MKC-750UHD

Digital Process Compact 3CMOS Color Camera

Operation Manual
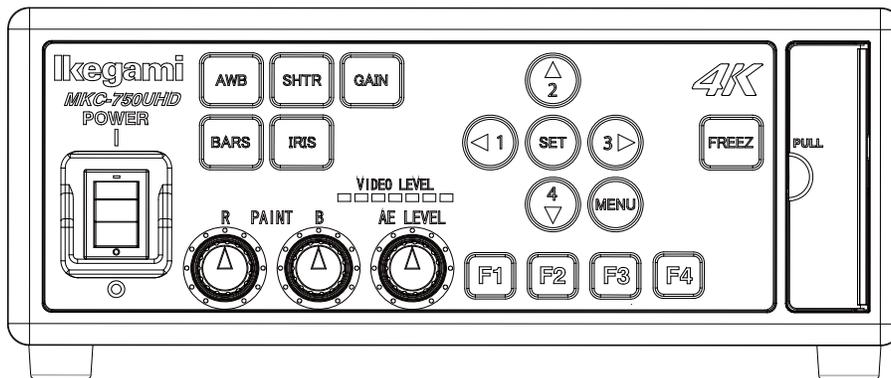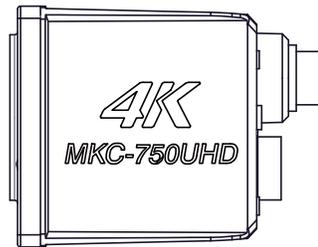
Ikegami

Safety Precautions

For safe and correct usage
Thoroughly read the "Safety Precautions" and the operation manual before using the unit. Keep them carefully after reading and use as ready reference.

Pictorial Symbols
The "Safety Precautions" and markings on the product contain various pictorial symbols to assure the safety use of the product and prevent an injury to you and other persons as well as property damage.
As each symbol has the following meanings, thoroughly under- stand them before using the unit.
Please note that some precautions may not be applicable to the product that you purchased.

WARNING: ⚠	Indicates a potentially hazardous situation that may arise due to improper handling by taking no notice of this symbol and could result in a serious injury or death.
CAUTION: ⚠	Indicates a potentially hazardous situation that may arise due to improper handling by taking no notice of this symbol and could result in an injury or property damage only.

[Note] △ means a heads-up.

Examples of symbols

🚫	Symbol "Ⓝ" means a prohibited action. The content of prohibited matter is mentioned near or in the figure. (The figure on the left side represents "Caution for disassembling".
🔌	Symbol "☞" means a mandatory or directive content. Practical precautions are shown in the figure. (The figure on the left side represents "Pull out power plug from plug outlet.")
📖ⓘ	Symbol "📖ⓘ" This mark is a symbol of an operator to advise the annex.
❘	Symbol " ❘ " This mark is a symbol that represents the connection to the power supply
◯	Symbol "◯" This mark is a symbol that represents the disconnection to the power supply

⚠ CAUTION

When using the unit:

🚫	**Do not place a receptacle containing water or a small metallic piece on the unit!** If water spills in the unit, a fire or electric shock may be caused.
🚫	**Do not use other power supply voltage than specified!** A fire or electric shock may be caused.
🚫	**Do not put a metal body or flammable material into the opening of the unit!** Do not drop in such material! A fire or electric shock may be caused.
🚫	**Do not make alterations to the unit!** A fire or electric shock may be caused.

When installing the unit:

🚫	**Do not set the unit in an unstable place!** It may drop or turn down, causing an injury.
🚫	**Do not connect to any other equipment than specified!** A fire or electric shock may be caused.
⚠	**When it is installed, please contact the dealer or salesman.!** When fixing the unit, do so in accordance with the specified procedure; otherwise it may drop or turn down, causing a fire, electric shock or injury. Especially when fixing it to the wall or ceiling, be sure to ask the dealer or salesman.

When an abnormal state occurs:

⚠ 🔌	**If the unit produces smoke, gives out a foul smell or produces an abnormal sound, turn off the power switch immediately and pull out the power plug!** If the unit is used as it is, a fire or electric shock may be caused. Check that no smoke is produced, and then contact the dealer or sales representative.
⚠ 🔌	**If water or foreign matter enters the unit, turn off the power switch and pull out the power plug!** If the unit is used as it is, a fire or electric shock may be caused. Check that no smoke is produced, and then contact the dealer or sales representative.
⚠ 🔌	**If the unit is dropped or the case is broken, turn off the power switch and pull out the power plug!** If the unit is used as it is, a fire or electric shock may be caused. Contact the dealer or sales representative.
⚠ 🔌	**If the unit fails to operate properly, turn off the power switch and pull out the power plug!** If the unit is used as it is, a fire or electric shock may be caused. Contact the dealer or sales representative.

<table>
<tr><td>⚠</td><td>**Do not use any damaged power cord (exposed core, broken wire, etc.)!**
If the unit is used as it is, a fire or electric shock may be caused. Contact the dealer or sales representative.</td></tr>
</table>

⚠ **WARNING:**

When installing the unit:

🚫	**Do not place a heavy thing on the unit!** The unit may lose a balance or drop, causing an injury.
🚫	**Do not get a leg over the unit or carrying case!** **Do not sit down on it!** The unit may break down or turn down, causing an injury.
🚫	When moving the unit, be sure to turn off the power switch, pull out the power plug and remove the connecting cable between the unit and equipment beforehand. The cord may be damaged, causing a fire or electric shock.
🔌	**When the unit is not used for a long period of time, be sure to pull out the power plug for safety's sake.** Otherwise, it may cause a fire.
⚠	Turn off the power switch, to stop working safely, and then unplug the power plug.
⚠	To avoid the risk of electric shock, this equipment must only a supply mains with protective earth.

When installing the unit:

🚫	**Do not block up the ventilating hole of the unit!** **If the ventilating hole of the unit is blocked up, heat will accumulate internally, causing a fire.** **Avoid the following usage:** ・Turning up or down the unit. Turning it sideways. ・ Pushing it in ill-ventilated place. ・ Placing it on a carpet etc. ・Covering it with a table cloth etc.
🚫	Do not place the equipment in the way of difficult disconnecting the power plug.

📖 **Hints on proper usage**

When using the unit:

・ **When using the unit in a water-place such as bathroom, poolside, etc., prevent water from flowing into the unit and cable; otherwise causing an electric shock.** When using it in rainy weather, during snowing, on the seaside or waterside, and in a cooking place, use care to prevent such an accident.
・ **When snow comes on, check the surrounding conditions before use.** Stop using the unit temporarily as necessary and do not touch it; otherwise causing an electric shock.
・ **Do not connect any equipment whose required electric power exceeds the wattage (W) that can be supplied from the AC outlet.** Refer to wattage shown near the AC outlet or in the operation manual.
・ **Do not bend (or twist or pull) the power cord and connecting cable excessively.** The covering material of the cord and cable may break, causing an electric shock.

・A serviceman exchanges it is possible parts:AC cable. When exchanging an AC cable of an accessory.

When installing the unit:

Avoid installing the unit in a moist place, dusty place or any other place exposed to oily smoke and vapor; otherwise causing an electric shock. Do not place the unit near a cooking table or humidifier.
・ As this unit is heavy (over 10Kg), carry it by 2 or more persons. If it is carried by one person, it may turn down or drop, some- times causing a physical damage to the waist or hand or a physical injury.
・ Take preventive measures against the overturn of the unit due to an earthquake or sudden shock. As the unit may overturn and cause a physical injury, take preventive measures against the overturn.

Maintenance

Turn off the power switch and pull out the power plug before maintenance; otherwise, causing an electric shock.
In order to keep a long and stable performance, "Periodical check" is recommended. For details of the periodical check, consult with the sales representative.
As the unit has high-voltage parts in it, an expert who has the knowledge about the product should perform these check, maintenance and repair; otherwise causing an electric shock.
When before and after each use, dirt can be seen,wipe the dirt/dust off the camera using a dry, soft cloth. If the stain is stubborn soak the cloth with water or detergent, wring well and wipe. If you use detergent, wipe off the detergent with a cloth that was soaked in just water and wring well. When wiping, always turn the power off, and take care not to spill water in the camera.

THE MKC-750UHD is authorized AAMI ES60601-1/EN60 601-1 Class Ⅰ IP rating of THE MKC-750UHD is IPX0. THE MKC-750UHD is a device for continuous operation.

A 급 기기 (업무용 방송통신기자재) 이 기기는 업무용(A 급) 전자파적합기기로서 판매자또는 사용자는 이 점을 주의하시기 바라며, 가정외의지역에서 사용하는 것을 목적으로

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference

by one or more of the following measures.

   -Reorient or relocate the receiving antenna.

   -Increase the separation between the equipment and receiver.

   -Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

   -Consult the dealer or an experienced radio/TV technician for help.

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

Please classify by the material, and dispose of them according to the law and the ordinance etc. of the country and the local government when you dispose of the main body and materials for packing.

The MKC-750UHD is not AP·APG equipment.

The BATTERY for BT1 in MKC-750UHD, that should be used same model as below when you need to exchange it.
MODEL : CR2032

Guidance and manufacturer's declaration - electromagnetic emissions		
The Model MKC-750UHD is intended for use in the electromagnetic environment specified below. The customer or the user of the Model MKC-750UHD should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic
RF emissions CISPR 11	Group 1	The Model MKC-750UHD uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The Model MKC-750UHD is suitable for use in all establishments, including domestic establishments and those directry connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC61000-3-2	Class A	
Voltage fluctuations/flicker emissions IEC61000-3-3	Complies	

Immunity test	IEC 60601 test level	compliance level	Electromagnetic environment guidance
Electrostatic discharge(ESD) IEC61000-4-2	±6kV contact ±8kV air	±6kV contact ±8kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC61000-4-4	±2kV for power supply lines ±1kV for input/output lines	±2kV for power supply lines ±1kV for input/output lines	Main power quality should be that of a typical commercial or hospital environment.
Surge IEC61000-4-5	±1kV differential mode ±2kV common mode	±1kV differential mode ±2kV common mode	Main power quality should be that of a typical commercial or hospital environment
Voltage dips, short interruptions and voltage variations on power supply input lines. IEC61000-4-11	<5% Ut (>95% dip In Ut) for 0.5 cycle 40% Ut (60% dip In Ut) for 5 cycle 70% Ut (30% dip In Ut) for 25 cycle <5% Ut (>95% dip In Ut) for 5 cycle	<5% Ut (>95% dip In Ut) for 0.5 cycle 40% Ut (60% dip In Ut) for 5 cycle 70% Ut (30% dip In Ut) for 25 cycle <5% Ut (>95% dip In Ut) for 5 cycle	Main power quality should be that of a typical commercial or hospital environment. If the user of the MODEL MKC-750UHD requires continued operation during power mains interruptions, It is recommended that the MODEL MKC-750UHD be powered from an uninterruptible power supply or battery.
Power frequency (50/60 Hz) magnetic field IEC61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at characteristic of a typical location In a typical commercial or hospital environment.
NOTE It is the a.c.mains voltage prior to application of the test level.			

