KC-2000MK II 隼
MADE IN JAPAN FALCON EYE

Owner's Manual

Contents

1. For Your Safety

	⚠Warning
❗	Ensure structural stability and strength when installing the unit.
❗	Securely tighten screws and other fasteners at all times. Injury caused by falling objects may be prevented with extra caution.
❗	Always use correct power source and voltage. The correct DC power source voltage range for this product is DC 10V~16V. Operating above this voltage range may cause malfunctions and lead to fire. We recommend the use of our optional AC adapter.
❗	Circuitry in this product provides reasonable protection from external electrical shock to the product itself and connected cables, but it cannot offer protection from lightening strikes. Disconnect all cables during a thunder storm.

❗	This product is 'splash proof' (IP rating scale of IPX-2) , not water proof. It cannot be used in rain or under water. Water intrusion may cause malfunction and fire.

	⚠Attention
🚫	Use only the designated battery. IDX battery model SSL--JVC50 is the battery approved for use on this product. Disconnect the battery when not using the product for extended periods of time.
🚫	Handle the metal parts with caution. Rubbing hard against the edges may cause injury.

2. Important Usage Guidelines

Storage and Operation

● Do not record extremely bright objects (such as a lamp or the sun) for a long time. Also do not operate this product under following conditions, as doing so may lead to malfunction and failure.

● Extreme temperatures outside normal operating range（-10℃~50℃）.
● Extreme humidity outside operating range（30%RH~90%RH）; avoid condensation.
● Near sources of strong magnetic fields such as transformers and motors.
● Near sources of strong electrical signals such as transceivers and cell phones.
● Near television and radio transmitting stations. Near reflective light from fluorescent lamps
● and windows.

● Near unstable illumination (may cause flickering). Laser light sources; never record laser.
● Near high voltage transmission lines.
● Near excessive dust and sand.
● Excessive vibration in vehicles and ships.
● Near steam and oil such as heaters.
● Flammable and other hazardous environments.
● Near sources of radiation, X-ray, or chlorine and
● other corrosive gasses. Near sources of other chemicals such as swimming
● pools and hot springs.

● Noticeable video image beat and other noise as well as color disturbances may result when the camera is operated near sources of strong electrical signal and magnetic fields such as radio and television sets, transformers, railways and power transmission lines.
● Insufficient heat dissipation may cause malfuntion. The camera enclosure is being used for cooling. Do not impede the flow of air around the camera by placing the camera too close to walls, etc.
● Use extreme caution, make all possible safety considerations, and notify the manufacturer if the camera must be used under following conditions:
   1. Environmental conditions outside operational specification limits and design parameters.
   2. Where safety is paramount and significant impact on person or property is anticipated.
● The manufacturer cannot anticipate every possible circumstances for use of this product. Sufficiently test and analyze the results for your intended operational conditions and parameters prior to deployment, and use the camera at your own risk.
● Design and manufacture of this product were not intended for regulation of equipment or apparatus which is concerned with sustenance of life（*1）, or the functionality, safety and welfare of the public（*2）. Please do not operate this product for such critical purposes.

　　　　　（*1）：By "equipment or apparatus concerned with sustenance of life," we mean:
　　　　　· Medical equipment such as life-support system and devices used for surgery.
　　　　　· Equipment for venting harmful gas, exhaust or smoke.
　　　　　· Installed devices required by fire law, building standards and other regulatory acts.
　　　　　· Devices equivalent to above.
　　　　　（*2）：By "equipment or apparatus concerned with the functionality, safety and welfare of the public," we mean:
　　　　　· Traffic control equipment for air, rail, road and ocean traffic.
　　　　　· Nuclear power plant equipment and the like.
　　　　　· Devices equivalent to above.

Transportation

● Handle this product with care during transportation. Avoid vibration and shock.

Maintenance

● If you notice dust particles on the image sensor, use commercially available optic air dusters to remove them gently. Spray-type blowers are not recommended, as water particles may disperse inside the camera. Use extreme caution when cleaning the sensor.

CMOS Image Sensor and Related Phenomenon

● Phenomenon listed below, which may be visible on recorded images, are common to CMOS image sensors and are not malfunctions.

　・White Dots
　　CMOS image sensors are occasionally affected by cosmic rays and other external disturbances, which manifest themselves as small white dots on the captured image. This is due to the functional principles of CMOS devices and is not a malfunction. These white dots may become more pronounced when:
　　　· the camera is used in hot temperatures.
　　　· the gain is increased.
　　　· the shutter speed is decreased.

　・Folded Deformation / Antialiasing
　　When fine patterns or stripes are captured, you may see patterns and colors which are different from the actual image.

Rechargeable Battery

● Use only the designated battery, IDX model SSL--JVC50, to ensure trouble-free operation.
● Battery is not charged when purchased.
  Use the designated charger to fully charge the battery prior to initial use.
● Battery life may become short or the battery may not function normally at low temperatures（below10℃/50℉）.Try warming the battery in your pocket before use if this happens.
● Do not subject the battery to excessive heat through exposure to direct sunlight or fire.
● If you are not going to use the battery for an extended period of time...
  ①Completely deplte the battery before removing from the camera to prevent battery degradation.
  ②Fully charge and completely deplete at least once every six months.
● Store disconnected battery in a cool (approx. 15～25℃ / 60～80℉), dry place with the battery contacts capped for safety.

Other

● Turn the system power OFF for safety and power conservation and remove the battery when not using the camera for a long time.

Disclaimer

● We are not liable to you for any damages, including any lost profits, interruption of business, alteration of memory contents, or other incidental or consequential damages arising out of your use or inability to use this product.
● We will not be held accountable for lost opportunity or loss of recorded content in the event this camera fails to record for any reason while being used with a VTR, a hard disk recorder or other recording equipment.
● Always check camera functionality prior to important recording sessions.
● We are not responsible for damages due to unforeseen circumstances or causes beyond our control including but not limited to acts of God, earthquakes, fire, third party actions and use or misuse under abnormal circumstances.
● We are not responsible for damages caused by use or malfunction of third party equipment (including image processing boards and lens) or software used with this product.
● We are not responsible for damages caused by claims of invasion of privacy arising from the use of this product.
● We are not responsible for damages to the end user's hardware or software caused by use of application and software provided by us or of the end user's own design.
● We are not responsible for damages caused by failure to adhere to the instructions in the user's manual.
● We are not responsible for damages caused by use of this product in a fashion not described in the user's manual.
● We are not responsible for damages caused by repair attempts and alteration attempts of this product by unauthorized third parties including the end user and unaccredited repair shops.
● The amount of liability we may incur in relation to this product under any and all circumstances shall be limited by the purchase value of this product.

3. Introduction

This camera is an ultra high-sensitivity, high definition video color night vision with video camcorder form-factor, equipped with a 2.2 million pixel, 2/3" high speed multi-sampling CMOS image sensor. This product is most suitable for nighttime and low light condition surveillance around international boarders and ports, and for other specialized applications.

