug

Pin	Signal
1	R TALLY 1
2	R TALLY 2
3	G TALLY 1
4	G TALLY 2
5	
6	
7	NC
8	+24V
9	GND
-	

CU mainframe

Pin	Signal
1	R TALLY 1
2	R TALLY 2
3	G TALLY 1
4	G TALLY 2
5	
6	
7	NC
8	+24V
9	GND
-	

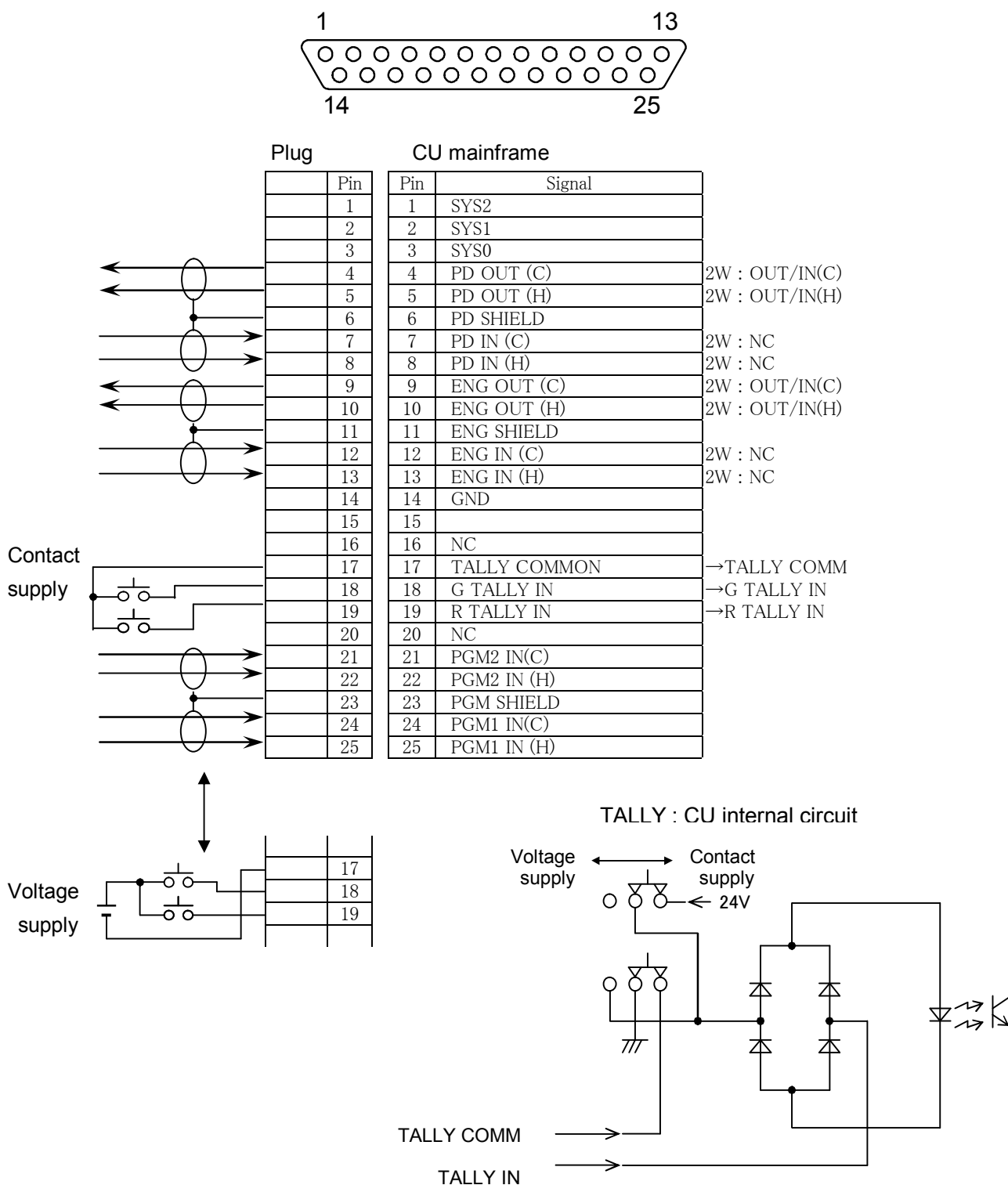
Internal circuit



+24V power current of pin 8 is max.10mA.