Guidance and manufacturer's declaration - electromagnetic emissions			
The Model MKC-750UHD is intended for use in the electromagnetic environment specified below. The customer or the user of the Model MKC-750UHD should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	compliance level	Electromagnetic environment guidance
Conducted RF IEC61000-4-6 Radiated RF IEC61000-4-3	3 Vrms 150 kHz to 80 MHz 3 V/m 80 MHz to 2.5 GHz	3 Vrms 3 V/m	Portable and mobile RF communications should be used no closer to any part of the MODELMKC-750UHD, Including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d=1.2\sqrt{P}$ $d=1.2\sqrt{P}$ 80～800 MHz $d=1.2\sqrt{P}$ 800 MHz～2.5 GHz where P is the maximum output power rating of the transmitter Inwatts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters(m) Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, [a]should be less than the compliance level In each frequency range[b]. Interference may occur in the vicinity of equipment marked with the following symbol：
NOTE 1 At 80 MHz and 800 MHz, the higher frequency range apply. NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation Is affected by absorption and reflection from structures, objects and people.			
[a] Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength In the location in which the MODEL MKC-750UHD Is used exceeds the applicable RF compliance level above, the MODEL MKC-750UHD should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the MODEL MKC-750UHD. [b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.			

Table of Contents

1. Overview

MKC-750UHD is the 4K Camera equipped with high-definition video of 4K (3840 × 2160) and color reproduction as medical grade camera which is used for the surgical microscope or shadowless lamp system.

It employs 3 CMOS system, performs 3840 x 2160 Full HDTV format with 1600TV lines horizontal resolution, S/N ratio with 56dB. In addition to the 4K output signal, the output of HD-SDI (corresponding to 3G), DVI system is available at the same time.

2. Names and Functions of Parts

2.1. Camera Head

①1/3 C-mount   ②Lens connector

Camera Side   **Camera Back**

③Camera connector
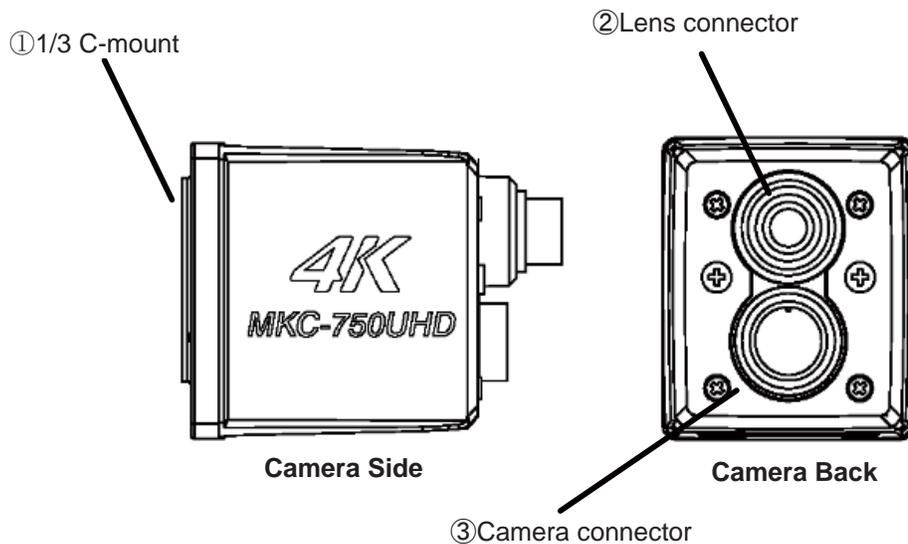
① **1/3 C-mount**

This is a mount for lens.

It accepts various kinds of C-mount lenses and microscope adapters.

② **Lens connector**

The dedicated microscope adapter or the IRIS cable of a C-mount lens is connected here.

LENS connector (HR10A-7R-4S)	
1	+12V
2	GND
3	IRIS
4	N.C
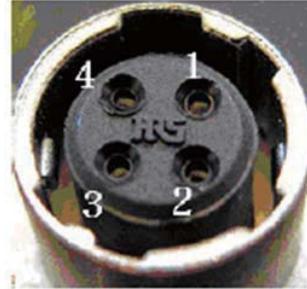
HR10A-7R -4S PIN assignment
Iris Cable side: HR10A-7P-4P
(4-pin female plug) or Equivalent.

③ **Camera connector**

The camera connector of a dedicated camera cable is connected here.

Please be aware that the camera connector is different in size between the camera head side and the CCU side.

2.2. CCU Front

④Electronic shutter button

③White balance button

②Color bar button

⑤Automatic sensitivity button

⑥Automatic Iris button

⑩Arrow keys

①Power button

⑫Freeze button

⑨ Brightness volume

⑪Function button

⑬Video level

⑦ Color correction volume (RED)

⑧ Color correction volume (BLUE)

⑭Maintenance door
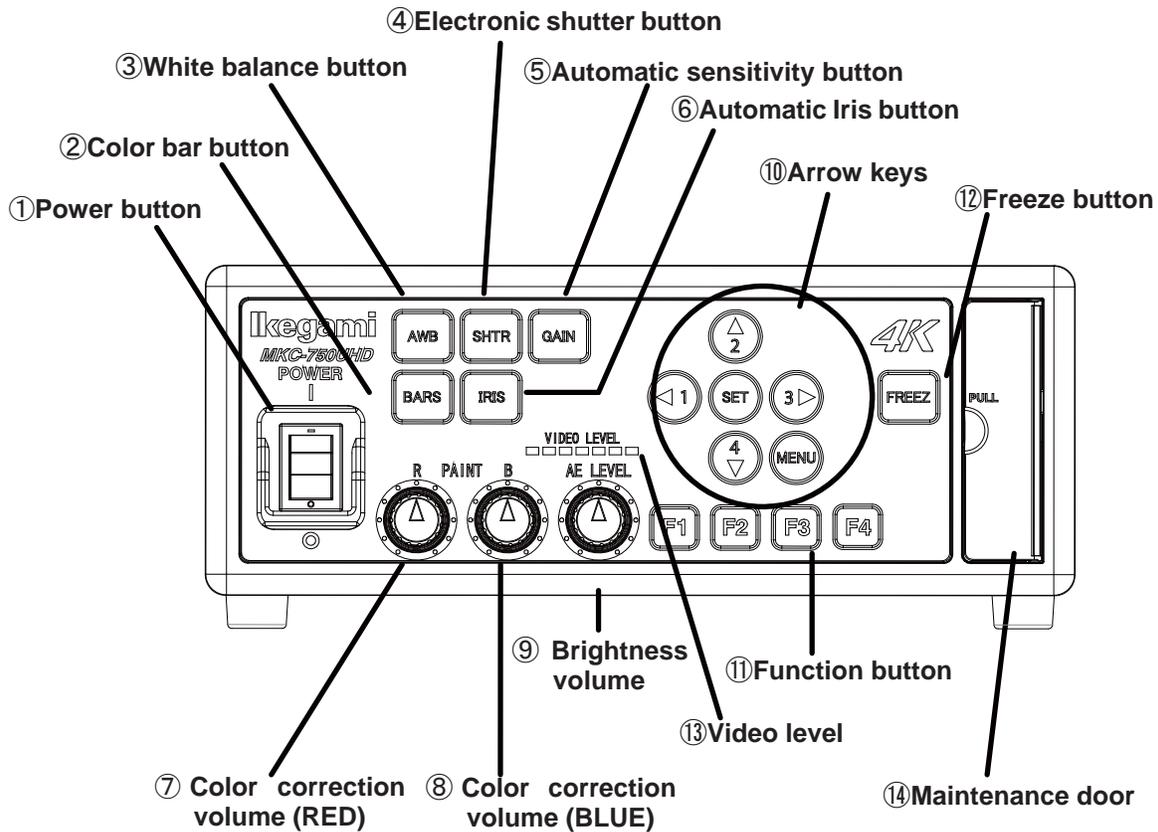
① **Power button**

This is the power on/off Switch of the MKC-750UHD.

② **Color bar button**

This outputs a color bar signal, included in the camera, to the video-out. It can be used for adjusting the brightness, contrast, etc. of a color monitor. (Page Outputting Color Bars24)

③ **White balance button**

This executes the automatic white balance function. (Page 19)

④ **Electronic shutter button**

This controls electronic shutter speed automatically, and adjusts to the most suitable output level.

⑤ **Automatic sensitivity button**

This button controls automatically a sensitivity setting inside the camera and adjusts to the best outputs level.

⑥ **Automatic Iris button**

This adjusts to an optimum condition automatically according to video

brightness.

⑦ **Color correction volume (RED)**

This adjust finely the red color density on the output picture.

⑧ **Color correction volume (BLUE)**

This adjust finely the blue color density on the output picture.

⑨ **Brightness volume**

This adjust the brightness of a video.

⑩ **Arrow keys**

This is used for selecting the scene file and operating menu.

⑪ **Function button**

The function key set to F1〜F4 is executed.（Page 36）

⑫ **Freeze button**

This freeze an image.（Page 23）

⑬ **Video level**

This appear video level.

When the LED display is lighted, it is that the video level has exceeded 100%.

⑭ **Maintenance door**

This equipped a USB connector to read and write in the scene file data.