4. Key Features

・Enables supersensitive color imaging under extremely low-light conditions, down to 0.005 lux.
・Maintains very good S/N ratio even at high gain settings, with proprietary 2D/3D noise reduction.
・Proprietary de-fog mode enables clear imaging even in foggy/smoky conditions.

5. Component Description & Function

8 INTERNAL MIC **5** ACCESSORY SHOE
1 LENS MOUNT
LEFT

22 VIEWFINDER
21 SD CARD ACCESS INDICATOR
3 BATTERY HOLD
7 SD CARD SLOT
6 HDMI PORT

18 VIDEO RECORD **17** PHOTO RECORD
RIGHT
4 HAND GRIP BELT LOOPS

TOP

2 TRIPOD SCREW HOLE
19 VIEWFINDER DIOPTER ADJUST LEVER
BOTTOM
20 IR Switching Lever

13 ASST SELECT
14 PLAY/REC SELECT
15 HDMI OSD SELECT
16 MENU SELECT & CURSOR KEY

10 HEADPHONES **11** DC POWER PORT
9 EXTERNAL MIC PORT **12** POWER SWITCH

Description & Function

	No.	Description	Function
Equipment	1	LENS MOUNT	Mount lens here. Accommodates various CS mounts.
	2	TRIPOD SCREW HOLE	Mount onto tripods here. Use 1/4"-20UNC screws with length 5.5mm and under.
	3	BATTERY HOLD	Insert the baterry here（IDX model SSL-JVC50）
	4	HAND GRIP BELT LOOPS	Hand grip may be secured with a belt using these loops.
	5	ACCESSORY SHOE	Mount external microphones and other accessories.
I/O Ports	6	HDMI PORT（VIDEO OUT）	Connect to digital HD TV monitor using HDMI video cables with Type A connector.
	7	SD CARD SLOT	Insert SD memory card（SDHC Card）for storing data.
	8	INTERNAL MICROPHONE	KC-2000 is equipped with a monaural microphone.
	9	EXTERNAL MIC. PORT	Input port for external stereo microphone（φ3.5mm stereo mini jack）
	10	HEADPHONE PORT	Connect headphones here.（φ3.5mm stereo mini jack） Headphone volume is set from the menu.
	11	DC POWER PORT	Connect the AC adapter here to provide the camera with power. This camera may be powered through either the battery or the DC power port. DC port is selected when both are present.
Switches and Selectors	12	POWER SWITCH	Turns the camera ON/OFF.
	13	ASST SELECT	Turns on 2x electronic zoom to assist focusing.
	14	PLAY / REC SELECT	Camera mode toggle（REC /VIDEO PLAYBACK / PHOTO PLAYBACK）
	15	HDMI OSD SELECT	Turns the HDMI On-Screen-Display icon ON/OFF.
	16	MENU SELECT (JOYSTICK)	Displays the menu when pressed. See setup menu details, p14.
	17	PHOTO RECORD	Record button for recording still images.
	18	VIDEO RECORD	Record button for recording video.
	19	DIOPTER ADJUST LEVER	Operate this lever while looking through the view finder.
	20	IR SWITCHING LEVER	Switching lever to change the image capturing mode to IR.
Display and Indicator	21	SD CARD ACCESS INDICATOR	LED flashes green while SD memory card is being accessed.
	22	VIEWFINDER	Displays video and the menu.

6. Preparation

6-1. Mounting the Battery

Install a fully-charged battery as follows:

① Remove the rear cover.
② Slide the locking pin away from the battery hold in the direction of the red arrow, as shown below.*
③ Insert the battery into the battery hold.
④ Slide the locking pin back toward the battery hold to secure the battery.
⑤ Replace the rear cover in its original position.
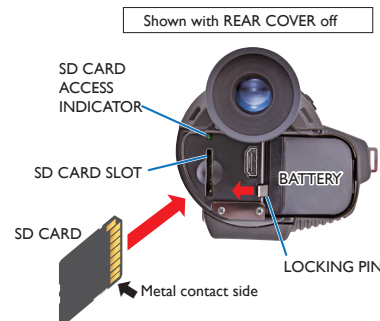　* To remove the battery, slide the locking pin away from the battery. The battery will pop out.

> Battery cannot be charged in this camera. Fully charge the battery first in its own charger.

REAR COVER

POWER SWITCH　DC POWER PORT

6-2. Inserting the SD Memory Card

Insert the SD memory card as follows:

① Remove the rear cover.
② Insert the SD card, with its metal contacts facing forward and to the right, into the SD card slot.
③ Push the card into the slot until you hear a 'click'.
④ Replace the rear cover in its original position.
* To remove the SD card, push the card in. The card will unlatch and pop out.

Shown with REAR COVER off

SD CARD ACCESS INDICATOR

SD CARD SLOT

SD CARD

BATTERY

LOCKING PIN

Metal contact side

> ● Before using a SD card for the first time:
> The SD memory card must be formatted.
> →Please see the description about Setup Page 4/4 on P20 of this manual.

> ● Caution: Do not remove the SD card, battery nor the AC adaptor while the SD Card Access Indicator is flashing.
> ● Never remove the SD card while recording nor during playback.

Note. 1　The following SD Memory Cards have been tested on KC2000:

Model	Class	Capacity	Notes
SD（SDHC）	4 and up	32GB	
Write Once SD（Tamper-Proof）	－	1GB	Toshiba：SD-K01G (Not fo Video Record/Playback)

We do not guarantee functionality for all commercially-available SD Memory Cards.
The following SD Memory Card manufacturers are recommended:

　　　　・Panasonic　　・Toshiba　　　　　　・SanDisk

Please do NOT delete the files recorded on this camera using your PC. Doing so in some cases will deteriorate the card's ability to record and playback video. If this happens, copy the files onto your PC first, then re-format the SD Memory Card in this camera.

Note 2

Total recording time on a SD memory card will vary depending on the amount of scene details.
Recording time available on a single battery charge will depend on the temperature, the number of charge cycles on the battery, and the charge method. We recommend that you plan ahead and have enough SD memory cards and batteries for twice the expected recording time.

Note 3

Folders are automatically created on the SD memory card to store data.
Sill image files are stored inside the "DCIM/100KC200" folder.
Video files are stored inside the "MOVIE" folder.*
　　(*"MOVIE" folder is not created on Write-Once (Tamper-Proof) SD cards.)