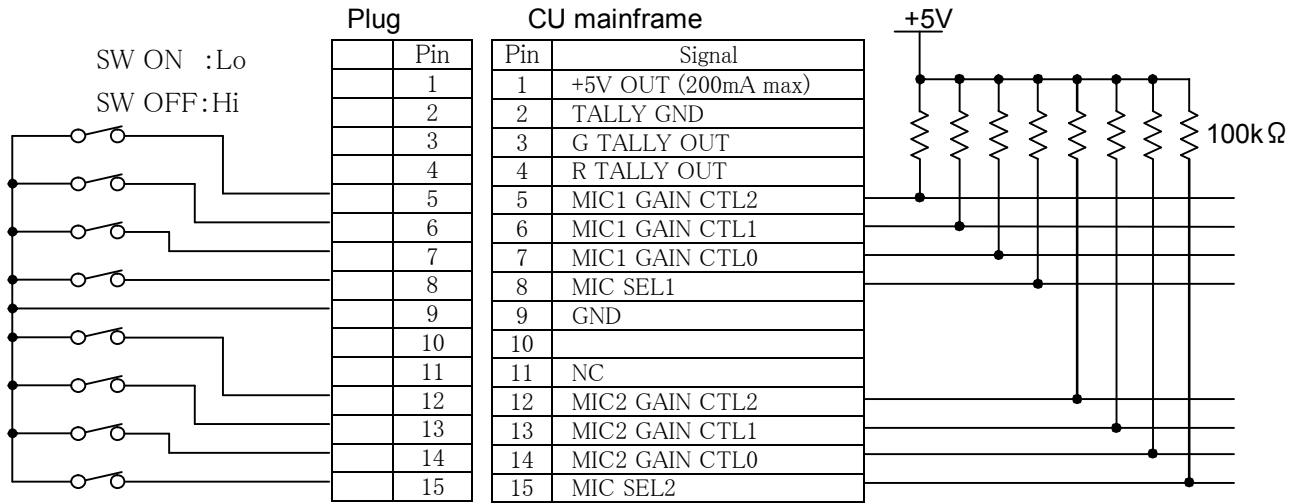
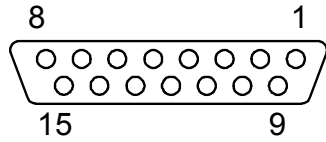
Service information

COMMUNICATION (25pin D-sub male:RDBD-25P-LNA(4-40)(55))



Service information

MIC REMOTE (15pin D-sub female: RDAD-15S-LNA(4-40)(55))

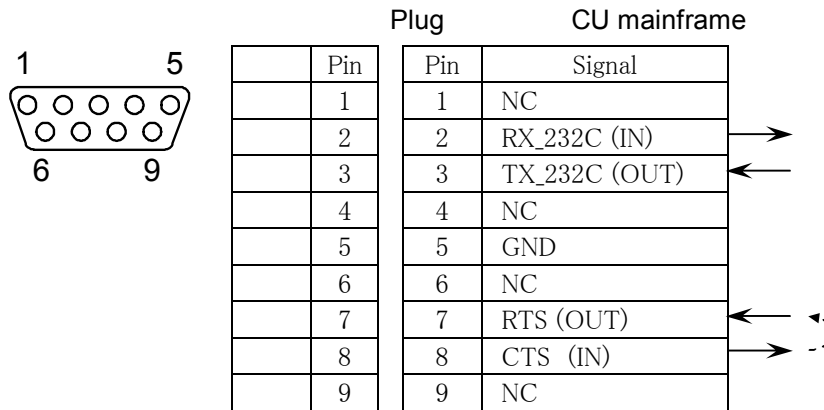


MIC SEL	Hi : Internal Control (Menu)
	Lo : External Control (MIC REMOTE connector)