2.3. CCU Back
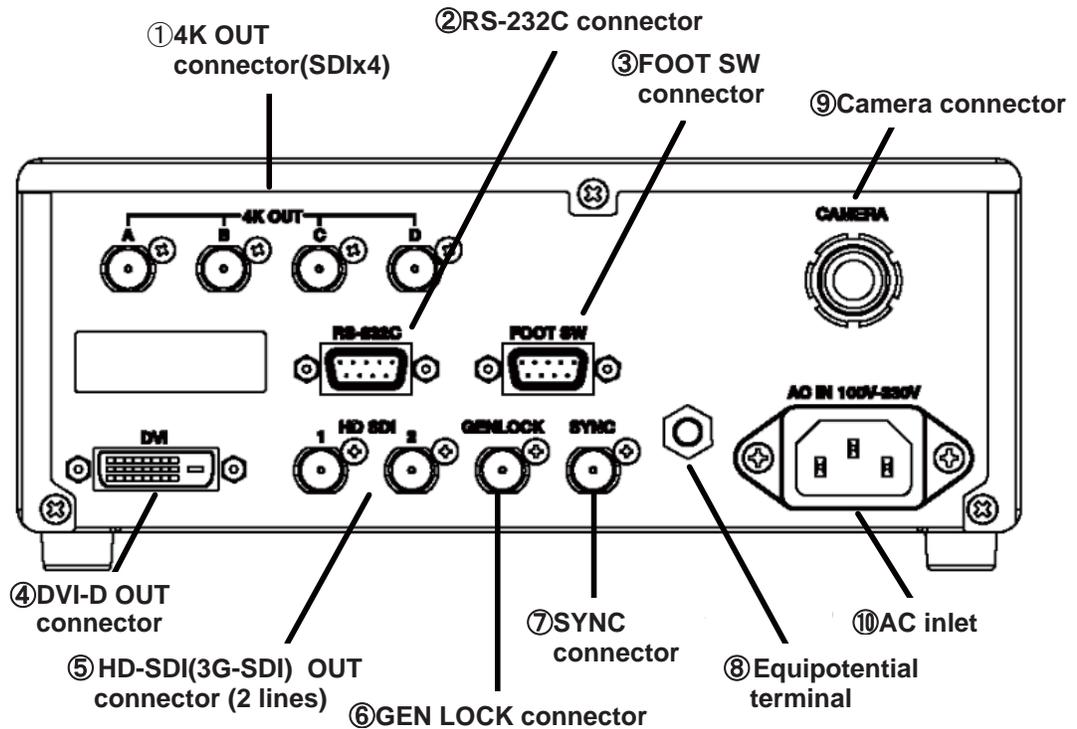
① **4K OUT connector(SDIx4)**

4K signal (Quad Link Level-A)-input-compatible monitor etc. is connected here.

② **RS-232C connector**

The personal computer etc. is connected here. A cross cable (option) is required for connection.

③ **FOOT SW connector**

The extension cable from a foot switch (option) can be connected here.

④ **DVI-D OUT connector**

A DVI-D-input-compatible monitor etc. is connected here. A DVI-D cable (option) is required for connection.

⑤ **HD-SDI(3G-SDI) OUT connector (2 lines)**

An HD-SDI (3G-SDI)-input-compatible monitor etc. is connected here. The same video is output to two lines.

A coaxial cable with a 75 Ω impedance should be used for connection.

⑥ **GEN LOCK connector**

To synchronize the phase of a video with another system, this inputs a synchronizing signal from that system. A 3-value sync (HD) is supported.

⑦ **SYNC connector**

To synchronize the phase of a video with another system, this outputs a synchronizing signal to that system. A 3-value sync (HD) is supported.

※It assumes the synchronization applications in between the MKC cameras.

  For synchronization with other products I am afraid that I can not guarantee.

⑧ **Equipotential terminal**

This is used to make the potential of a cabinet equal to other equipment.

⑨ **Camera connector**

The camera connector of a dedicated camera cable is connected here.

Please be aware that the camera connector is different in size between the camera head and the CCU.

⑩ **AC inlet**

The power cable included with a commercial power (100 to 240 VAC) is connected here.

3. Service

3.1. Connection Example

4K-Compatible monitor

MKC-750UHD
camera head

Foot switch

Camera cable

coaxial cable ×4 lines

DVI-D cable

coaxial cable

DVI-compatible

SDI-compatible
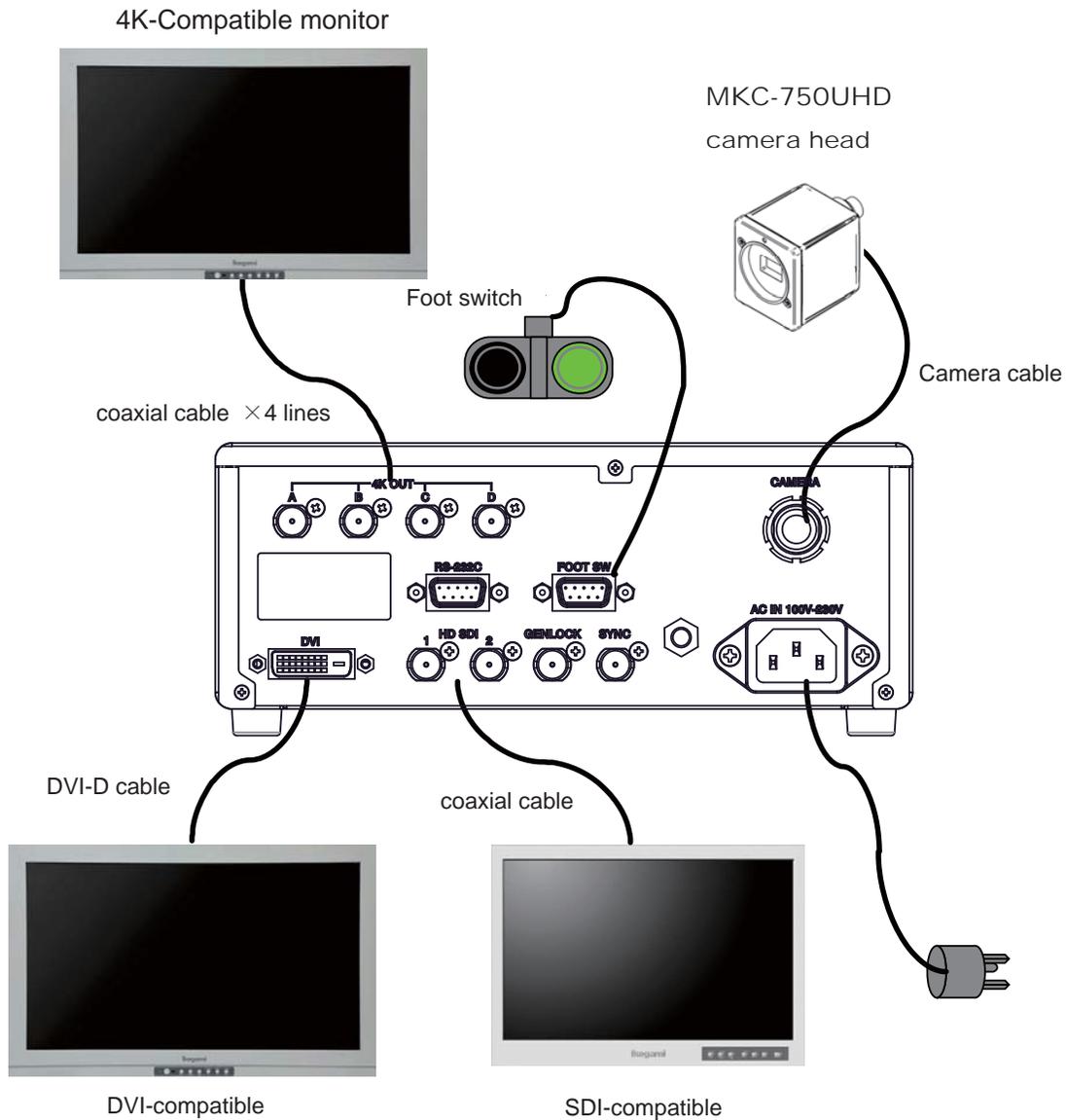
※ How to connect to a 4K monitor, please check the operation manual that comes
with the monitor.

※ Always, please use the supplied power cable in the connection with the power supply.

* Terminate the output from RGB OUT and VIDEO OUT at 75ohms on the receiver side.

* FOOT SW to be connected to this device, it conforms to the IEC60601-1 : 2005

* Equipment connected to this unit except FOOTSW that conform to IEC standards that apply to the equipment or IEC60601-1:2005

* If you are connecting to a device that is in contact with the patient to make the connection in accordance with IEC60601-1 : 2005 Annex I Table I.1

* While connected, it is necessary to fit the evaluation and IEC60601-1 : 2005 Section 16.

* When FOOT SW is used in the operating room, you should always use the FOOT SW which is conformed to the IEC60529-IP6.

* When FOOT SW is used beside the operating room, you should always use the FOOT SW the IEC60529- IP1.

DVI connector

This connector outputs a digital signal. Connect a DVI cable to this connector.

＊Use a DVI cable with a ferrite core at both ends. Contact Ikegami if you are unable to obtain such a cable.

Ferrite core
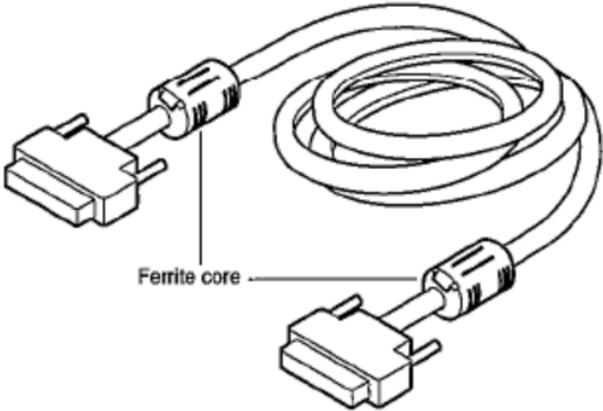
3.2. Installation

Notes on installation

CAUTION: ⚠	There is ventilation duct on the side of the CCU. Placed away 1.5cm or more from the wall so as not to block the ventilation ducts. Set up blocking the ventilation holes is cause of failure.

Placed away 1.5cm or more from the wall so as not to block the ventilation ducts.

3.3. Powering Up

1. Before power-up, make sure that the external equipment, such as the camera head and a monitor, is connected properly.

2. Power up the external devices such as a monitor.

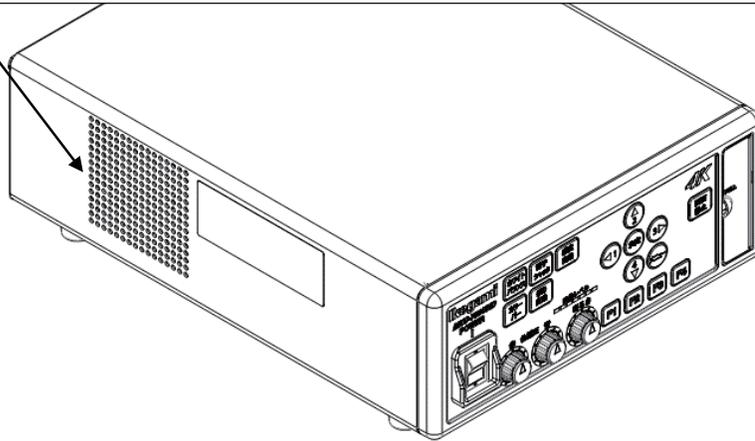3. Turn ON the main power switch on the CCU front.

   - The supplied power cable should always be connected to the AC inlet on the CCU back.

   - When it is powered up, the power button on the front will light up in olive green.

   - It can be powered off by pressing the power button or turning OFF the main power switch with the power button lit.

   - Immediately after the power is turned on, the CCU and camera head is initialized automatically. The pictures on the monitor are not stable during this period. However it is not a failure.

4. Finally, in a state of using a camera, a video from the camera is output.

   - When power is turned off in the state of still an image frozen, that state will not be held even if power is turned on again, and MKC-750UHD is set to the normal shooting state.