6-3. Powering the Unit On

This product may be powered either by the battery or by the AC adapter through the DC POWR PORT.
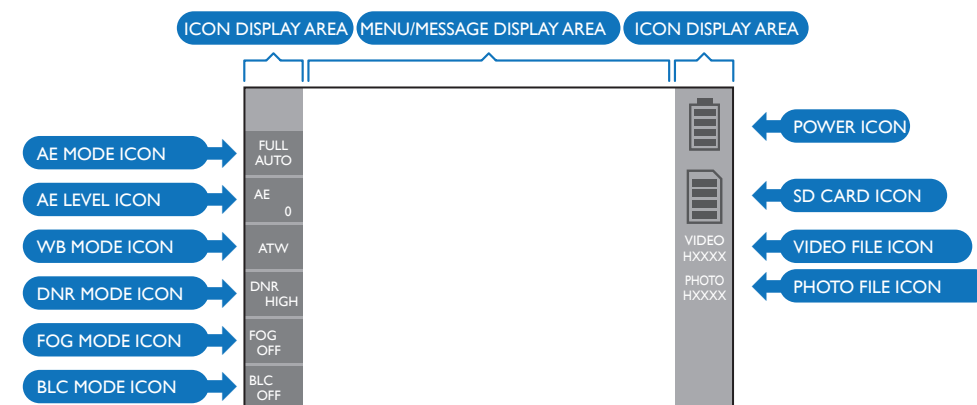If both the battery and the AC adapter are present, the camera takes its power from the DC POWER PORT.

Turn the camera ON or OFF by pressing and holding the POWER SWITCH for more than 2 seconds.

6-4. Power On and Preflight Checks

① Press and hold the POWER SWITCH for more than 2 seconds.
②Video image will appear in the VIEWFINDER (or on the HDMI monitor if one is connected).
　The display will say "BOOTING" while the unit is booting up.
③ Once the "BOOTING" message disappears the camera is ready for use.

The camera will always boot into RECORD mode.

After boot, the display will look like this. (If ICON DISPLAY for the HDMI monitor is turned off in the MENU setting, the ICONS won't be displayed on the HDMI monitor.)

ICON DISPLAY AREA　MENU/MESSAGE DISPLAY AREA　ICON DISPLAY AREA

AE MODE ICON
AE LEVEL ICON
WB MODE ICON
DNR MODE ICON
FOG MODE ICON
BLC MODE ICON

FULL AUTO
AE 0
ATW
DNR HIGH
FOG OFF
BLC OFF

POWER ICON
SD CARD ICON

VIDEO HXXXX
PHOTO HXXXX

VIDEO FILE ICON
PHOTO FILE ICON

AE MODE ICON　　Indicates the current AE (Automatic Exposure) MODE setting. If shutter speed priority is selected, the shutter speed will be shown instead.

AE LEVEL ICON　　Indicates the current AE LEVEL setting. When the menu is not showing, the level may be adjusted by moving the MENU SELECT / CURSOR KEY button left or right.

WB MODE ICON　　Indicates the current WHITE BALANCE MODE setting.

DNR MODE ICON　　Indicates the current DYNAMIC NOISE REDUCTION MODE setting.

FOG MODE ICON　　Indicates the currnt FOG MODE setting.

BLC MODE ICON　　Indicates the current BACK LIGHTING CORRECTION MODE setting.

POWER ICON　　Indicates the power source currently in use, with a battery icon for battery and DC power plug icon for external DC power source.

BATTERY LEVEL DISPLAY

FULL —————— EMPTY   NG

RED battery level display icon
➡ The camera will automatically shut down
   when the battery voltage is too low.
   Please exchange the battery.

YELLOW battery level display icon is a warning

RED × battery level display icon

➡ The battery is nearly empty.

➡ The battery is faulty. Please replace the battery.

SD CARD ICON　　Indicates the SD memory card status.（The SD card is not recognized if there is no icon.）

SD CARD CAPACITY DISPLAY

FULL —————— EMPTY

SD memory card is Write Protected

WP ➡ Files may be played back, but you won't be able to record.f
In order to record, remove the SD card, move the lock switch to the OFF position and re-insert.

SD memory card has not been formatted or is in an abnormal state

STEADY ON ➡ Format the SD memory card in the camera（See P20 for MENU PAGE 4/4 details）。
If formatting the SD card does not change the display, replace the SD card.
If the SD card has already been formatted, ejecting and then re-inserting the SD card may help.

SD memory card is being recognized

FLASHING

VIDEO FILE ICON　　Indicates the current VIDEO QUALITY setting（H/S/L）and the total number of
video files currently stored on the SD memory card.

PHOTO FILE ICON　　Indicates the current PHOTO QUALITY setting（H/S/L）and the total number of
photo files currently stored on the SD memory card.

6-5. Setting the Clock

Press the MENU SELECT button while looking at the VIEWFINDER or the HDMI monitor (if connected)
to display the SETUP MENU PAGE 1/4 on the screen.
Press the MENU SELECT button again to display PAGE 2/4 on the screen.

Select DATE & TIME ADJUST on that page and press the MENU SELECT button.
➡ See the description of the setup menu on P17 for details.

This product utilizes a rechargeable backup
battery. If the camera is not connected to power
for an extended period of time the clock will revert
to factory setting.

PLAY/REC SELECT　　HDMI OSD SELECT
ASST SELECT　　　　　　MENU SELECT

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FALCON EYE

VIEWFINDER

DIOPTER
ADJUSTMENT
LEVER

8

6-6. Eyesight Adjustment

Press the MENU SELECT button to display the SETUP MENU PAGE 1/4 on the screen.
While looking through the VIEWFINDER, manipulate the DIOPTER ADJUSTMENT LEVER until
the menu icons and text appear clearly.

6-7. IR Switching mode

1. What is IR mode?
   It is an image capturing mode to take IR image in monochrome using IR illuminator under close to pitch black.
   Image capturing in color is made under visible light between 380nm and 780nm wave length.
   In case of IR mode, it captures invisible light between 780 and 1,000 wave length.
   IR mode image capturing is useful for law enforcement and military applications.

2. Setting up IR mode image capturing mode.
   ① Shift the IR switching lever to IR position.
   ② Make sure if the image in the viewfinder is turned into monochrome.
   ③ Now you are ready to shoot under IR condition.
   [Note] The camera is set up to Color mode at the time of ex factory.
   [Note] In case of IR image capturing, use IR illuminator (option)
   　　　　The following two types are available in the market.
   　　　　IR illuminator for 850nm: Light source is recognizable in red.
   　　　　IR illuminator for 940nm: Light source is not recognizable.

3. Recording IR image
   You will see the IR images in the viewfinder in monochrome which will be recorded into SD card or will be
   output to HDMI port in monochrome.