CTL0	CTL1	CTL2	MIC AMP GAIN
Hi	Hi	Hi	70dB
Lo	Hi	Hi	60dB
Hi	Lo	Hi	50dB
Lo	Lo	Hi	40dB
Hi	Hi	Lo	30dB
Lo	Hi	Lo	20dB
Hi	Lo	Lo	10dB
Lo	Lo	Lo	-10dB

Service information

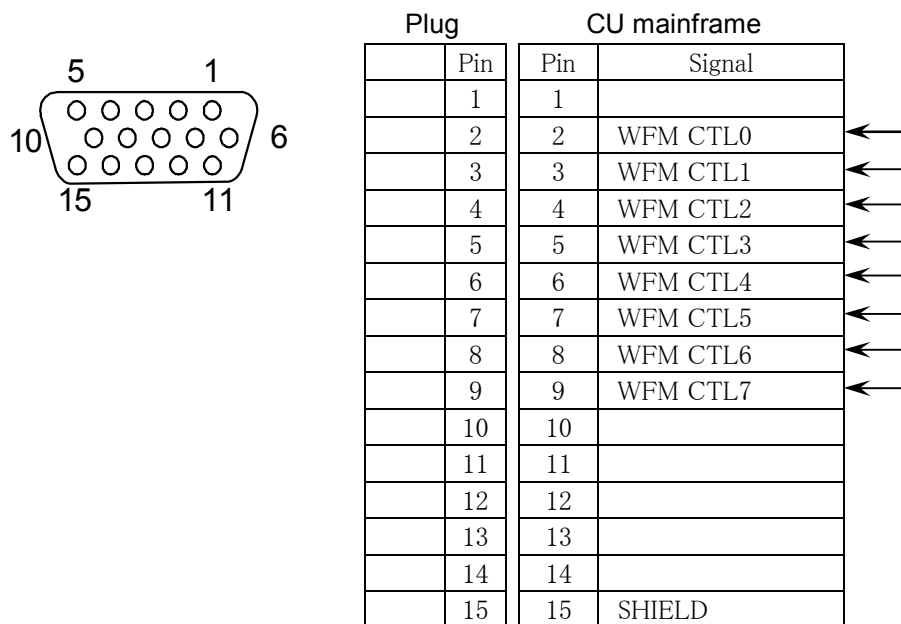
RS-232C(9pin D-sub male:RDED-9P-LNA(4-40)(55))



*RTS:Request To Send

*CTS:Clear To Send

WFM CONTROL (15pin female:YKF42-8043N)