   * Before relocating the main unit, always turn off the main power, remove the power plug, and disconnect the cables connected among equipment.
   * If any cable is disconnected during use, you should redo the above procedure from the beginning.

Precautions on Plugging or Unplugging the Camera Cable

CAUTION: ⚠	Before plugging or unplugging the camera cable that connects the camera head and the CCU with each other, always power off the main unit. If the camera cable is plugged or unplugged with the main unit powered ON, a failure will occur.

Precautions on Video from Camera

This machine uses a CMOS sensor.
Therefore, a video may encounter the following phenomena; however, this is not a failure.

1) With higher sensitivity or with still higher temperature, bright spots may appear in a video.

2) Under the lighting of a discharge tube, such as a fluorescent lamp, flicker or horizontal stripes appear on a screen. In this case, when, for a 50 Hz area, a shutter speed is set to 1/100 s, they will reduce.

3) For the subject moving fast on a screen, distortion may occur on the screen.

3.4. Setting a White Balance

When using MKC-750UHD for the first time, or when the light source has been changed, adjust the White Balance.

The white balance can be adjusted automatically.

＜**Operation**＞

1. Shoot a white photographic object on the screen largely, and press the white balance button.

   ● During automatic adjustment, the white balance button lights up.

White balance button
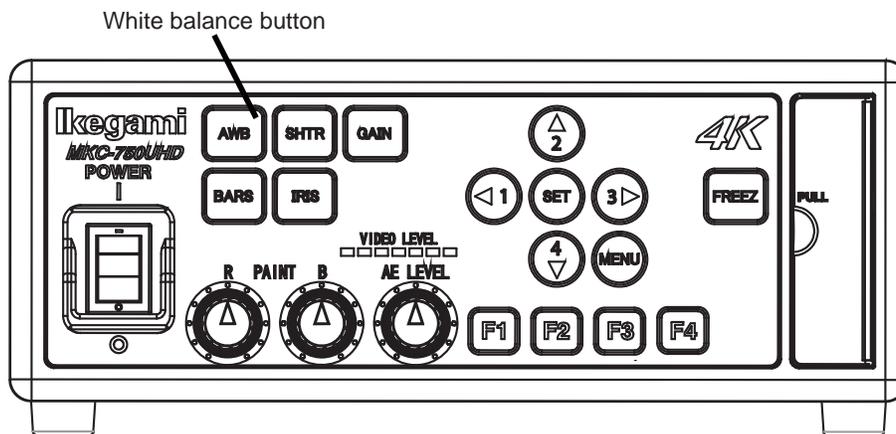
   ● "AWB" will appear on a monitor screen. When the adjustment is complete successfully, "AWB COMPLETED" will appear.

AWB BUSY

AWB COMPLETED
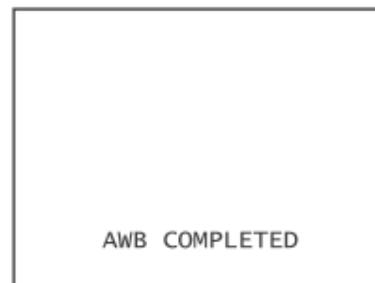
   ● If the display of "AWB ERROR" comes out, the adjustment of the white balance has not been carried out successfully. Recheck the image pickup conditions (a white subject, brightness, etc.), and readjust the white balance.

2. When the automatic adjustment is complete, the light of the auto white button will go out automatically.

3.5. Adjusting a Paint

After white balance adjustment it is possible with the MKC-750UHD to carry out fine adjustment of the red level and blue level/density of picture as desire of user.

<Operation>

1. Turn the color correction volume (red) and the one (blue) to make adjustments.
- Turning it to the right and left raises and reduces the level respectively.
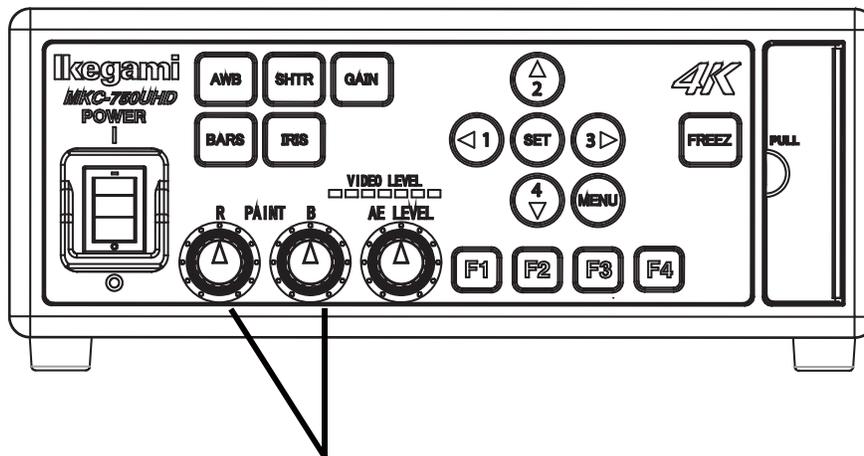
Color correction volume

3.6. Adjusting an AE Level

The MKC-750UHD can adjust a shutter speed, gain, and an Iris automatically, according to the preset exposure level. A screen becomes easy to see by raising the level when the screen is too dark, or reducing it when too bright.

This function is enabled when GAIN/ Electronic shutter is AUTO.

＜**Operation**＞

1. Turn the brightness volume to make adjustments.
   - Turning it to the right and left brightens and darkens the screen respectively.
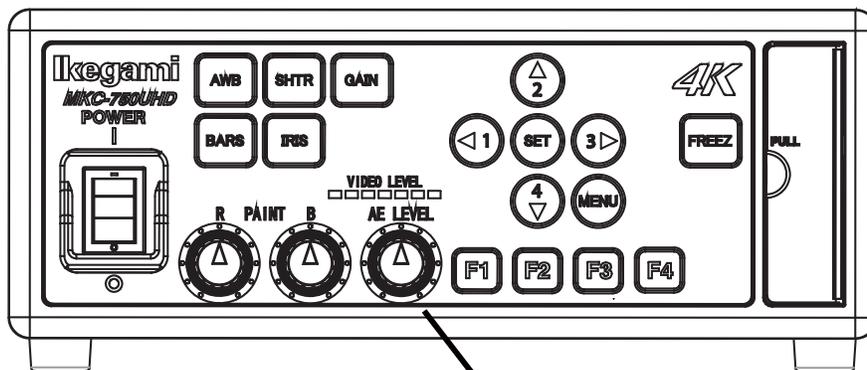
Brightness volume

3.7. Outputting a Still Image

The MKC-750UHD can temporarily stop moving image output and switch to freeze frame output.

＜**Operation**＞

１．Press the freeze button.

- A still image will be output immediately.
- While a still image is output, the freeze button lights up.
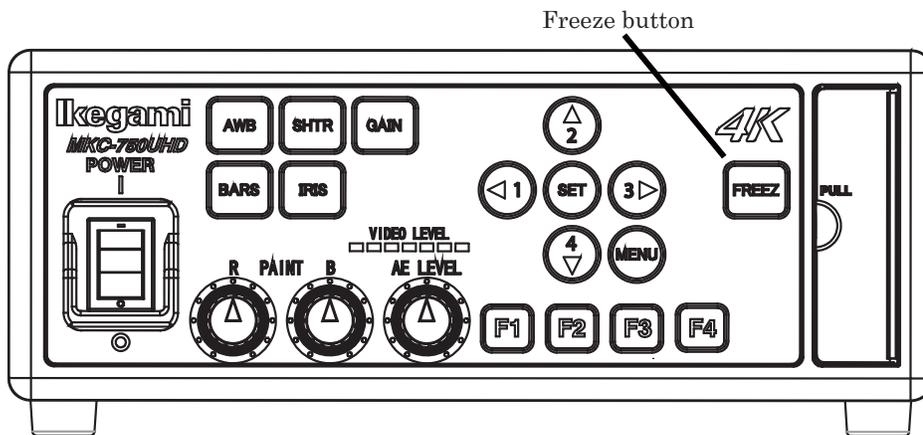
Freeze button

２．To unfreeze the image, press the freeze button again.

- The light of the freeze button will go out.

3.8. Outputting Color Bars

The MKC-700HD can output a color bar. This is used when adjusting the color monitor brightness, contrast, etc.

＜**Operation**＞

1．Press the color bar button.

- Color bars will be output immediately.
- While color bars are output, the color bar button is lit in green.

Color bar button
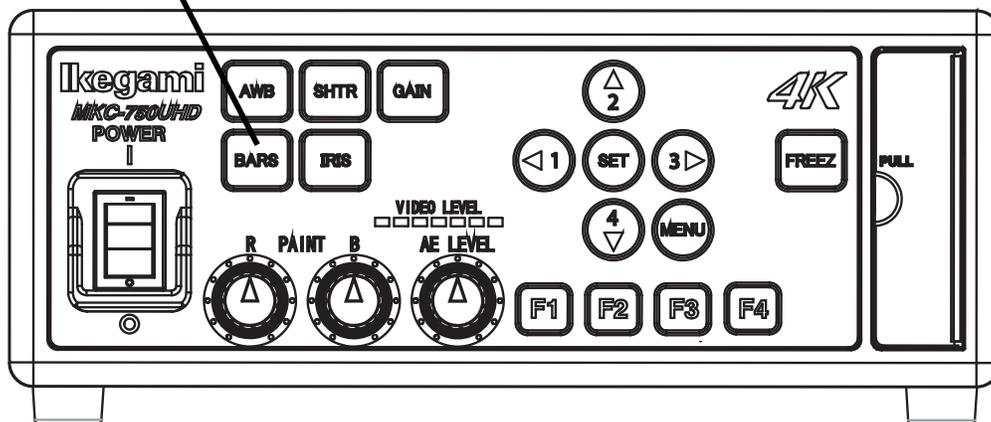
2．To restore a video from the camera, press the color bar button again.

- The light of the color bar button will go out.

3.9. Selecting a Scene File

The MKC-750UHD can read them at any time by saving settings often used on beforehand in a scene file. A maximum of four scene files can be stored.

<**Loading**>

1. The arrow key corresponding to the currently selected scene file is lit.
2. Select a scene file with the arrow key.

   ● The numeral near an arrow key shows a scene file number.

   ● The arrow key corresponding to the selected scene file will light up.