Color Mode

IR Mode switching lever

Image in color mode

IR Mode (with IR illuminator)

IR Mode switching lever

Image in IR mode with IR illuminator

9
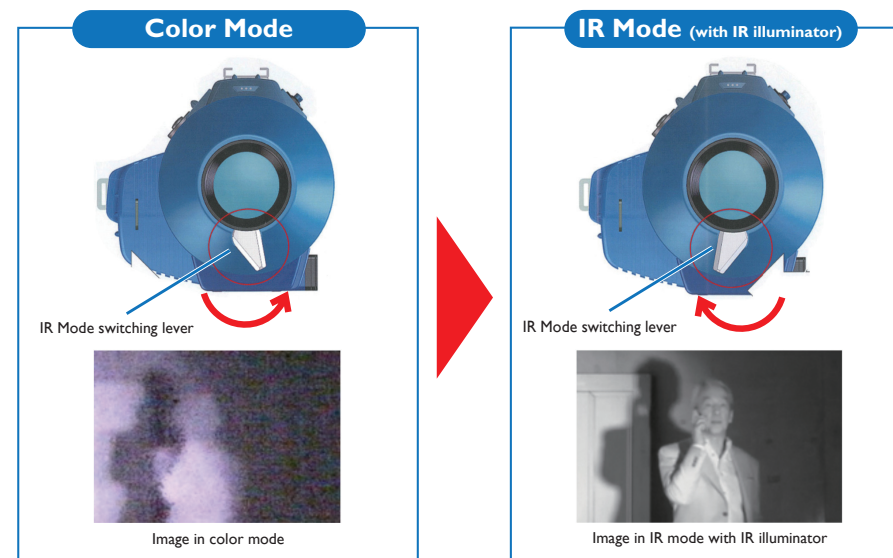
7. Operation

7-1. VIDEO RECORD MODE

1. Check the recording status and settings in the ON-SCREEN MENU DISPLAY.

The SETUP MENU appears when the MENU SELECT button is pressed, and should look as shown below.

ICON DISPLAY

For the HDMI monitor only, pressing the HDMI OSD SELECT button will show the ICON DISPLAY on the HDMI monitor even when the MENU display is set to OFF. This setting can be changed in the SETUP MENU PAGE 2/4. The ICON DISPLAY is always present in the viewfinder.

```
                SYSTEM  SETUP          (PAGE 1/4)

 FULL      AE   MODE              FULL   AUTO
 AUTO        SHUTTER  SPEED        1/100
            AE      LEVEL
 AE
   0        WHITE   BALANCE        AUTO   W/T
            DYNAMIC   N/R          HIGH
 ATW        FOG   MODE             OFF
            EDGE
 DNR        CHROMA   GAIN
 HIGH
            BACKLIGHT   CMP.       OFF
 FOG        V/F   BRIGHT
 OFF

 BLC                EXIT
 OFF                              20YY/MM/DD_HH:MM:SS

                                        VIDEO
                                        HXXXX
                                        PHOTO
                                        HXXXX
```

ON-SCREEN MENU DISPLAY··· Appears when the MENU SELECT button is pressed.
The ON-SCREEN DISPLAY will disappear after 60 seconds of user interface inactivity.
While recording, only PAGE 1/4 of the MENU can be displayed.

Use the SETUP MENU to change the camera settings.

➡ See P14 for SETUP MENU details.

2. Focus adjustment

If you press the ASST SELECT button while the ON-SCREEN MENU DISPLAY is not showing, the camera enters FOCUS ASSIST ZOOM MODE. The video image is displayed at 2X magnification for 60 seconds in order to assist the focusing effort. Pressing the MENU SELECT button while the image is already magnified will extend the zoom mode for 60 more seconds. Pressing the ASST SELECT, VIDEO RECORD or PHOTO RECORD button will cancel the zoom mode.

* This feature cannot be used while the ON-SCREEN MENU DISPLAY is showing. Please turn the MENU off by pressing the PLAY/REC SELECT button first.

PLAY/REC SELECT   HDMI OSD SELECT
ASST SELECT   MENU SELECT

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3. Record video

Press the VIDEO RECORD button once to start recording video. Press again to stop recording.

Video file count increments by 1 when recording starts.

VIDEO REORD   PHOTO RECORD

```
 ●REC
 00:00:01          Icon indicates recording in progress
                   Indicates recording time
 FULL
 AUTO

 AE
   0
                              VIDEO
 ATW                          HXXXX
                              PHOTO
 DNR                          HXXXX
 HIGH

 FOG
 OFF

 BLC
 OFF              20YY/MM/DD_HH:MM:SS
```

While in VIDEO RECORD mode, the MENU SELECT button can be used to adjust the AE LEVEL and headphone volume. when the MENU is not displayed.

Long recordings are segmented automatically according to the duration or file size rules set.
（See VIDEO CHUNK description on P18.）

MENU SELECT button functions
（when MENU is not displayed）

Headphone-Volume +

UP

AE LEVEL −   ← LEFT   RIGHT →   AE LEVEL +

DOWN

Headphone-Volume −

VIDEO PLAYBACK MODE

1. Select the file to play back from the video file list.

① Press the PLAY/REC SELECT button to display the video file list.
② Select the file on a page by pressing the MENU SELECT button UP/DOWN.
   Change the page by pressing the MENU SELECT button LEFT/RIGHT.

PLAY/REC button function   Toggles through the three modes with each press.

RECORD ➡ VIDEO FILE LIST ➡ PHOTO FILE LIST
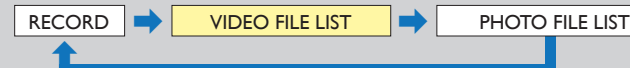
```
 VIDEO FILES              [ PAGE 1/N ]

 FILE#        REC      DATE   Y/D/T
 1000    20YY/MM/DD   HH:MM:SS
 0900    20YY/MM/DD   HH:MM:SS
 0800    20YY/MM/DD   HH:MM:SS
 0700    20YY/MM/DD   HH:MM:SS
 0600    20YY/MM/DD   HH:MM:SS              VIDEO
 0500    20YY/MM/DD   HH:MM:SS              XXXX
 0400    20YY/MM/DD   HH:MM:SS
 0300    20YY/MM/DD   HH:MM:SS  ×           0%
 0200    20YY/MM/DD   HH:MM:SS              2M
 0100    20YY/MM/DD   HH:MM:SS
```

MENU SELECT button function
（VIDEO PLAYBACK: VIDEO FILE LIST）

Move up within current page

UP

PUSH to play the selected file

PREVIOUS PAGE   ← LEFT   RIGHT →   NEXT PAGE

DOWN

Move down within current page
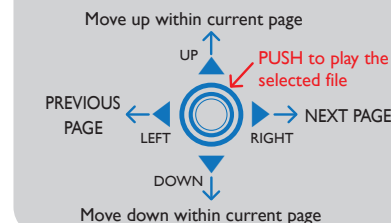
Damaged files and files which cannot be played back are greyed out and shown with an × .
Damaged files cannot be selected.