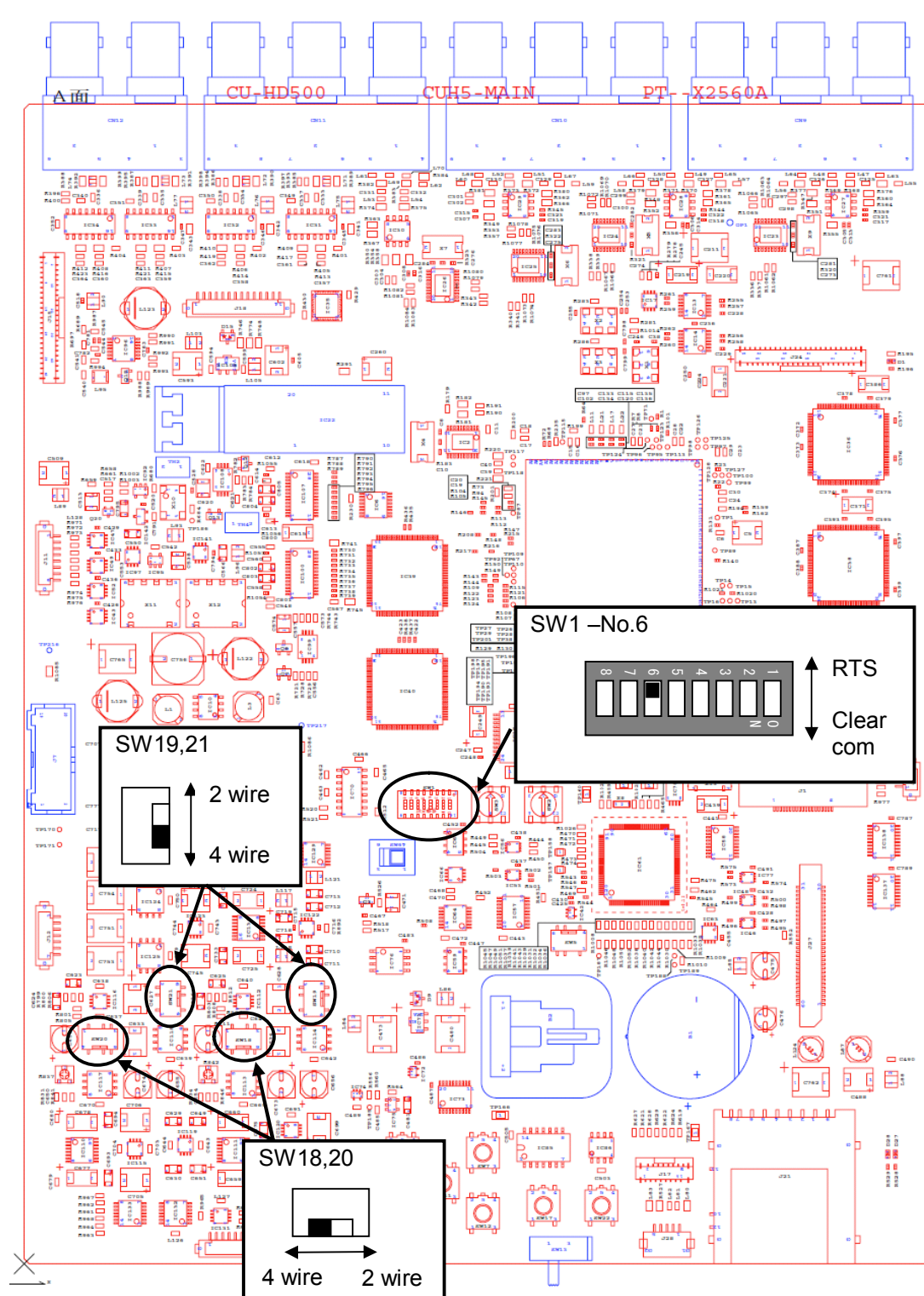


MODE	Analog PIX OUT	Analog WFM OUT	CTL0	CTL1	CTL2	CTL3	CTL4	CTL5	CTL6	CTL7
R	R	R	Lo	Hi	Hi	Hi	Hi	Hi	Hi	Hi
G	G	G	Hi	Lo	Hi	Hi	Hi	Hi	Hi	Hi
B	B	B	Hi	Hi	Lo	Hi	Hi	Hi	Hi	Hi
ENC	ENC	ENC	Hi	Hi	Hi	Lo	Hi	Hi	Hi	Hi
SUP	ENC	SUP	Hi	Hi	Hi	Hi	Lo	Hi	Hi	Hi
SEQ	ENC	SUP	Hi	Hi	Hi	Hi	Hi	Lo	Hi	Hi