   ● The settings in the scene file will take effect immediately.
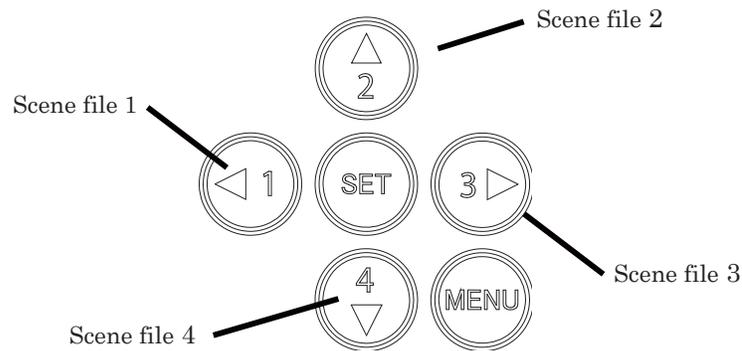
4. Menu Operation

The MKC-750UHD has various kinds of functions that are very useful in service.
A user can select and set these functions as desired.

The basic procedure for operation is as follows.

4.1. Operation Method

1. When you press the menu button on the CCU front, a menu will open on a monitor screen, where you can set various kinds of camera functions.

```
        PICTURE
            Exposure
            Level
            DTL
            Color
            Scene File
        FUNCTION
            Function Mode
            Foot Switch
            Function Key
        SYSTEM
            Video Format
            Date/Time
            Others
            Information
```
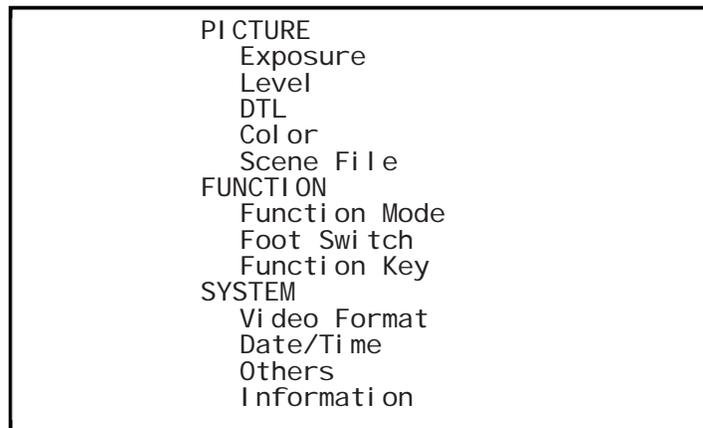
2. Use the ↑/↓ keys on the CCU front to select the item and then press the → keys or the SET button to enter the submenu screen. Change with the '↑ / ↓ 'keys to set value of each setting item. Use the '←' keys to return to the previous menu.

Change the set value   Determination of
                              the selected item
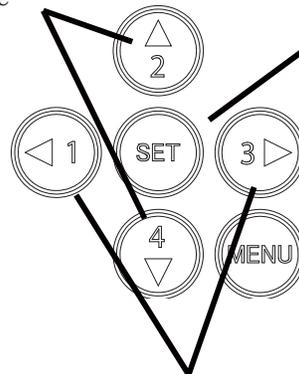
Display/non-display
of the menu screen

Change of item

※When, with a menu screen displayed, you press the menu button on the CCU front, the settings will be saved and the menu screen will close.

4.2. Exposure

The exposure time, etc. can be adjust.

```
                    Exposure

         Measurement Area      MIDDLE
         AE Level              0
         Speed                 MIDDLE
         Peak Ratio            25
         Shutter               AUTO ⇒
         Gain                  AUTO ⇒
         Line Mix              OFF
         Iris Control          AUTO ⇒
```

Item		Description
Measurement Area		Adjusts the extent of a metering area. Carries out automatic adjustment of the shutter and gain, etc. based on the image in the frame displayed in the screen.
	NARROW	About 40% of the screen center is a metering area.
	MIDDLE	About 60% of the screen center is a metering area.
	FULL	The entire screen is a metering area.
	CIRCLE	The circular range of the center screen is a metering area.
	USER	Set the metering area arbitrary. Press the SET button to enter the setting screen.
AE Level		When Shutter Control or Gain Control is AUTO, fine-adjust a shutter speed according to the level that is set here.
	-128~127	If the screen is too dark, the value is increased, and if the screen is too bright the value is decreased.
Speed		When Shutter or Gain is Auto, set a control speed.
	MIDDLE	Adjusts to the standard speed.
	SLOW	Adjusts slowly.
	FAST	Adjusts quickly.
Peak Ratio		When Shutter or Gain is AUTO, adjust a metering scheme. When most of the background is dark and also a subject is bright, set it toward peak metering. When there are few changes in brightness on the entire screen, set it toward average metering.
	0~63	+63 is peak metering, and 0 is average metering.

Shutter			This item concerns automatic adjustment of the shutter speed. When you make a shutter speed higher, brightness will change according to the speed. Under the lighting of a discharge lamp, such as a fluorescent lamp, much flicker may appear.
		AUTO	According to the brightness of a video, a shutter speed will be adjusted to the optimum one automatically.
		Shutter Limit	Limits the fast shutter speed.
		Slow Shutter	Sets the enable or disable.
		Slow shutter Limit	Limits the storage shutter speed.
		MANUAL	Set to the shutter speed set by the user.
Gain			This item concerns automatic adjustment of the Gain. When a dark subject is picked up, you can adjust the brightness.
		AUTO	According to the brightness of a video input, a gain will automatically be adjusted so that an output level may always be fixed.
		Base	Sets the offset.
		Limit	Sets the upper limit of the gain setting.
		MANUAL	Sets the Gain set by the user.
Line Mix			Use this to raise sensitivity. Sensitivity will be doubled, but vertical resolution will be deteriorated.
		ON	Carries out the sensitivity up.
		OFF	Does not carry out the sensitivity up.
Iris Control			Sets the lens iris.
		AUTO	Automatically adjusts to the ideal lens iris value in relation to image brightness.
		Iris Priority	Sets either the iris priority or the shutter priority.
		MANUAL	Sets the lens iris value set by the user.
		Iris Level -128~127	The higher the value, the brighter it. The lower the value, the darker it.

4.3. LEVEL

The level of black, red, blue of video picture can be adjust.

```
                        LEVEL

         Pedestal              0
         Flare                 7
         Gamma                 0
         Knee                  ON
         R Paint               0
         B Paint               0
         White Shading         OFF
```

Item	Setting	Description
Pedestal		Adjusts the black level. Normally not used.
	-64~63	If the value is increased, the black sections become brighter.
Flare		Carries out the flare correction.
	0~50	Increasing the value, results a correction strong.
Gamma	-128~127	The Gamma correction makes a dark image bright.
Knee		The knee correction makes a bright image more visible.
	ON	Enable a setting.
	OFF	Disable a setting.
R Paint		Adjusts the red level. This is the same function as paint adjustment volume on the front of the CCU.
	-128~127	Increasing the value, results in a more vivid red.
B Paint		Adjusts the blue level. This is the same function as paint adjustment volume on the front of the CCU.
	-128~127	Increasing the value, results in a more vivid blue.
White Shading		Carries out adjustment of the White Shading.
	ON	Enable a correction.
	OFF	Disable a correction.

4.4. DTL

The detail enhancement can be set.

```
                    DTL

       Gain                16
       Boost               2MHz
```

Item	Setting	Description
Gain		Adjusts the detail enhancement level.
	0~31	Increasing the value, results in a sharper image.
Boost		Sets the boost frequency for detail enhancement.
	2~16MHz	The lower the value, the easier it is to carry out contour enhancement on the entire screen.

4.5. Color

The color reproducibility can be set.

```
                    Color
        White Balance      AWB
        Chroma             O
        Matrix             OFF
        Color Correct      OFF
```

Item	Setting		Description
White Balance			Sets white balance operation.
		AWB	The white balance is adjusted automatically. Press the SET button when this item is selected.
		ATW	Automatically adjusts to the white balance in relation to pick up conditions.
		Manual	Manual adjustment of white balance.
		R Gain	Adjusts the red gain.
		B Gain	Adjusts the blue gain.
Chroma			Set the color intensity.
	-128~127		The higher the value, the more intense the color. The lower the value the more faded the color.
Matrix			Adjusts the Linear matrix. Normally sets to the OFF.
		OFF	Disable an adjustment.
		ON	Enable an adjustment.
Color Correct			Adjusts the density and color of each six colors. Normally sets to the OFF.

	OFF	Disable an adjustment.
	ON	Enable an adjustment.

4.6. Scene File

The settings information as a scene file can be read and save. Up to four scene files can be created.

* For details of the setting, see Section 5.3 "Scene File".

```
                    Scene File

        Scene Number        No.1
        Store Scene         READY
        Initialize          SceneREADY
```

Item	Setting	Description
Scene Number		Select the set scene file, read it.
Store Scene		Store the set condition in the scene file. Select the scene file you wish to set, and press the SET button.
Initialize Scene		Select the scene file you wish to initialize, and press the SET button. If you select ALL, all scene files will be initialized.

4.7. Function Mode

Other functions can be set.

```
              Function Mode

    Digital Zoom          x1.0
    Flip                  OFF
    DNR Level             0
```

Item	Setting	Description
Digital zoom		Magnification setting of electronic zoom.
	x1.0~x4.0	The center of the screen is zoomed up in units of 0.1 power.
Flip		Sets the horizontal and vertical inversion of the image.
	OFF	The both horizontal and vertical direction become the normal rotation output.
	H FLIP	Outputs a horizontally inverted image.
	V FLIP	Outputs a vertically inverted image.
	ROTATE	Outputs an image inverted 180 degree.
DNR Level		Adjusts the noise reduction level.
	0~31	A larger value reduces more noise, but deteriorates resolution.

4.8. Foot Switch

The movement of time to operate the foot switch can be set.

```
                    Foot Switch

        Foot Switch 1          NONE
        Foot Switch 2          NONE
        Foot Switch 3          NONE
        Foot Switch 4          NONE
```

Item	Setting	Description
Foot Switch		Carries out setting of operations when the foot switch is operated. Foot switch operation responds up to 4, and allow separate operation settings for each.
	NONE	Even when the foot switch is operated, nothing is carried out.
	FREEZE	Outputs a still images. Operate the foot switch again to return to moving images.
	SCENE F(ROT)	Switches the scene file selection.
	H FLIP	Outputs a horizontally inverted image.
	V FLIP	Outputs a vertically inverted image.
	ROTATE	Outputs an image inverted 180 degrees.
	ZOOM IN	Carries out electronic zoom-in.
	ZOOM OUT	Carries out electronic zoom-out.
	AWB	Adjusts white balance.

4.9. Function Key

The movement of time to operate the function key on the CCU front can be set.

```
                    Function Key

         Key 1                  NONE
         Key 2                  NONE
         Key 3                  NONE
         Key 4                  NONE




```

Item	Setting	Description
Function Key		Carries out setting of operations when the function key is operated.
	NONE	Nothing is carried out, even when the function key is operated.
	H FLIP	Outputs a horizontally inverted image.
	V FLIP	Outputs a vertically inverted image.
	ROTATE	Outputs an image inverted 180 degrees.
	ZOOM IN	Carries out electronic zoom-in.
	ZOOM OUT	Carries out electronic zoom-out.