2. Play back the selected file.
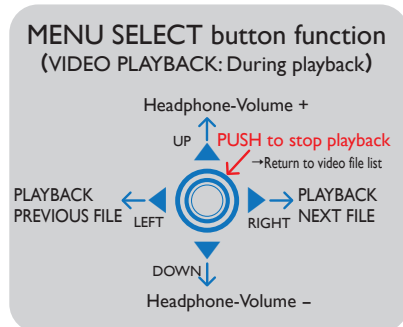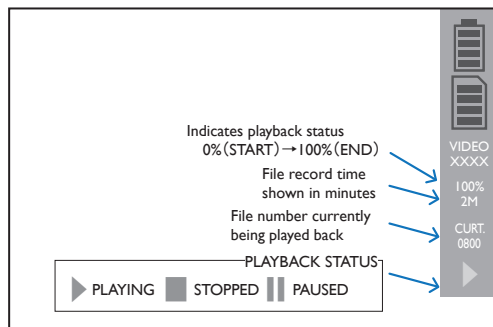
Push the MENU SELECT button in to play back the selected file.

MENU SELECT button function
(VIDEO PLAYBACK: During playback)

Indicates playback status
0%(START)→100%(END)

File record time shown in minutes

File number currently being played back

PLAYBACK STATUS

▶ PLAYING ■ STOPPED ‖ PAUSED

VIDEO XXXX
100% 2M
CURT. 0800
▶

Headphone-Volume +

UP

PUSH to stop playback
→Return to video file list

PLAYBACK PREVIOUS FILE ◀ LEFT   RIGHT ▶ PLAYBACK NEXT FILE

DOWN

Headphone-Volume −

Pressing the ASST SELECT button will pause playback. Press ASST SELECT button again to resume playback.

If the SETUP MENU for video playback mode is set to "SINGLE", playback will stop when playback of the current file is complete (Playback status display : 100%). Push the MENU SELECT button in to return to the video file list. Pressing the MENU SELECT or PLAY/REC SELECT button during playback will end playback and return to the video file list.

7-2. Recording and Playing Photographs

PHOTO RECORD MODE

Photo file count increments by 1 for every photo recorded.
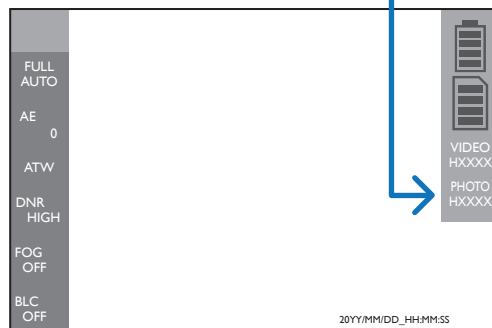
1. Check status and settings.
➡ Same as VIDEO RECORD mode.

2. Focus adjustment
➡ Same as VIDEO RECORD mode.

3. Record photograph
Press the PHOTO RECORD button to record a photograph. Photograph may be taken while video is being recorded.

FULL AUTO
AE   0
ATW
DNR   HIGH
FOG   OFF
BLC   OFF

VIDEO HXXXX
PHOTO HXXXX

20YY/MM/DD_HH:MM:SS

PHOTO PLAYBACK MODE

1. Select the file to play back from the photo file list.
① Press the PLAY/REC SELECT button to display the photo file list.
② Select the file on a page by pressing the MENU SELECT button UP/DOWN.
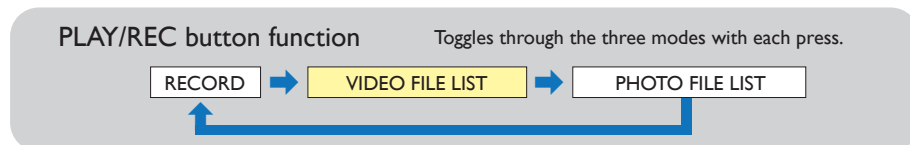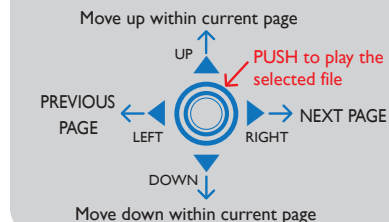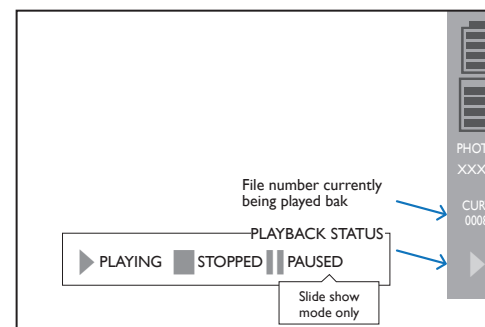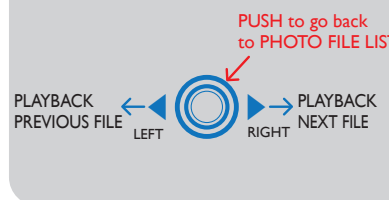   Change the page by pressing the MENU SELECT button LEFT/RIGHT.

PLAY/REC button function   Toggles through the three modes with each press.

RECORD ➡ VIDEO FILE LIST ➡ PHOTO FILE LIST

PHOTO FILES		[PAGE 1/N]	
FILE#	REC	DATE Y/D/T	
0010	20YY/MM/DD	HH:MM:SS	
0009	20YY/MM/DD	HH:MM:SS	
0008	20YY/MM/DD	HH:MM:SS	
0007	20YY/MM/DD	HH:MM:SS	
0006	20YY/MM/DD	HH:MM:SS	
0005	20YY/MM/DD	HH:MM:SS	
0004	20YY/MM/DD	HH:MM:SS	
0003	20YY/MM/DD	HH:MM:SS	
0002	20YY/MM/DD	HH:MM:SS	
0001	20YY/MM/DD	HH:MM:SS	

PHOTO XXXX

MENU SELECT button function
(PHOTO PLAYBACK: PHOTO FILE LIST)

Move up within current page

UP

PUSH to play the selected file

PREVIOUS PAGE ◀ LEFT   RIGHT ▶ NEXT PAGE

DOWN

Move down within current page

2. Play back the selected file.

Push the MENU SELECT button in to play back the selected file.

File number currently being played bak

PLAYBACK STATUS

▶ PLAYING ■ STOPPED ‖ PAUSED

Slide show mode only

PHOTO XXXX
CURT. 0008
▶

MENU SELECT button function
(PHOTO PLAYBACK: During playback)

PUSH to go back to PHOTO FILE LIST

PLAYBACK PREVIOUS FILE ◀ LEFT   RIGHT ▶ PLAYBACK NEXT FILE

Pressing the MENU SELECT button return to the photo file list.

If the SETUP MENU for photo playback mode is set to "SLIDE SHOW", pressing the ASST SELECT button will pause playback. Press ASST SELECT button again to resume playback.
Push the MENU SELECT button in to return to the video file list.
Pressing the MENU SELECT or PLAY/REC SELECT button will end playback and return to the photo file list.

7-3. Setup Menu Details

The SETUP MENU consists of four pages, PAGE 1/4 to PAGE 4/4.
During RECORD MODE, however, display is limited to the camera settings page.
Currently selected item is highlighted with grey background.

