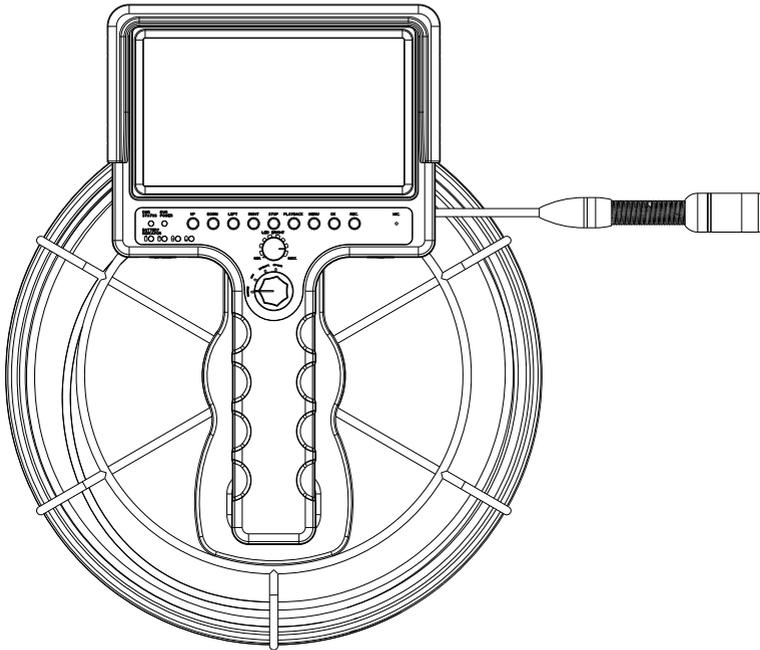


# PIPE & WALL INSPECTION SYSTEM



Read these instructions completely before operating this system.

Please charge the battery first before use.



**INSTRUCTION**

# Brief Introduction

## **Before using, please read the content as follow**

In order to avoid taking inferior movies and damaging the inspection system, please firstly read "Safety Warning" and "Operation Matters".

## **Please consult the manual while using the inspection system in order to be familiar to the inspection system.**

When reading the manual, please try to use the inspection system and know the step of operation.

## **Please test the inspection system before inspecting and pay attention to the matter as follow**

If it is unable to record image and movie due to the fault of inspection system or SD card, and it can not be downloaded to computer. We are sorry that we are unable to recover for the lost data.

## **About copyright**

The copyright law in your country may ban any purpose for using the recorded image in the SD card, except for only personal using.

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# List of Articles

Please check the pack if it contains the items as follow. If so, please contact with the distributor.

Item	Optional	Description	Code
Camera Head & SKIDs		<ul style="list-style-type: none"> <li>• 6mm Camera Head</li> <li>• ø12mm SKID</li> </ul> Read page 11 for more details	C01
		<ul style="list-style-type: none"> <li>• ø23mmX120mm Camera Head</li> <li>• ø40mm SKID &amp; ø80mm SKID</li> </ul> Read page 11 for more details	C02
		<ul style="list-style-type: none"> <li>• ø23mmX141mm Camera Head</li> <li>• 512Hz transmitter inside</li> <li>• ø40mm SKID &amp; ø80mm SKID</li> </ul> Read page 11 for more details	C03
		<ul style="list-style-type: none"> <li>• ø17mmX21mm Camera Head</li> <li>• ø24mm SKID</li> </ul> Read page 12 for more details	C04
		<ul style="list-style-type: none"> <li>• ø23mmX35mm Camera Head</li> <li>• ø40mm SKID &amp; ø80mm SKID</li> </ul> Read page 12 for more details	C05
		<ul style="list-style-type: none"> <li>• ø23mmX27mm Camera Head</li> <li>• ø40mm SKID &amp; ø80mm SKID</li> </ul> Read page 12 for more details	C06
DVR		<ul style="list-style-type: none"> <li>• Standard type</li> </ul> Read page 13 for more details	K01
		<ul style="list-style-type: none"> <li>• Movie record &amp; picture snap</li> <li>• Storage medium: SD card(max 32G)</li> </ul> Read page 14 for more details	K02