4.10. Video Format

The video format can be set.

```
                    Video Format

        Frame Rate           59.94Hz
        SDI Output           1080i
        DVI Output           1080p
        H Position           0
        V Position           0
        Genlock              OFF
        Center Marker        OFF
```

Item	Setting	Description
Frame Rate		Select the frequency of the video output signal. Frequency is common to all of the output signal.
	59.94Hz	Outputs at 59.94 Hz.
	50Hz	Outputs at 50 Hz.
SDI Output		Selects the HD SDI output signal output format.
	1080p	Outputs the progressive signal.
	1080i	Outputs the interlace signal.
DVI Output		Selects the DVI output signal output format.
	1080p	Outputs the progressive signal.
	1080i	Outputs the interlace signal.
H Position	-32~32	Adjusts the horizontal display position of a screen in one pixel unit.
V Position	-8~8	Adjust the vertical display position of a screen in one line unit.
Genlock		Sets the Genlock.
	OFF	Disable a set Genloc function.
	AUTO	When SYNC signal is input to the GENLOCK connector, automatically switches to external synchronization.

		H Phase	Adjusts the horizontal phase for Genlock input.
		V Phase	Adjusts the vertical phase for Genlock input.
		3D Support	When the 3D system is configured, sets whether to operate as a slave or as a master.
Center Maker			Displays the Center marker.

4.11. Date/Time

The date and time can be set.

```
                    Date/Time

            Year              2016
            Month             3
            Day               2
            Hours             11
            Minutes           34
            Seconds           20
            Setting           READY

                  2016-03-02
                    11: 34: 20


```

Item	Setting	Description
Year		
Month		
Day		
Hours		Sets the date and time.
Minutes		
Seconds		
Setting		

4.12. Others

The condition at the time of shipment from the factory can be return. Reading
and writing data to a USB memory can be.

```
                       Others

        Initialize          READY
        USB Memory          NO MEDIA
```

Item	Setting	Description
Initialize		Press [READY]→[START]→[SET]. All the settings other than those for scene files will be initialized.
USB Memory		Read and store of a USB memory can be.
	NO MEDIA	USB memory is not inserted.
	READY	USB memory is inserted, and can be read and save.
	CCU→USB	Stores the data of CCU in a USB memory.
	USB→CCU	Reads the data of USB memory into a CCU.

4.13. Information

The version information of the software appears.

```
                    Information

         CCU Firmware         V1.00-6162
         CCU FPGA            V1.00a-6155
         Head FPGA           V5.00e-6153
```

5. Advance Use

5.1. External Synchronization

To use this machine in external synchronization mode, input SYNC to the GENLOCK terminal on the CCU back. When SYNC is input to the GENLOCK terminal, the camera will enter external synchronization mode from internal synchronization mode automatically.

SYNC input conditions: 3-value SYNC: 0.6 Vp-p / 75 Ω

5.1.1 Wiring Example

Prepare two sets of the CCU and camera for MKC-750UHD. Connect the SYNC connector on the CCU (master) and the GENLOCK connector on the CCU (slave) with each other, using a coaxial cable.
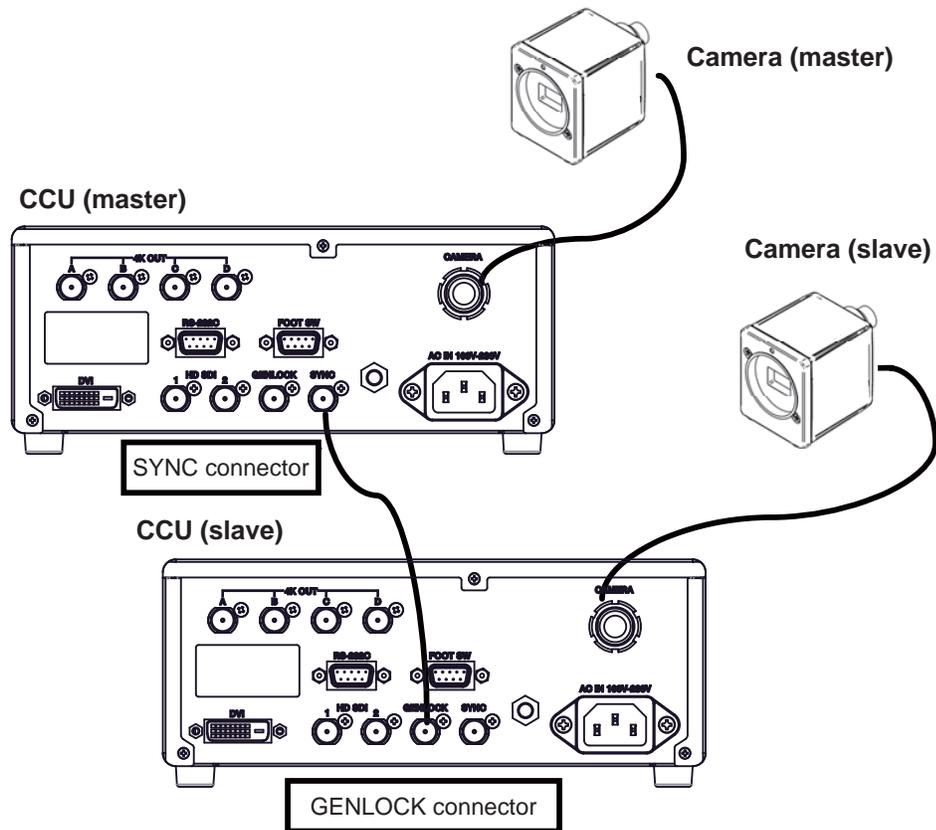
5.1.2 Setting

Observing the SYNC output waveforms of the master and the slave CCU, adjust PHASE so that H/V phases may become consistent with each other. The slave one (whose GENLOCK connector is connected) should be a target for the adjustment. The master one does not need the phase adjustments.

Master SYNC

Make phases consistent with each other

Slave SYNC
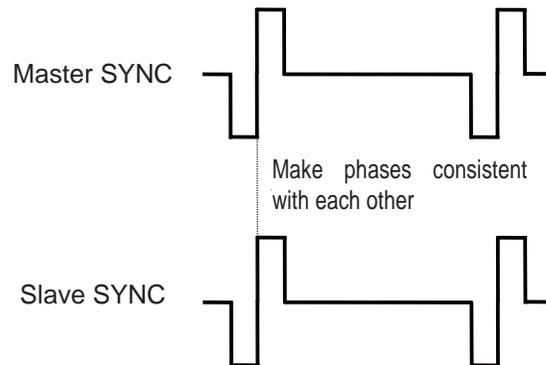
5.2. Manually Setting a Metering Frame

You can change the range of a metering frame as desired. By adjusting a metering frame, a video can automatically be adjusted in keeping with the use environment.

5.2.1 Setting

Choose [Exposure]→[Measurement Area]→[USER..] from the menu, and press the set button. You will enter the manual setting screen for a mete ring frame.

As you press the SET button, it changes the [Quit]→[Position]→[Top&L eft]→[Bottom&Right]→[Quit].
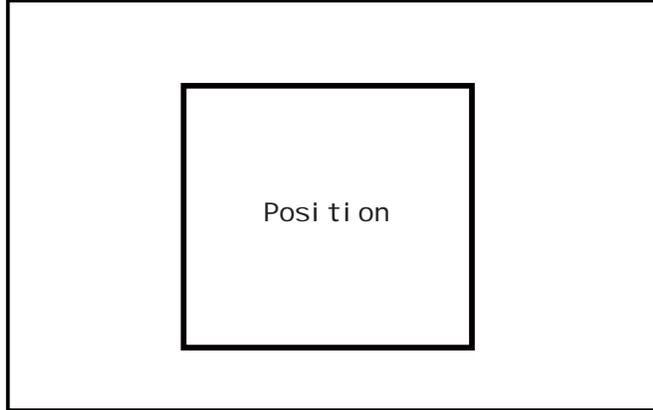
You can set the position and size of a metering frame. When setting is finished, select QUIT and press the SET button to finish setting.

Setting the Position

Select Position and press the SET button to adjust the position of a metering frame. The frame size is not changed.

Move a frame.
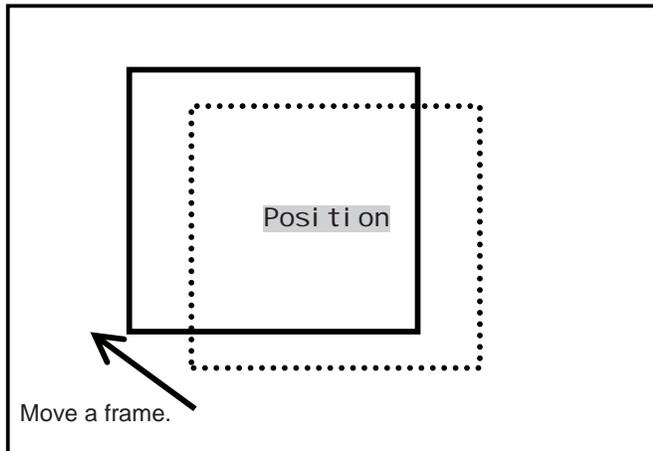
Use the ⇧/⇨/⇩/⇦keys to adjust the position.

Setting the Size

Select [Top&Left] or [Bottom&Right] to adjust the size of a metering frame.

```
                    [Bottom&Right]

                                          Changing    the    frame
                                          size
```

Use the ⇧/⇨/⇩/⇦ keys to adjust the position.

[Top&Left]　　　 : Adjusts the size of left and upper sides of a metering frame.
　　　　　　　　　 Enlarges with "↑"/"←"key. Reduces with　"↓"/"→"key.
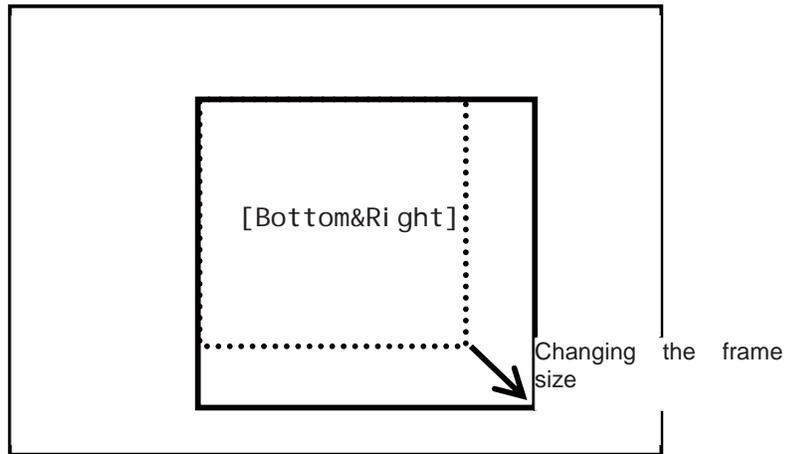[Bottom&Right]　 : Adjusts the size of lower and right sides of a metering frame.
　　　　　　　　　 Enlarges with "↓"/"→"key. Reduces with　"↑"/"←"key.