Service information

Intercom system setting

CUH5-MAN Board



Service information

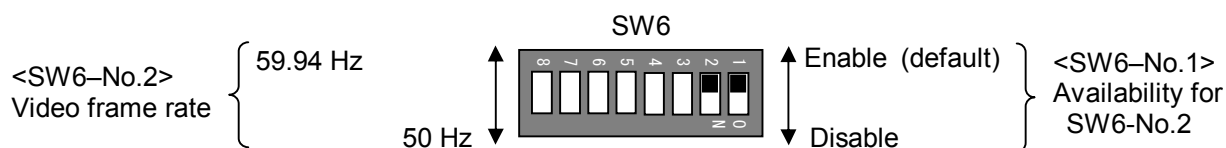
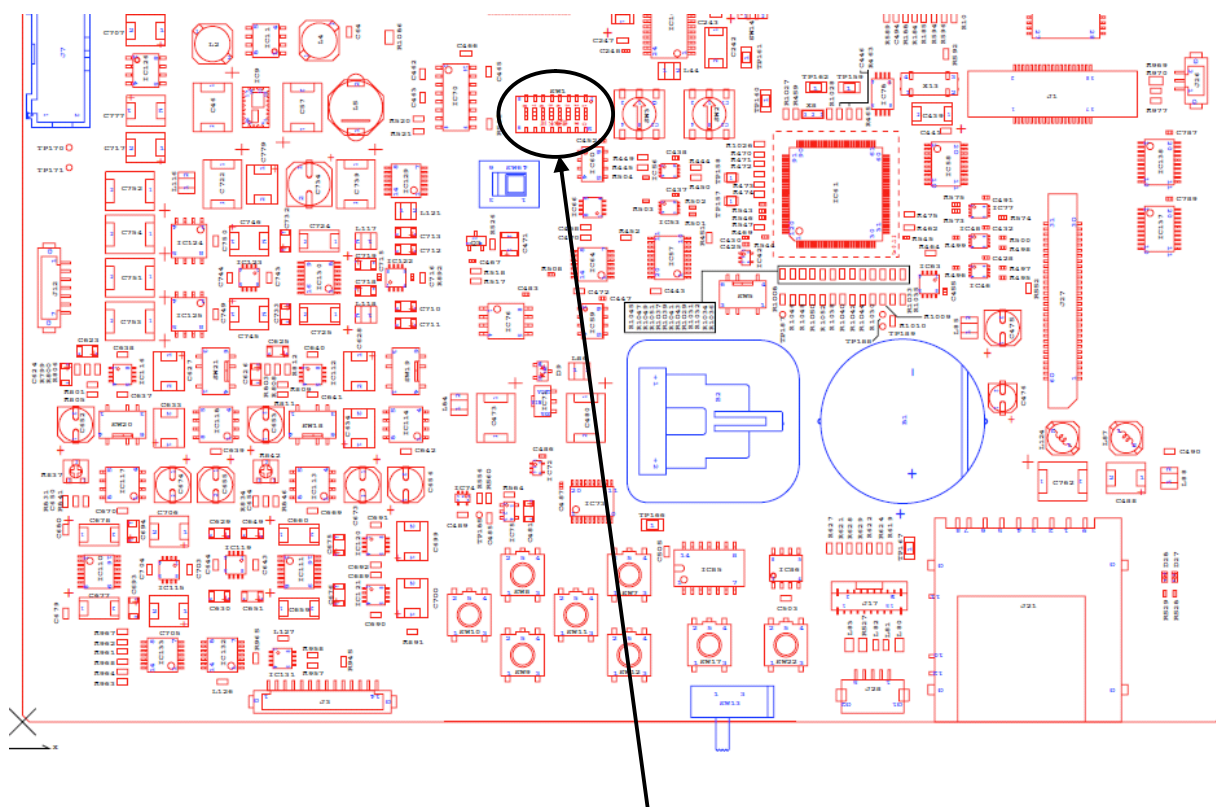
Video frame rate setting

The CU-HD500 is switchable for video frame rate between 59.94 Hz and 50 Hz.

The setting method is offered by the dip switch SW6–No.1 on CUH5-MAIN board.

When the dip switch SW6–No.1 is turned ON, the video frame rate can be switched by the dip switch SW6–No.2.