Item	Optional	Description	Code
DVR		<ul style="list-style-type: none"> <li>● Movie record &amp; picture snap</li> <li>● Storage medium: SD card(max 32G)</li> <li>● OSD Interface Operation</li> </ul> Read Page 14 for more details	K03
Suitcase		<ul style="list-style-type: none"> <li>● 480(L)X415X200(H)mm</li> <li>● Fire board &amp; Aluminum alloy</li> </ul> Read page 17 for more details	B01
		<ul style="list-style-type: none"> <li>● 460(L)X370X180(H)mm</li> <li>● Engineering Plastics</li> </ul> Read page 17 for more details	B02
		<ul style="list-style-type: none"> <li>● 520(L)X435X200(H)mm</li> <li>● Engineering Plastics</li> </ul> Read page 17 for more details	B03
Keyboard		<ul style="list-style-type: none"> <li>● Hard Keyboard</li> <li>● Size: 220(L)X110(W)X15(H)mm</li> </ul> Read page 18 for more details	J01
		<ul style="list-style-type: none"> <li>● Soft Keyboard</li> <li>● Size: 323(L)X130(W)X11(H)mm</li> </ul> Read page 18 for more details	J02
Microphone		<ul style="list-style-type: none"> <li>● Frequency response: 20-20KHz</li> <li>● Sensitivity: -47DB±2DB</li> <li>● Output impedance: ≤2.2KΩ</li> <li>● Line Length: 1m</li> </ul>	

Item	Standard	Description	Code
Cable Wheel	√	<ul style="list-style-type: none"> <li>● ø320mmx110(h) cable wheel</li> <li>● ø5mm cable diameter</li> <li>● Cable counter</li> </ul>	
Charger	√	<ul style="list-style-type: none"> <li>● Input: AC100-240V~50/60Hz</li> <li>● Output: DC 12V/1000MA</li> <li>● DC plug diameter: 2.1mm</li> </ul>	
Li-ion Battery	√	<ul style="list-style-type: none"> <li>● Total Power: 14W</li> <li>● Charge time: 5hours</li> <li>● Protective voltage: 8.1V</li> <li>● Work time: ≧260minutes</li> </ul>	
Connection Wire	√		
Screw Driver	√		
Waterproof Rubber	√		
Manual	√		

# Operation Matters

## Inspection System

- Avoid using the device in extremely cold, heat, or humidity environment, it may damage the device.
- Do not drop or press hard on the device.
- Warranty invalidation if the device is disconnected by users or has any physical damages.
- Always back up your data before connecting your SD device to this system. The manufacturer is not responsible for any data damage on your device for any reason.
- Do not disconnect the unit while recording or playing. It may damage the unit and/or the SD device.
- Do not place the drop or subject it to physical impact.
- Do not use this device near objects having strong magnetic fields, such as magnet or motor. In addition to avoid equipment emit radio waves near the object, such as antenna. Strong magnetic field may cause equipment malfunction or failure of image data.
- Do not use this device in high temperature place. High temperature may lead to equipment failure.
- If you do not use the device for a long time, remove the battery and the device is placed in a cool dry place with good ventilation. Please store for a long time during boot time, to confirm whether the device can work normally.
- If the device is not used for a long time, please test before use all functions.

## LCD monitor

- Although the LCD monitor with precision manufacturing technology, the effective pixel is more than 99.9%, but in the remaining 0.1% or below the pixel may have some display only in black or red pixels. Bad points are not failures. Dead does not affect the image recording effect.
- If the LCD monitor long time remains open, the screen may appear abnormal, from the screen can see the afterimage image display. However, this situation is only temporary, after a few days without the use of equipment, it will disappear.
- The LCD monitor at low temperature may be slower, or at high temperature is more black. It will return to normal at room temperature.

## Memory Card

In order to protect the memory card and the recorded data is not damaged, please note the following:

- Do not drop, the memory card is bent or wet. Please do not to apply too much force, the impact or vibration.
- Do not use electronic contact fingers or any metal items contact storage card.
- Do not paste any stickers on the memory card.
- Do not have any strong magnetic objects near the store or use the memory card, such as TV, speaker or magnet. In addition to avoid easy place to produce electricity.
- Do not put the memory card in the sunlight or near sources of heat.
- The memory card is stored in the box.
- Do not put the memory card stored in high temperature, dusty or humid environments.

### **Note (The use for a long time)**

If the equipment is used for a long time, the camera will become hot. Although this is not a fault, but touch the heating camera may cause slight skin burns.