Displaying the SETUP MENU

The SETUP MENU is displayed in the viewfinder and the monitor (HDMI output) when the MENU SELECT
button (#17 on P4) is pressed and held down while the camera is in RECORD MODE.

MENU SELECT / CURSOR KEY button operation
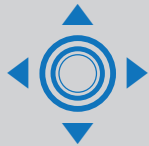
1）UP/DOWN KEY：Moves the cursor within in the current page to
select a menu item.
2）LEFT/RIGHT KEY：Changes the setting choices for the current
menu item.
3）PUSH：Enters the selected choice for the menu item.

Changing the SETUP MENU page

Select the PAGE display at the top of the page, then use the LEFT/RIGHT control or
push the MENU SELECT button in to change the SETUP MENU page.

Exiting the SETUP MENU

Select the EXIT display at the bottom of the page and push the MENU SELECT button in
to exit the SETUP menu, or press the PLAY/REC SELECT button to exit the SETUP MENU
at any time. The menu display will also disappear after 60 seconds of interface inactivity.

SETUP MENU PAGE 1/4

```
            SYSTEM   SETUP            (PAGE 1/4)

      AE   MODE                    FULL   AUTO
        SHUTTER   SPEED            1/100
      AE       LEVEL
      WHITE   BALANCE              AUTO   W/T
      DYNAMIC   N/R                HIGH
      FOG   MODE                   OFF
      EDGE
      CHROMA   GAIN
      BACKLIGHT   CMP.             OFF
      V/F   BRIGHT

                    EXIT
```

1. AE MODE ▶ Automatic Exposure Setting

FULL AUTO — Automatically adjusts the shutter speed and gain for best image levels.
When DC Iris Lens is used, the iris settig is also automatically adjusted.
FULL AUTO setting is recommended for normal use.
（The factory setting is FULL AUTO.）
※Works on Color/IR modes

TIME VALUE — Fixes the shutter speed and attempts to get the best image levels by adjust-
ing the gain (and iris when used with DC Iris Lens).
A fast-moving subject may be recorded with more clarity by setting a fast
shutter speed. Fluorescent light flicker may be reduced by setting an optimal
shutter speed（1/100 shutter speed for 50Hz power frequency, for example).

SHUTTER SPEED — The shutter speed can be set to desired value when AE MODE is set to TIME
VALUE. The following shutter speeds may be chosen:
1/8, 1/15, 1/30, 1/60, 1/100, 1/125, 1/250,1/500,
1/1000, 1/2000, 1/4000, 1/10000

2. AE LEVEL ▶ Adjusting the Automatic Exposure convergence level

-100～10 — Move the marker to the right for brighter setting.
Choose the best setting for actual conditions.
※Works on Color/IR modes

3. WHITE BALANCE ▶ White Balance Setting

Choose from seven presets and two automatic settings depending on the light source and actual
recording conditions.
※Works on Color mode only

BLUE SKY — Use in clear sky conditions outdoors.

NEUTRAL — Use for white fluorescent lighting.

SHADE — Use in the shade.

INCANDESCENT — Use for incandescent bulb lighting.

DAYLIGHT — Use for fluorescent lighting with daylight color temperature

CANDLE — Use for candlelight conditions.

OVERCAST — Use in overcast conditions outdoors.

AUTO W/T — Continually adjusts the white balance at appropriate levels. Use this as the default setting.

AUTO W/B [PUSH] — Point the camera at a white object and push the MENU SELECT button in to adjust the white
balance automatically (the indicator displays "---" while the white balance is being adjusted).
The display changes from OK to PUSH once the adjustment is completed normally.
Effective as long as the lighting conditions stays constant. If the adjustment does not
complete normally ("NG" is displayed), change the AE Level and try again.

4. DYNAMIC N/R ▶ Noise Reduction Setting

HIGH ‥‥‥‥‥‥ Strongest noise reduction setting.
Prioritizes the S/N ratio, but may cause ghosting in low light conditions.
Use this as the default setting.

OFF ‥‥‥‥‥‥ Turns noise reduction off.

LOW ‥‥‥‥‥‥ Moderate noise reduction setting.
※Works on Color/IR modes

5. FOG MODE ▶ Fog Mode Setting

OFF ‥‥‥‥‥‥ Use this as the default setting.

ON ‥‥‥‥‥‥‥ FOG MODE is effective for cutting through fog and smoke. Narrowed image contrast range under foggy and smoky conditions is automatically stretched.

About FOG MODE ON/OFF

FOG MODE on KC-2000MKⅡ is effective for use in low image contrast and low clarity conditions such as fog, mist and smoke. KC-2000MKⅡ attempts to sharpen the image in this mode, even when it is difficult to see with the naked eye.

The FOG MODE is effective only when at least a vague outline of the subject or the background is somewhat visible through the fog/mist/smoke.
If the fog/mist/smoke is so thick that nothing can be seen, FOG MODE won't be able to improve the image.
※Works on Color/IR modes

6. EDGE ▶ Edge Enhancement Setting

The level of edge enhancement can be adjusted here to emphasize the camera image outlines.
※Works on Color/IR modes

7. CHROMA GAIN ▶ Chroma Gain Setting

The level of chroma gain for the camera image can be adjusted here.
※Works on Color/IR modes

8. BACKLIGHT CMP. ▶ Compensation Setting for Backlight Conditions

OFF ‥‥‥‥‥‥‥‥‥‥‥‥‥‥ No backlight compensation（Use this as the default setting）.
ON ‥‥‥‥‥‥‥‥‥‥‥‥‥‥ Compensates for backlight conditions（ignores the bright areas）
SPOT（CENTER）‥‥‥‥‥‥‥ Use only the center of the picture for exposure adjustment.
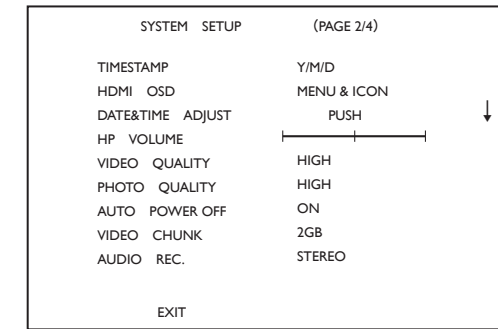(The entire picture is normally used for exposure adjustment.)
※Works on Color/IR modes

9. V/F BRIGHT ▶ Viewfinder Brightness Setting

Brightness level for the viewfinder can be adjusted here.
※Works on Color/IR modes

SETUP MENU PAGE 2/4

```
          SYSTEM  SETUP         （PAGE 2/4）

     TIMESTAMP              Y/M/D
     HDMI   OSD             MENU & ICON
     DATE&TIME   ADJUST          PUSH          ↓
     HP   VOLUME          ├─────┼─────┤
     VIDEO   QUALITY        HIGH
     PHOTO   QUALITY        HIGH
     AUTO   POWER OFF       ON
     VIDEO   CHUNK          2GB
     AUDIO   REC.           STEREO


          EXIT
```

1. TIMESTAMP ▶ Time and Date Setting

The time and date values can be set here to superimpose on the picture.