Dip switch setting on CUH5-MAIN Board

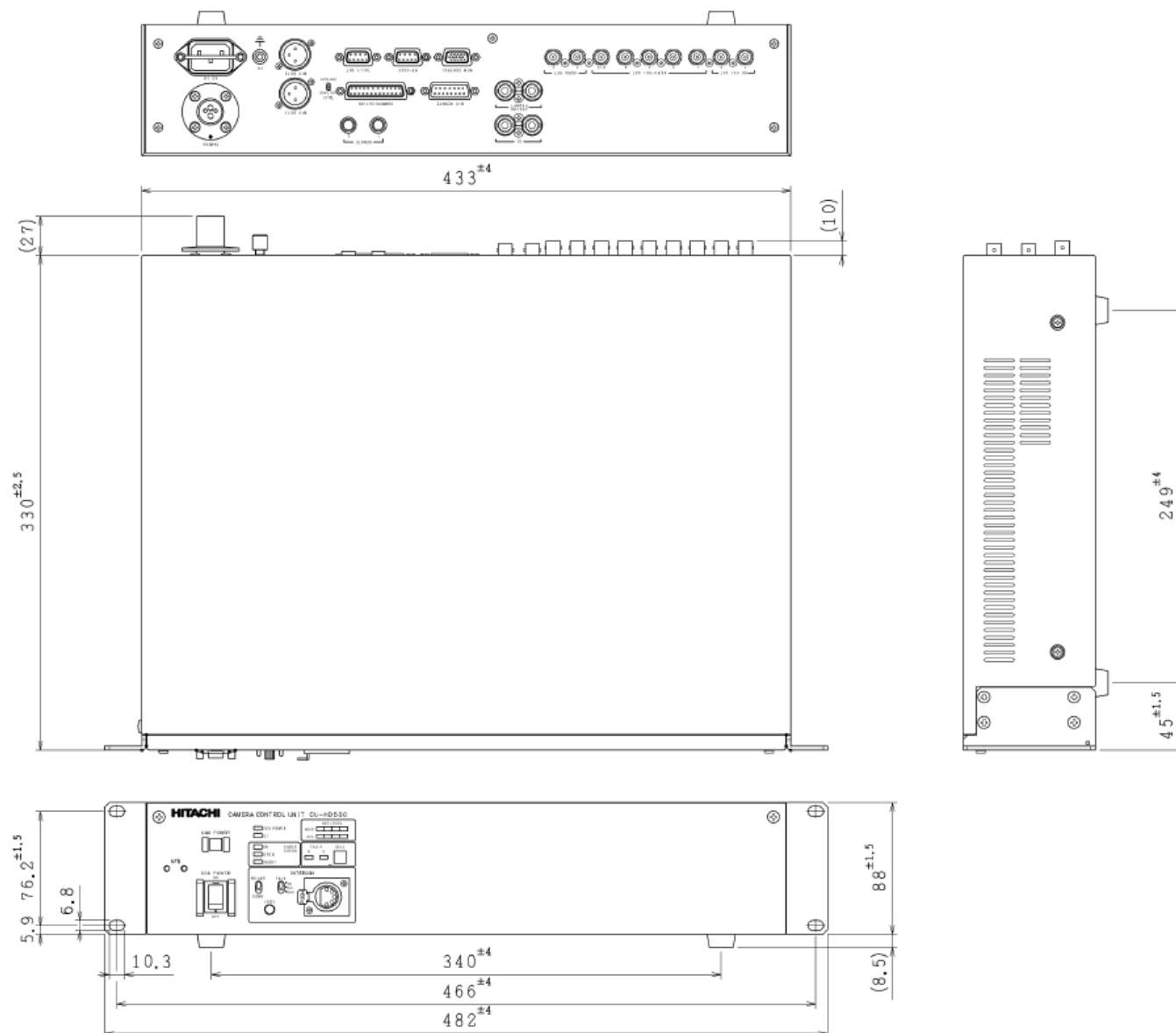


NOTICE

Do not operate the camera and CCU,
when it connects the camera of the difference video frame rate.