# Safety Warning

## Please read the following safety warnings carefully

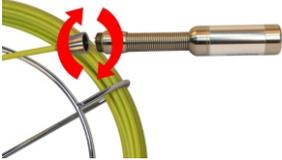
- Please follow these safety precautions and the proper use of equipment, to avoid personal injury, death and damage.
- Please follow the following security issues, to avoid overheating, fire, chemical leakage and explosion accident.
- Do not use any other non battery, power supply and annex the specification specified. Do not use homemade batteries or refit battery.
- Do not short-circuit the battery, disassemble or refit battery. Please don't make the battery overheating or the welding. Please don't make the battery close to a fire or water. Please don't make the battery received violent physical impact.
- Do not allow the in temperature range of 0 DEG -40 DEG C (32 DEG F-104 DEG F) than to charge the battery. Please don't exceed the charging time.
- Do not use any other metal objects into the machine, accessories, electronic contact connection line.
- Discard the battery, please use the tape to battery electronic contact insulation, avoid contacting with other metal objects or battery, to avoid fire or explosion.
- The battery charging process, if there is overheating, smoke and odor, please immediately from the power socket unplug the battery charger to stop charging, avoid the occurrence of fire.
- When charging the battery, please put the device in children's reach. Power line may lead to children accidental suffocation or make it an electric shock.
- Please do not make any power line near the heat source, otherwise it will make the power line heating deformation or melting of the insulating layer, and cause a fire or electric shock accident.
- Do not use accessories store, please cut off the power. This can avoid the shock, fever or cause a fire.
- Do not use the machine in a combustible gas environment to avoid explosion or fire.
- This equipment has not completely waterproof, do not put the water or rain, so as not to affect the electrical performance of the result can not be used.
- If the equipment fall caused by shell rupture and expose the inner parts, do not touch the internal parts to avoid electric shock.
- Do not disassemble or remodel the equipment. Internal parts of the high voltage electric shock may happen.
- Do not use the equipment stored in the dusty or humid, corrosive environment to avoid aging equipment cannot be used normally.

# Quick Start Guide

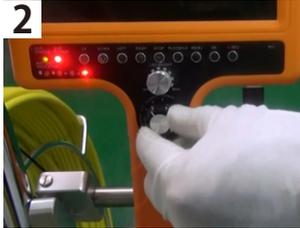
## Important:

When connecting the camera to the cable wheel, the power must be off.

1



2



3



1. Connect the camera to the cable wheel
2. Turn the switch knob to "ON/BATT" position, the battery level indicators show the capacity of battery, other indicators show that the DVR works now
3. The monitor displays the starting interface

4



5



4. Use the inspection system in certain dark area
5. The images will show on the screen

# 1 Know your tools

## Camera

C01		
	Head Dimension:	ø6mm
	View angle:	60°
	Lens Cover:	Glass
	LEDs:	4PCS white LEDs
	Waterproof:	IP65

C02		
	Head Dimension:	ø23mmX120mm(length)
	Sensor:	1/4 inch color
	View Angle:	120° wide angle
	Lens Cover:	Sapphire glass
	LEDs:	12PCS white LEDs
	Waterproof:	IP68

C03		
	Head Dimension:	ø23mmX141mm(length)
	Sensor:	1/4 inch color
	View Angle:	120° wide angle
	Transmitter:	512Hz transmitter
	LEDs:	12PCS white LEDs
	Waterproof:	IP68

C04		
	Head Dimension:	ø17mmX21mm
	Sensor	1/4 inch
	View angle:	60°
	Lens Cover:	Sapphire glass
	LEDs:	6PCS white LEDs
	Waterproof:	IP68

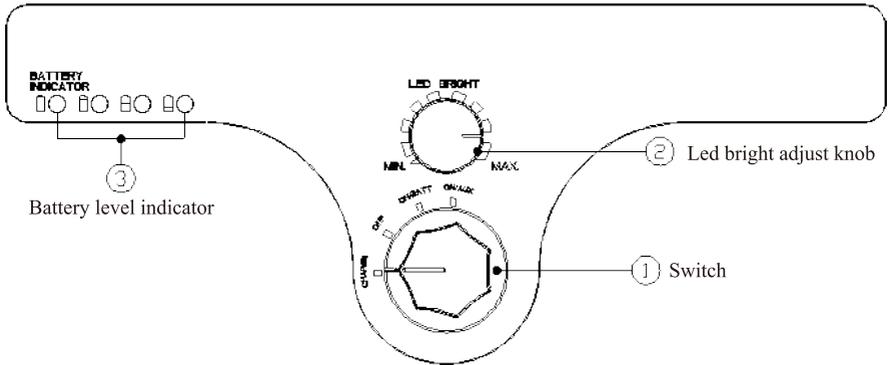
C05		
	Head Dimension:	ø23mmX35mm(length)
	Sensor:	1/4 inch color
	View Angle:	120° wide angle
	Lens Cover:	Sapphire glass
	LEDs:	12PCS white LEDs
	Spring length:	ø22.6mmX200mm(length)