Y/M/D ‥‥‥‥‥‥‥‥‥‥ Year/Month/Date Time
M/D/Y ‥‥‥‥‥‥‥‥‥‥ Month/Date/Year Time
D/M/Y ‥‥‥‥‥‥‥‥‥‥ Date/Month/Year Time
OFF ‥‥‥‥‥‥‥‥‥‥‥ Timestamp will not be superimposed on the picture.

2. HDMI OSD ▶ Menu & Icon Display Setting

Turns the menu and icon display ON/OFF for the HDMI monitor screen.

MENU & ICON ‥‥‥‥‥‥ Display both the menu and the icon
MENU ‥‥‥‥‥‥‥‥‥‥ Display the menu only
ICON * ‥‥‥‥‥‥‥‥‥‥ Display the icons only
OFF * ‥‥‥‥‥‥‥‥‥‥ No display

*ICON & OFF settings cannot be selected using the monitor display without the menu visible.
Please use the viewfinder screen to select.

3. DATE&TIME ADJUST ▶ Clock Setting

Push the MENU SELECT button in to switch to the clock setting submenu.

After setting the date and time in the clock setting submenu, move the cursor to
SET PUSH and push the MENU SELECT button in to enter the new values.

There are two ways to exit the clock setting submenu:
- Move the cursor to RETURN and push the MENU SETTING button in => Return to SETUP MENU
- Press the PLAY/REC SELECT button => Exit the SETUP MENU

4. HP VOLUME ▶ Headphone Volume Adjustment

The headphone audio volume can also be adjusted with the UP/DOWN key action of the MENU
SELECT button even when the menu is not showing.

5. VIDEO QUALITY ▶ Video Record Quality Setting

・HIGH ： 12Mbps ⋯ Higher quality for video editing, etc.（Default setting is HIGH）
・STD ： 8Mbps ⋯ Standard video quality.
・LOW ： 4Mbps ⋯ Lower quality for recording subjects with little movement or when long recording
　　　　　　　　　　　time is desired. May notice more block noise and artifacts for fast moving subjects
　　　　　　　　　　　and noisy conditions.

APPROX. RECORDING TIME IN STEREO MODE.

HIG	300 min (32GB)
STD	420 min (32GB)
LOW	720 min (32GB)

※Works on Color/IR modes

6. PHOTO QUALITY ▶ Photo/Still Image Quality Setting

・HIGH ⋯⋯⋯⋯⋯ Keeps the compression ratio low for high quality photos.（Default setting is HIGH）
・STD ⋯⋯⋯⋯⋯ Standard photo quality.
・LOW ⋯⋯⋯⋯⋯ Highest compression setting. Allows more photographs to be stored onto the SD
　　　　　　　　　memory card, but there will be more block noise.

7. AUTO POWER OFF ▶ Power Saving Mode Setting for Battery Power

OFF ⋯⋯⋯⋯⋯ Turns the power saving mode OFF.
ON ⋯⋯⋯⋯⋯ When ON, turns the camera OFF when there is no activity for more than 5 minutes,
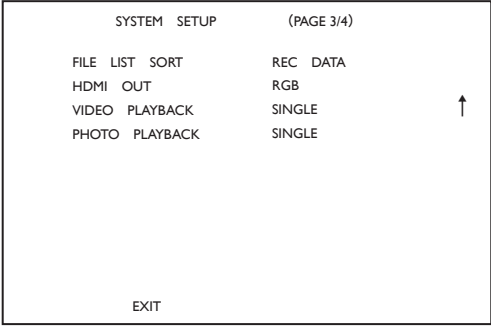　　　　　　　except while recording or playing back. （Default setting is ON）

8. VIDEO CHUNK ▶ Video Segmentation Setting for Long Recordings

2GB ⋯⋯⋯⋯⋯ Automatically segments the video file at approximately 2GB each.
10MIN. / 5MIN. / 1MIN. ⋯⋯⋯ Automatically segments the video file at selected lengths of recording time.
　　　　　　　　　　　The two lower digits of the file number increments from 1 ～ 99 every time
　　　　　　　　　　　a file is segmented. There will be video and audio discontinuity at segment
　　　　　　　　　　　boundaries. Damage from possible file damage may be minimized if files are
　　　　　　　　　　　set to be segmented at a short time interval.

9. AUDIO REC ▶ Audio Record Setting (Affects available video recording time.)

STEREO ⋯⋯⋯⋯ Record with 2ch stereo audio.
MONO ⋯⋯⋯⋯ Record with monaural audio (combines L+R channels into one).
NONE ⋯⋯⋯⋯ Does not record audio.

SETUP MENU PAGE 3/4

```
            SYSTEM   SETUP            （PAGE 3/4）

        FILE   LIST   SORT            REC   DATA
        HDMI   OUT                    RGB
        VIDEO   PLAYBACK              SINGLE              ↑
        PHOTO   PLAYBACK              SINGLE




                    EXIT
```

1. FILE LIST SORT ▶ File List Sort Order Setting for Playback Menu

FILE NUMBER ⋯⋯⋯⋯ Order of File Number ↓ Ascending ☒ Descending
REC DATE ⋯⋯⋯⋯ Order of Recording Date ↓ Older first (FIFO) ☒ Newer first (LIFO)

2. HDMI OUT ▶ HDMI Video Output Format Setting

RGB ⋯⋯⋯⋯⋯ This setting is recommended for most cases.
YPbPr ⋯⋯⋯⋯⋯ Select this setting if HDMI monitor has problems displaying video with
　　　　　　　　the RGB setting.

3. VIDEO PLAYBACK ▶ Video Playback Mode Setting

SINGLE ⋯⋯⋯⋯⋯ Playback the currently selected file only.
SINGLE REPEAT ⋯⋯⋯ Repeat (loop) playback of the currently selected file.
CONTINUOUS ⋯⋯⋯ Playback all files in order of appearance in the FILE LIST.

4. PHOTO PLAYBACK ▶ Photo Playback Mode Setting

SINGLE ⋯⋯⋯⋯⋯ Playback the currently selected file only.
SLIDESHOW（5s） ⋯⋯ Playback all files in order of appearance in the FILE LIST, 5 seconds each.
SLIDESHOW（10s） ⋯⋯ Playback all files in order of appearance in the FILE LIST, 10 seconds each.

SETUP MENU PAGE 4/4

```
            SYSTEM   SETUP           （PAGE 4/4）

         NAME                    KC-2000MKⅡ
         VERSION
                      MAIN        0.00
                      DSP         00.00.00.00

         SD   CARD   FORMAT         PUSH


         FACTORY   RESET            PUSH

                      EXIT
```

1. NAME ······································· Product name

2. VERSION ······························· Product version

3. SD CARD FORMAT ▶ Formatting the SD memory card

Select PUSH and press the MENU SELECT button to switch to the submenu.