External View

CU-HD500 External View



Specifications

•Power supply voltage	CU-HD500J CU-HD500U CU-HD500E	AC100V 50/60Hz AC117V 60Hz AC230V 50Hz
•Power consumption	300W approx. (AC operation, including Z-HD5000 or SK-HD1000,VF-402 and AUX POWEROUT 100VA)	
•Ambient Temperature	Operating: 0 to +40°C Storage: -20 to +60°C	
•Dimensions	433(W)×88(H)×330(D)mm	
•Mass	9.5kg approx.	
•Max. Cable length	1km	

■ Input output signals (CU-HD500)

Input signals

GEN LOCK IN	B-BST 0.45Vp-p/75 Ω (loop through) HDTV tri-level sync 0.60Vp-p/75 Ω (loop through)	BNC
DIGITAL RET IN1/2	HD SDI(1080i,720p) or SD SDI <u>*HD SDI input is same as output format</u> • 1080i : SMPTE274M • SD-SDI : SMPTE259M-C	BNC
PROMPT IN	VS or VBS 1.0Vp-p/75 Ω (loop through)	BNC
INTERCOM(HEAD SET)	-60dBm	XLR-5pin(Female)
COMMUNICATION		D-sub 15pin
•INTERCOM	0dBm , 600 Ω at 4Wire 0dBu or -15dBu ,200 Ω at 2Wire	
•PGM	0dBm/600 Ω	
•R/G TALLY	Voltage or contact supply	
REMOTE 1	1.5Vp-p	4pin
REMOTE 2	1.5Vp-p	4pin
RS-232C	9600 baud	D-sub 9pin

Specifications

Output signals

DIGITAL OUT	HD-SDI(1080i) (Embedded audio available) • 1080i:SMPTE274M 0.8Vp-p/1.5Gbps	BNC (x2)
	HD-SDI(1080i) or SD-SDI selectable (Embedded audio available) • 1080i :SMPTE274M 0.8Vp-p/1.5Gbps • SD-SDI:SMPTE259M-C 0.8Vp-p/270Mbps	BNC (x4 (x2+x2))
	HD-SDI(1080i) or SD-SDI selectable PIX (Embedded audio available) • 1080i :SMPTE274M 0.8Vp-p/1.5Gbps • SD-SDI:SMPTE259M-C 0.8Vp-p/270Mbps	BNC (x1)
MIC OUT 1	0dBm/600 Ω	XLR-3pin
MIC OUT 2	0dBm/600 Ω	XLR-3pin
INTERCOM (HEAD SET)	0dBu MAX+15dB	XLR-5pin(Female)
Remote 1	1.5Vp-p	4pin
Remote 2	1.5Vp-p	4pin
RS-232C	9600 baud	D-Sub 9 pin
COMMUNICATION		D-sub 25pin
•INTERCOM	0dBm , 600 Ω at 4Wire 0dBu or -15dBu ,200 Ω at 2Wire	
TALLY OUT(R,G)	Contact	D-sub 9pin
WFM CONTROL	WFM 0-7 0/5V	D-sub 15pin
MIC Remote	MIC1/2 Gain	D-sub 15pin

Specifications

■ Accessories

- Remote control unit
- Setup control unit

■ Standard Composition

• Camera Control Unit	: CU-HD500	1
• Code Set(U/J)	: WC0051(0234-0089A 2.5M) (8488057)	1
• Code Set(E)	: VM0306B;VM0303B 2.5M (BBZ0399)	1
• Operation Manual	: CU-HD500 O/M	1
• Connector	: HDAB-15P(05) (8AAE000717)	1
• Plug Case	: HDA-CTH(4-40)(10) (JYH0050)	1
• Connector	: HDBB-25S(05) (8AAE000522)	1
• Plug Case	: HDB-CTH(4-40)(10) (JYHS003)	1
• Connector	: HDEB-9S(05) (2PBB018260)	1
• Plug Case	: HDE-CTH(4-40)(10) (JYH0051)	1
• Connector	: HDEB-9P(05) (8AAE000718)	1
• Plug Case	: HDE-CTH(4-40)(10) (JYH0051)	1
• Connector	: D02-M15SG-N-F0 (JMD0222)	1
• Plug Case	: DE-C8-J9-F1-1R (E400013231A)	1
• Pin	: D02-22-26S-PKG100 (JYD0108)	15
• Written guarantee(U)	: Written guarantee (MGA****)	1