5.3. Scene File

This device allows setting of up to four scene files chosen according to photographic conditions. And also reset to the factory default.

5.3.1 Saving a Scene File

The scene file can be created from a menu. Since the present setting is saved in the scene file, set beforehand to the setting you wish.

At [Scene File] on a menu, select one of the alternatives: [Store Scene 1] to [Store Scene 4], and press the SET button. The settings will be saved immediately to the scene file. (Please see 3.9 Scene File.)

5.3.2 Initializing a Scene File

At [Scene File] on a menu, select a file to initialize from the alternatives: [Initialize Scene 1] to [Initialize Scene 4], and press the SET button. The selected scene file will be initialized immediately.

5.3.3 Setting a Scene File

To use the stored scene, operate a front panel (Page 25) or a foot switch (Page 35).

5.4. Saving and loading a set data

The set data is save to a USB memory. And, the set data save to a USB is loaded.

5.4.1 Connecting of USB memory

Open the maintenance door, and insert USB memory into USB connector.

Precautions on USB memory

・USB memory equipped with a protective function by password is not support.

・File system of USB memory is supported FAT32 and FAT16.

　USB memory that has been formatted with other file system is not support.
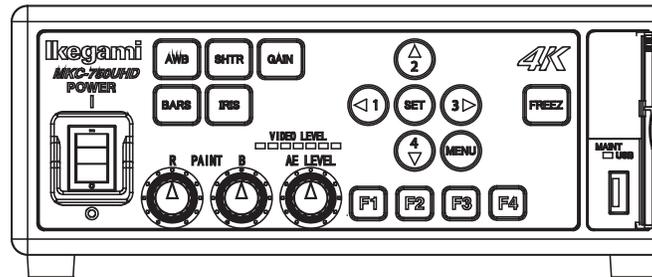
When USB memory is inserted, the LED in the maintenance door is light up. And [USB Memory] state of [Others] is changed from [NO MEDIA] to [READY].

```
                    Others

          Initialize           READY
          USB Memory           READY




```

5.4.2 Saving a set data

Points the cursor to the [READY] of [USB Memory], selects [CCU⇒USB] by the [↑] [↓] buttons, presses the [SET]. The set data is saved to a USB memory.

During save to the USB memory, "USB Memory Busy" is appear at the bottom of the screen.

After save, "USB Memory Completed" is appear and the item of [USB Memory] returns to [READY]. Saving take about 15 to 60 sec.

```
          Others                            Others

Initialize         READY          Initialize          READY
USB Memory         CCU⇒USB        USB Memory           READY




    USB Memory Busy                   USB Memory Completed

```
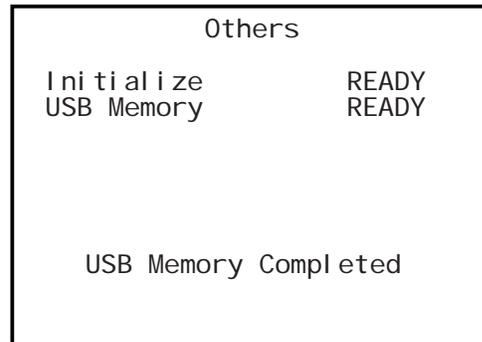
Precautions on the USB memory access.

CAUTION: ⚠	Don't remove the USB memory or turn off the power, while it is displayed as "USB Memory Busy". When an USB memory is removed while being accessed, or equipment is powered off, a data of USB memory may get corrupted.

A USB memory that a free space has above 1MB is used for save a set data. A set data is saved with the file name extension with that "msf" in the root directory of the USB memory. The file name to save can not be changed.

Precautions on saving a set data.

When USB memory that saved a set data is save, past set data is overwritten and disappear.

"USB Memory Error" is appear when failing to save a set data.

```
                    Others

    Initialize            READY
    USB Memory            READY




              USB Memory Error


```

Precautions on failing to save.

When failing to save a set data, delete a data of USB memory and increase a free space and use another memory.

5.4.3 Loading a set data

Points the cursor to the [READY] of [USB Memory], selects [USB⇒CCU] by the [↑] [↓] buttons, presses the [SET]. The set data is read from a USB memory.

During read from the USB memory, "USB Memory Busy" is appear at the bottom of the screen.

After read, "USB Memory Completed" is appear and the item of [USB Memory] returns to [READY]. Reading take about 30 sec.
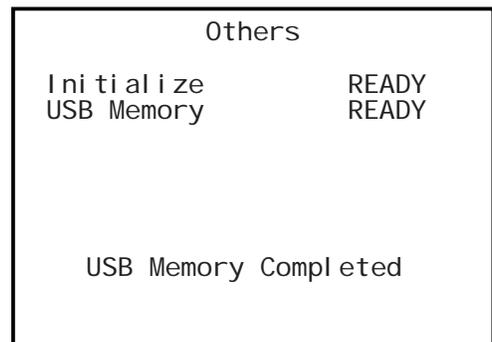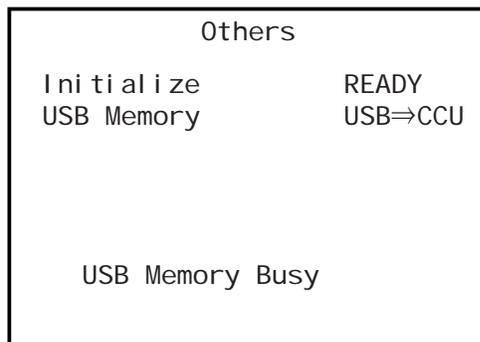
```
            Others                              Others

 Initialize         READY           Initialize            READY
 USB Memory         USB⇒CCU         USB Memory            READY




     USB Memory Busy                    USB Memory Completed

```

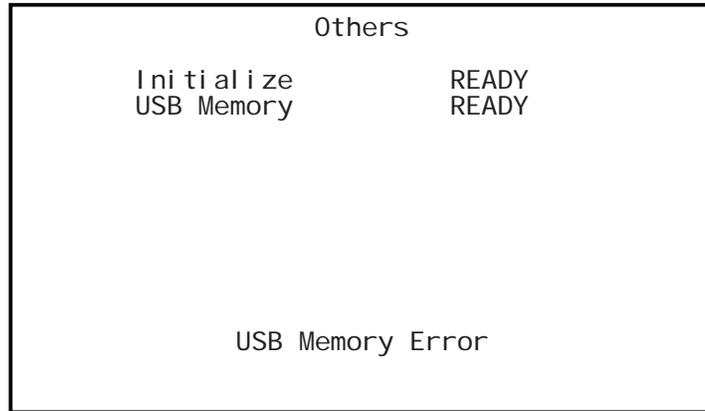**Precautions on the USB memory access.**

| CAUTION: ⚠ | Don't remove the USB memory or turn off the power, while it is displayed as "USB Memory Busy". When an USB memory is removed while being accessed, or equipment is powered off, a data of USB memory may get corrupted. |

Precautions on loading a set data.

A set data saved in our other models can not be read to MKC-750UHD.

5.5. 3D support function

By using 3D support function of this machine, it is possible to change setting various kinds of camera functions simultaneousness of left and right and adjust easily when 3D system is constructed using this two machines.

5.5.1 Connections and settings

The 3D system of this machine is constructed one master machine, one slave machine and 3D -adaptive monitor. Please connect each apparatus like a lower figure.

■Connection Example

RS-232C cross cable

CCU (Master)

CCU (Slave)

Coaxial cable

Video output cable
HD-SDI or DVI

Video output cable
HD-SDI or DVI
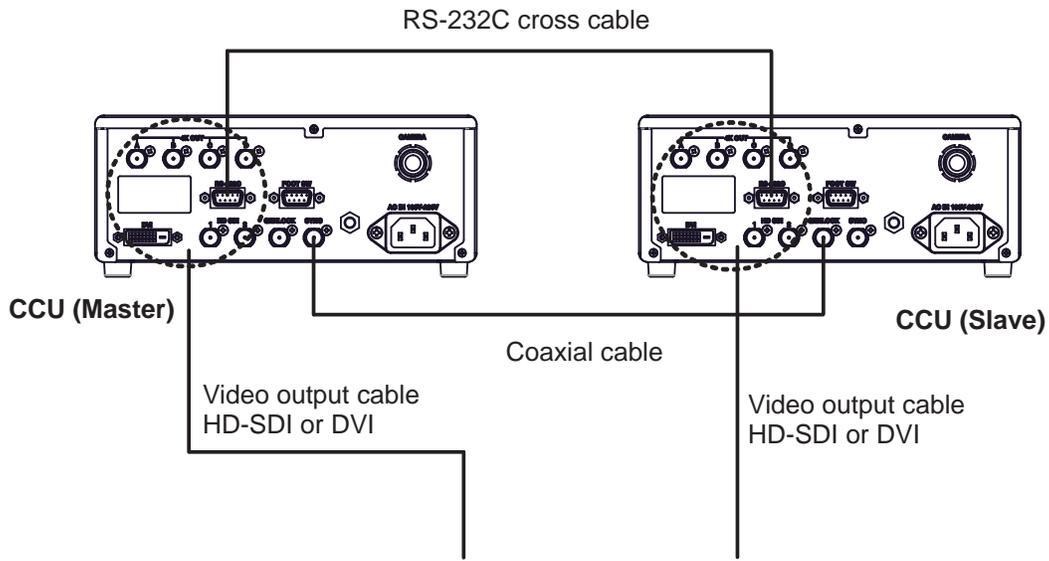
3D-compatible monitor

■Setting the master and the slave

1. Connect SYNC connector of the CCU made a master and GENLOCK connector of the CCU made a slave using a coaxial cable. And connect RS-232C connector comrade using RS-232Ccross cable (D-Sub 9-pin Female).

2. Connect the two CCU and the monitor.
   ※connect the both CCU output signal to the 3D-compatible monitor
   ※Whichever camera of the left or right is made the master, it is no problems.
   ※check the Specification of the monitor for the connection of the output of the left and right of the camera.

3. Turn ON the main power switch. (It's possible even from the left or right of the CCU.)

4. From MENU, point a cursor in the order of [Video Format]→[Genlock]→ [3D Support]. Therefore, change the camera setting in 'Master' in the case of Master, and in 'Slave' in the case of the Slave.

```
               Video Format

        Frame Rate        59.94Hz
        SDI Output        1080i
        DVI Output        1080p
        H Position        0
        V Position        0
        Genlock           AUTO
        Center Marker     OFF



```

```
          Video Format→Genlock

        H Phase           0
        V Phase           0
        3D Support        SLAVE





```

5． If disappears after the lamp of maintenance USB port is lighted a few seconds, the setting is completed.