Select EXECUTE and press the MENU SELECT button to start formatting the SD memory card.

The entire content of the SD memory card will be erased.

There are two ways to exit the submenu:
 - Select RETURN with the cursor and press the MENU SELECT key => Return to the SETUP MENU.
 - Press the PLAY/REC SELECT button => Exit the SETUP MENU

4. FACTORY RESET ▶ Resetting the camera

Select PUSH and press the MENU SELECT button to reset all camera settings to the original factory setting.

8. Specifications

■CAMERA SECTION

IMAGE SENSOR	Single-plate CMOS / RGB Bayer array
IMAGE SIZE	approx. 2.6M pixels 2270（H）× 1144（V）
EFFECTIVE IMAGE SIZE	approx. 2.2M pixels 1974（H）× 1100（V）
PIXEL SIZE	5μm（H）× 5μm（V）
OPTICAL SIZE	2/3 inch
SCAN METHOD	Progressive
SENSITIVITY	F11 2000 lx
MINIMUM ILLUMINATION	0.005lx（1/30、50IRE、+72dB）
HORIZONTAL RESOLUTION	Over 650TV lines
S/N RATIO	Over 50dB（γ=1, edge enhancement OFF）
VIEWFINDER	0.45"WVGA LCOS（852（H）× 480（V）appro. 410k pixels）

AE MODE	FULL AUTO TIME VALUE	Automatic exposure using shutter speed and gain. Shutter speed selectable from the following: 1/8,1/15,1/30,1/60,1/100,1/125,1/250, 1/500,1/1000,1/2000,1/4000,1/10000
WHITE BALANCE	7 fixed patterns; 2 automatic adjustment modes（W/T or W/B PUSH）	
DNR	OFF / LOW / HIGH	
FOG	OFF / ON	
EVF BRIGHT	Electronic viewfinder brightness adjustment range 30% ～ 100%	
ELECTRONIC ZOOM	2 x electronic zoom for focus assist	
AVAILABLE SETTINGS	TIME STAMP	OFF / ON
	HDMI OSD	OFF / ON
	DAY&TIME ADJUST	YY,MM,DD,HH,MM,SS
	AE LEVEL	Continuous slide control -100% ～ 10%
	CHROMA GAIN	Continuous slide control
	EDGE	Continuous slide control
IR MODE	ON/OFF	

■STORAGE SECTION

STORAGE MEDIA	SD CARD Class4 or better
VIDEO RECORDING TIME	HIGH MODE：approx. 300 minutes（32GB） (Initially set at Hi mode)
	ＳＴＤ MODE：approx. 420 minutes（32GB）
	ＬＯＷ MODE：approx. 720 minutes（32GB）
PHOTO RECORDING	1 photo per second, up to 9999 photos, simultaneously with video
MEDIA CAPACITY	1 slot (Max. countable frames)
VIDEO/PHOTO CODEC	H.264、JPEG 1280 × 720p 30Hz
FILE SYSTEM	FAT32
RECORDING FILE FORMAT	Video：MOV Photograph/still image：JPEG

■Audio

MIC INPUT	Internal monaural microphone with AGC
	External microphon input Φ3.5mm stereo mini jack x 1 with AGC
HEADPHONE	No internal audio speaker
OUTPUT	Audio output Φ3.5mm stereo mini jack x 1
	Audio output level control available

■General

POWER SOURCE	Battery：DC7.4V IDX model SSL—JVC50
	External DC input：DC10〜16V DC jack Φ2.5 x 5.5
POWER CONSUMPTION	Less than 8W
RECORDING TIME	Approx.4.5hours (room temperature) on fully-charged battery
ENCLOSURE TYPE	Splash-proof, IPX 2（lens excluded)
OPERATIONAL RANGE	Temperature -10〜50°C / relative humidity 30〜90%
STORAGE RANGE	Temperature -20〜60°C / relative humidity 20〜95%（in shipping package)
LENS MOUNT	C mount
CAMERA MOUNT	1/4"-20 UNC
ACCESSORY SHOE	1
EXTERNAL DIMENSIONS	108.0（W）× 100.1（H）× 210.5（D）mm（lens excluded)
WEIGHT	1100g（battery and lens excluded)

9. Dimensions

Φ80mm
(3.15in)

108mm
(4.25in)

100.1mm
(3.94in)

210.5mm
(8.29in)

● Product specifications and appearance are subject to change without notice.

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10. License

10-1. H.264 License

The use of H.264 codec is limited by VC-1 as well as AVC/H.264 patent portfolio licence to personal and non-commercial applications.

In accordance with the license agreement, please limit the use of KC-2000MKⅡ to personal and non-profit applications only. Please see http://www.mpegla.com for details.

Note： Permissible personal and non-commercial uses of VC-1 and AVC/H.264 video codec:

（1）Encoding into VC-1 and AVC/H.264 video for personal and non-commercial applications.

（2）Decoding of VC-1 and AVC/H.264 video data originally encoded during personal or non-commercial applications or by otherwise licensed provider.

10-2. Third Party Software License

This product utilizes third-party software licenses in accordance with the applicable license agreements. Each of the licenses apply to the software itself and not the entier product.

Certain third-party software applications used in this product are licensed as follows:

* GNU General Public License Version 2（GPL）
http://www.gnu.org/licenses/old-licenses/gpl-2.0.html
* GNU Lesser General Public License Version 2.1（LGPL）
http://www.gnu.org/licenses/old-licenses/lgpl-2.1.html

10-3. Obtaining the Source Code for Free Third Party Software

If you wish to obtain the source code for the free, third-party GPL/LGPL software applications used in this product, please contact the product sales distributor. Source code will be provided at cost according to the license agreement.

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11. Lens Selection & Recommendation

KC-2000MKⅡ may be used with a variety of lenses according to application. Please read the following on KC-2000MKⅡ Lens Selection Requirements & Recommendations and Notes on Lens for KC-2000MKⅡ in order to ensure that you get the most out of KC-2000MKⅡ product features and capabilities.

KC-2000MKⅡ Lens Selection Requirements & Recommendations

1. HD-rated lens with more then 2 Megapixels of resolution.

2. Lens with C mount.

3. Lens rated for 2/3" sensors or better.

4. Lens with F rating at least equal to F1.4 or better（use of faster lens will help enhance the capabilities of this product).

5.Manual operation lens.

Notes on Lens for KC-2000MKⅡ

● C Mount Lens

・Install directly

● Lens for Single-Lens Reflex Camera

・Use a C-mount adapter for the SLR camera lens.
・Only the SLR camera lens which allow manual operation may be used.

・Not all SLR camera lens can be used. Please make sure to check the fit before selecting a SLR camera lens, well in advance of actual use.