C06		
	Head Dimension:	ø23mmX27mm(length)
	Sensor:	1/4 inch color
	View Angle:	120° wide angle
	Lens Cover:	Sapphire glass
	LEDs:	12PCS white LEDs
	Spring length:	ø14.2mmX100mm(length)

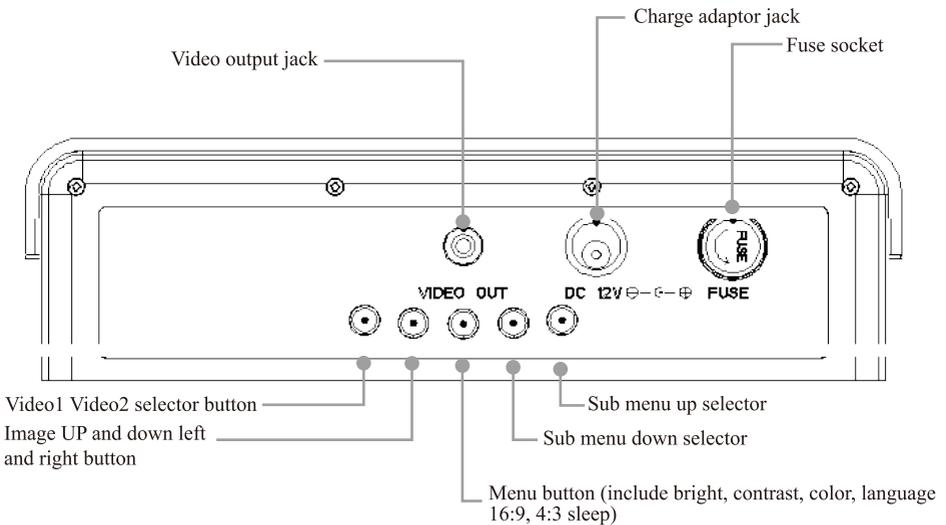
# DVR

K01

## DVR(Positive)

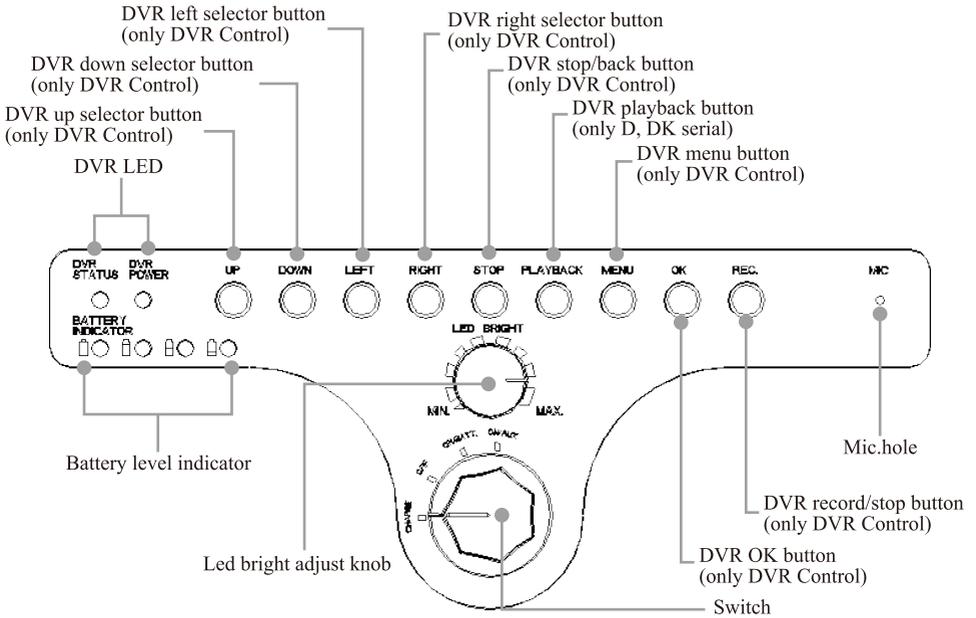