Precautions During Connection
・ Before connection, always power OFF the camera.

5.5.2 Linkage the operation panel and the menu

When the setting is finished, [White balance], [Auto shutter], [Auto sensitivity], [Auto Iris] and [Set value of each volume] etc. are interlocked between the master and the slave, and setting that was operated at the master is automatically is reflected by the slave.

6. Default Settings

6.1. Exposure

The 2nd hierarchy			The 3rd hierarchy		
Item	Default	Setting	Item	Default	Setting
Measurement Area	MIDDLE	[NARROW] [MIDDLE] [FULL] [CIRCLE] [USER]			
AE Level	0	-128 ～ 127			
Speed	Middle	[SLOW] [MIDDLE] [FAST]			
Peak Ratio	25	0 ～ 63			
Shutter	AUTO	[MANUAL]			
		└	Shutter Speed	OFF	[1/4] ～[1/10000]
		[Auto]			
		└	Shutter Limit	1/4000	[1/100]～[1/10000]
			Slow Shutter	DISABLE	[ENABLE][DISABLE]
			Slow Shutter Limit	1/15	[1/4]～[1/30]
Gain	AUTO	[MANUAL]			
		└	Normal Gain	-6dB	[-9dB]～[24dB]
		[AUTO]			
		├	Base	-6dB	[-9dB]～[6dB]
		└	Limit	9dB	[3dB]～[18dB]
Line Mix	OFF	[ON][OFF]			
Iris Control	AUTO	[AUTO]			
		└	Iris Priority	IRIS	[IRIS] [SHUTTER]
		[MANUAL]			
		└	Iris Level	0	-128 ～ 127

6.2. Level

The 2nd hierarchy			The 3rd hierarchy		
Item	Default	Setting	Item	Default	Setting
Pedestal	0	0～64			
Flare	7	0～50			
Gamma	0	-128～127			
Knee	ON	[ON] [OFF]			
R Paint	0	-128～127			
B Paint	0	-128～127			
White Shading	OFF	[OFF]			
		[ON]			
		└	AUTO		[START]

6.3. DTL

The 2nd hierarchy		
Item	Defaults	setting
Gain	16	0～31
Boost	2MHz	2～16MHz

6.4. Color

The 2nd hierarchy			The 3rd hierarchy		
Item	Defaults	setting	Item	Defaults	setting
White Balance	AWB	[AWB][ATW]			
		[MANUAL]			
		├	R Gain	0	-128～127
		└	B Gain	0	-128～127
Chroma	0	-128～127			
Matrix	OFF	[OFF]			
		[ON]			
		├	R-G	0	-170～342
		├	R-B	0	-170～342
		├	G-R	0	-170～342
		├	G-B	0	-170～342
		├	B-R	0	-170～342
		└	B-G	0	-170～342
Color Correct	OFF	[OFF]			
		[ON]			
		├	R Gain	0	-64～63
		├	R Phase	0	-32～31
		├	G Gain	0	-64～63
		├	G Phase	0	-32～31
		├	B Gain	0	-64～63
		├	B Phase	0	-32～31
		├	Cy Gain	0	-64～63
		├	Cy Phase	0	-32～31
		├	Mg Gain	0	-64～63
		├	Mg Phase	0	-32～31
		├	Ye Gain	0	-64～63
		└	Yw Phase	0	-32～31

6.5. Scene File

The 2nd hierarchy		
Item	Defaults	setting
Scene Number	No.1	[No.1][No.2][No.3][No.4]
Store Scene	READY	[READY] [No.1][No.2][No.3][No.4]
Initialize Scene	READY	[READY] [No.1][No.2][No.3][No.4]

6.6. Function Mode

The 2nd hierarchy		
Item	Defaults	setting
Digital zoom	x1.0	x1.0～x4.0
Flip	OFF	[OFF][H FLIP][V FLIP][ROTATE]
DNR Level	0	0～31

6.7. Foot Switch

The 2nd hierarchy		
Item	Defaults	setting
Foot Switch 1	NONE	[NONE][FREEZE][SCENE F(ROT)][H FLIP][V FLIP][ROTATE][ZOOM IN] [ZOOM OUT][AWB]
Foot Switch 2	NONE	[NONE][FREEZE][SCENE F(ROT)][H FLIP][V FLIP][ROTATE][ZOOM IN] [ZOOM OUT][AWB]
Foot Switch 3	NONE	[NONE][FREEZE][SCENE F(ROT)][H FLIP][V FLIP][ROTATE][ZOOM IN] [ZOOM OUT][AWB]
Foot Switch 4	NONE	[NONE][FREEZE][SCENE F(ROT)][H FLIP][V FLIP][ROTATE][ZOOM IN] [ZOOM OUT][AWB]

6.8. Function Key

The 2nd hierarchy		
Item	Defaults	setting
Key 1	NONE	[NONE][H FLIP][V FLIP][ROTATE][ZOOM IN][ZOOM OUT]
Key 2	NONE	[NONE][H FLIP][V FLIP][ROTATE][ZOOM IN][ZOOM OUT]
Key 3	NONE	[NONE][H FLIP][V FLIP][ROTATE][ZOOM IN][ZOOM OUT]
Key 4	NONE	[NONE][H FLIP][V FLIP][ROTATE][ZOOM IN][ZOOM OUT]

6.9. Video Format

The 2nd hierarchy			The 3rd hierarchy		
Item	Defaults	setting	Item	Defaults	setting
Frame Rate	59.94Hz	[59.94Hz][50Hz]			
SDI Output	1080i	[1080p][1080i]			
DVI Output	1080p	[1080p][1080i]			
H Position	0	-32～32			
V Position	0	-8～8			
Genlock	OFF	[OFF]			
		[AUTO]			
		├	H Phase	0	-128～127
		├	V Phase	0	-128～127
		└	3D Support	SLAVE	[MASTER][SLAVE]
Center Marker	OFF	[OFF][ON]			

7. Specification

7.1. Rating

(1)	Lens mount	C-mount
(2)	Optical system	RGB prism
(3)	Image pickup device	1/3-inch CMOS sensor x 3 (rolling shutter)
(4)	Outputs pixels	4K output 3840×2160 pixels
		2K output 1920×1080 pixels
(5)	Scan mode	Progressive scan
(6)	External synchronization input	3-value SYNC: 0.6 Vp-p / 75 Ω
(7)	Video output signal	

4K output	3840×2160P 59.94/50Hz
	3G-SDI×4 Quad Link Level-A Square division
2K output	1920×1080P 59.94/50Hz,1920×1080I 59.94/50Hz
	3G/HD-SDI Level-A (2 lines)
	DVI(1 line)

(8)	Input Control Signal	RS-232C（1 line），9-pin D-Sub, male
		FOOT SW（1 line），9-pin D-Sub, female
(9)	Power supply	AC100〜240V ± 10%（50/60Hz）
(10)	Power consumption	30W or less
(11)	Operating Temperature	0℃ 〜 +40℃
(12)	Storage temperature	-20℃ 〜 +70℃
(13)	Outline dimensions/weight	Camera head:W34×H40×D40mm/100g or less
		CCU: W210×H80×D270mm/3kg or less
(14)	Camera cable (standard option)	5+10m cable
(15)	Accessories	Operation Manual, AC cable

7.2. Performance

(1) Resolution（center）

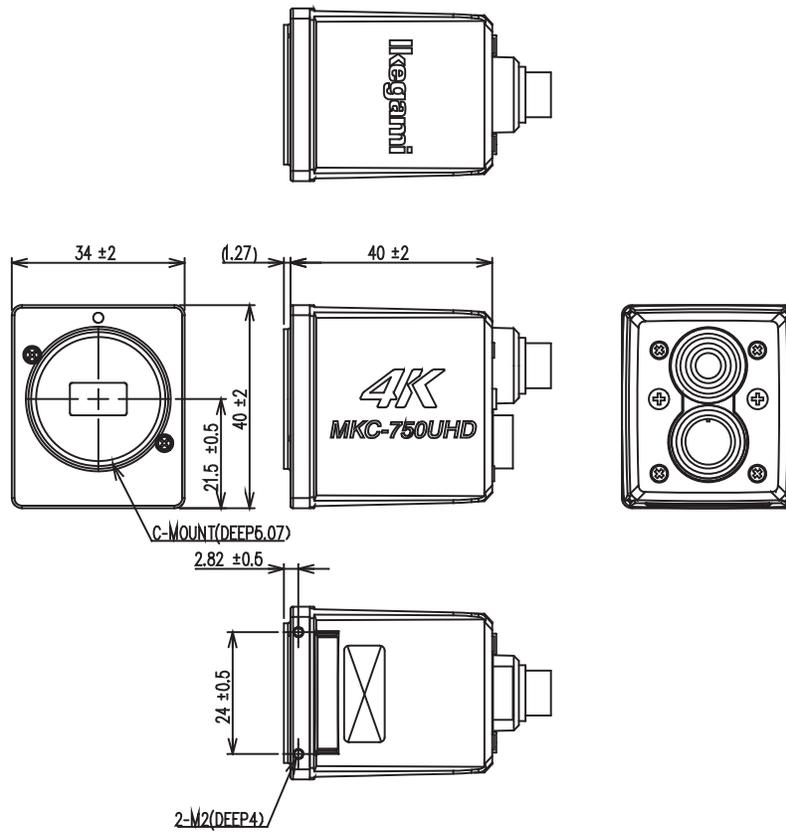|	
4K output	Horizontal：1600TV lines, Vertical：1600TV lines （Line mix OFF）
2K output	Horizontal：1000TVines, Vertical：1000TV lines （Line mix OFF）

(2) S/N ratio   56 dB targeted (γ and detail OFF)

(3) Sensitivity   Standard : 2000lx F8 / 3200K or more

7.3. Function

(1) Gain Control function（AUTO/MANUAL）

(2) White Balance function（AWB/MANUAL/ATW）

(3) Shutter Control function（AUTO/MANUAL）

(4) White Shading correction function

(5) Flare correction function

(6) Photometry area variation function

(7) Picture freeze function
(8) Internal color bar
(9) Image flip function（horizontally, vertically, horizontally and vertically）

(10) Noise reduction function

(11) GENLOCK function

(12) Down converter function（1920×1080 output）

(13) Electronic zoom function

(14) Scene file function

8. Appearances

8.1. Camera Head

34 ±2 (1.27) 40 ±2

40 ±2

21.5 ±0.5

C-MOUNT(DEEP6.07)

4K
MKC-750UHD

2.82 ±0.5

24 ±0.5

2-M2(DEEP4)

8.2. CCU

270±4

210±4

80±3

8

MEMO

MKC-750UHD

Operation Manual

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