## DVR(Back)

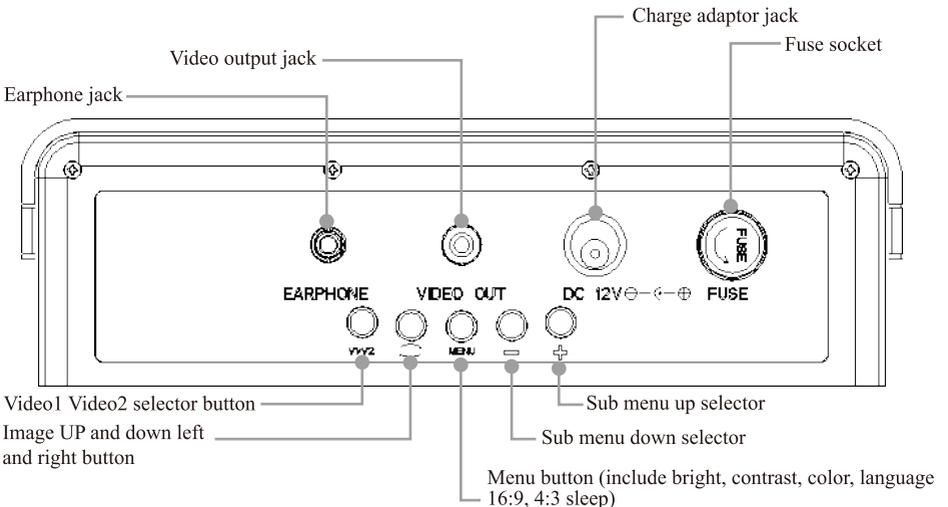


K02 & K03

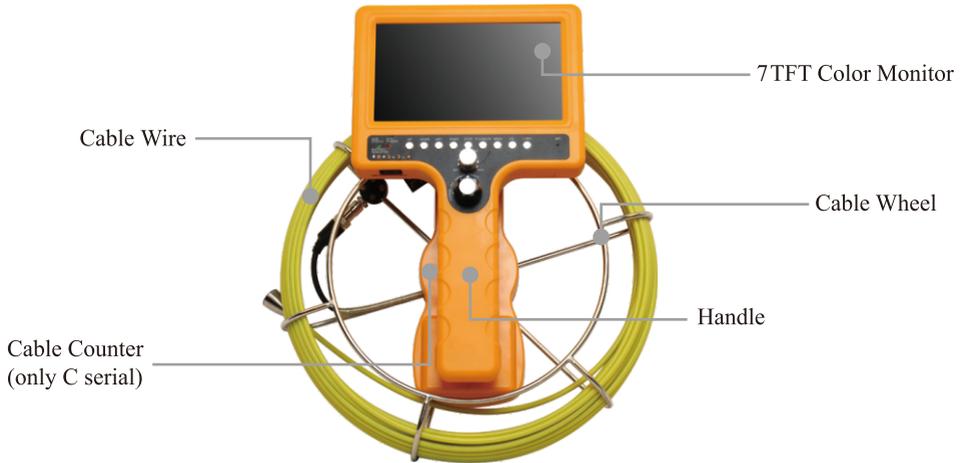
DVR(Positive)



DVR(Back)

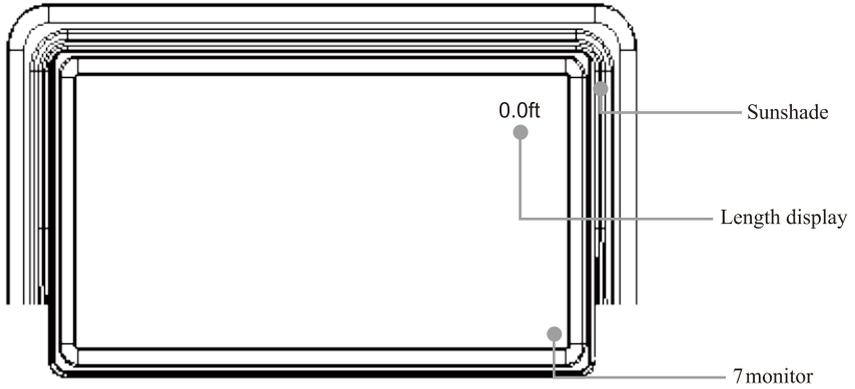


# Cable Wheel



Cable Wheel:	ø320mmX110(h)
Wire Material:	Fiberglass rod
Wheel Material	Stainless steel
Cable Diameter:	ø5.0mm
Cable Counter:	Metric & imperial counter

# Monitor



Size:	7 inch
Resolution:	1440X234 pixels
Osd Language:	English
Ratio:	16:9 & 4:3

# Suitcase

B01		
	Case Dimension:	460(L)X370(W)X180(H)mm
	Material	Engineering plastics
	Empty Weight:	3.8KG
	Color	Green / Black

B02		
	Case Dimension:	480(L)X415(W)X200(H)mm
	Material	Aluminum alloy
	Empty Weight:	3.4KG
	Color	Black

B03		
	Case Dimension:	520(L)X435(W)X200(H)mm
	Material	Engineering plastics
	Empty Weight:	5.9KG
	Color	Orange / Green / Black

# Keyboard

J01		
	Keyboard Size:	220(L)X110(W)X15(H)mm
	Language:	English
	Interface:	USB
	Text Edit Line:	PAL 28letter 15line
		NTSC 26letter 12line
	Max Edit Page:	4pages

J02		
	Keyboard Size:	323(L)X130(W)X11(H)mm
	Language:	English
	Interface:	USB
	Text Edit Line:	PAL 27letter 14line
		NTSC 27 letter 12line
	Max Edit Page:	4pages

## 2 Preparation Before Using

### Charge The Battery

- If the status LEDs on the battery is under lower level, please charge the battery.
- When you firstly use this inspection system, please charge the battery.



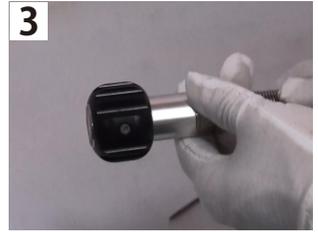
1. Connect the charger to the socket



2. Connect the plug to the charger, the indicator of charger will turn into red. When the Li-ion battery is full of power, the indicator of charger will turn into green.

# SKID Assemble

- Please assemble the SKID before using this inspection system.
- The SKID will protect and stabilize the camera head.



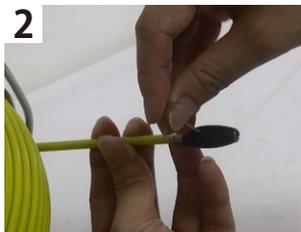
## 40mm SKID and 23mm camera head

1. Set the SKID in the camera head
2. Fasten the SKID with a screwdriver by tightening its screws.
3. The SKID assemble completed



## 80mm SKID and 23mm camera head

1. Set the SKID in the camera head
2. Fasten the SKID with a screw rod by tightening its screws.
3. The SKID assemble completed



## 12mm SKID and 6mm camera head

1. Set the SKID in the camera head
2. Fasten the SKID with a screw rod by tightening its screws.
3. The SKID assemble completed



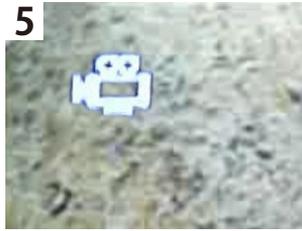
# 3 Basic Operation

## Video & Picture Recording

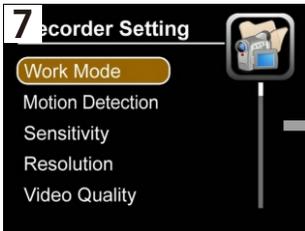
Note: This operation is not suitable for the control box which don't have the recorded function.



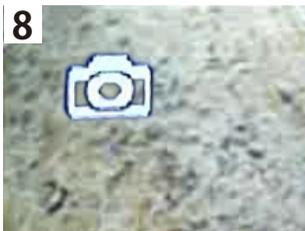
1. Insert the SD card to the slot(note: The SD card must be flipped to its back)
2. Press the "REC" button
3. The screen shows the "REC" letters and the recorded time after pressing the "REC" button



4. Press the "REC" button again
5. The screen shows the DV icon again, the movie has already been recorded
6. Press the "menu" button, go to "Recorder Setting"



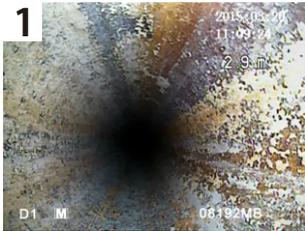
7. According to these steps, set the option of the system



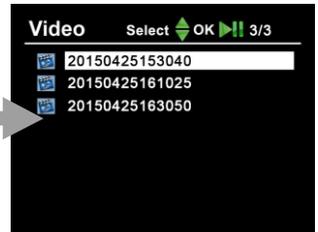
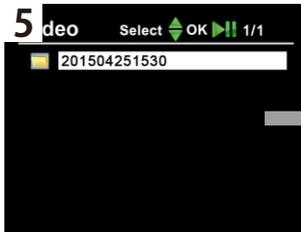
8. The screen shows the camera icon
9. Press the "REC" button to snap picture

# Event Playback

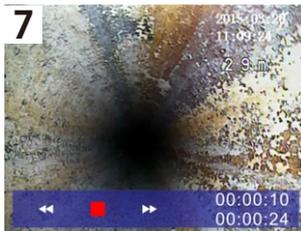
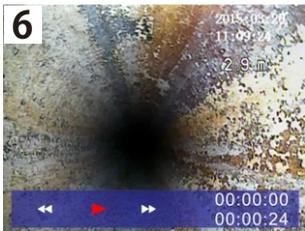
Note: This operation is not suitable for the control box which don't have the recorded function.



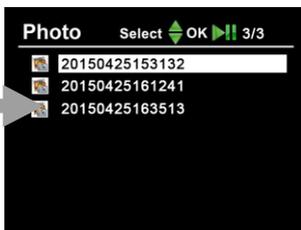
1. The screen is in the state of recording
2. Press the "PLAYBACK" button
3. The screen shows the "Event Playback" interface



4. Press the "OK" button to enter the "Video Files"
5. Select the file what you want



6. The monitor plays the video
7. Press the "OK" button to pause the video



8. Select the photo files what you want
9. The monitor displays the photo

# Brightness Adjustment & Cable Counter

## Brightness Adjustment



1. Rotate the brightness adjustment knob in a clockwise direction, the LEDs will become more and more bright

## Cable Counter

Note: This operation is not suitable for the control box which don't have the recorded function.



1. Press the "METRIC/IMPERIAL" button to alternate metric and imperial unit



2. Press the "RESET" button to reset the value of cable length

## Main Interface

Note: This operation is not suitable for the control box which don't have the recorded function.



## Recorder Setting



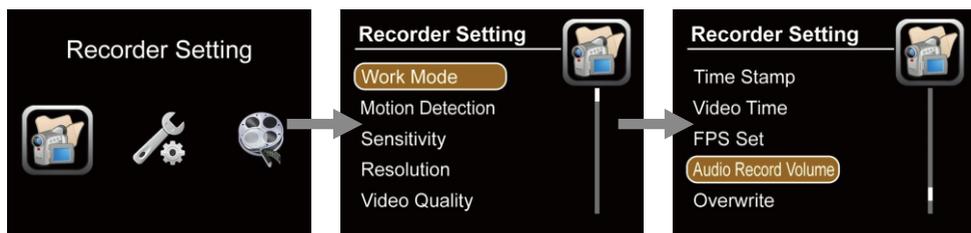
## System Setting



## Event Playback

# Recorder Setting

Note: This operation is not suitable for the control box which don't have the recorded function.



## Work Mode

- Video: Record video by manual
- Photo: Snapshot photo by manual
- Audio: Record audio by manual

## Motion Detection

- Off: Stop the motion detection
- On: Start the motion detection

## Sensitivity

- High: The full area will be detected
- Medium: The 1/2 area will be detected
- Low: The 1/4 area will be detected

## Resolution

- 720X576
- 720X480
- 640X480

## Video Quality

- High: High resolution
- Medium: Standard resolution
- Low: Low resolution

## Time Stamp

- Off: Time stamp will not be showed on the screen
- On: Time stamp will be showed on the screen

## Video Time

It can choose the video file length

- 5 Min: 5 minutes recorded video
- 10 Min: 10 minutes recorded video
- 15 Min: 15 minutes recorded video
- 30 Min: 30 minutes recorded video
- 30 Min: 30 minutes recorded video
- 60 Min: 60 minutes recorded video

## FPS Set

- 15 FPS: 1 second 15FPS picture
- 30 FPS: 1 second 30FPS picture

## Audio record volume

Work with audio record mode

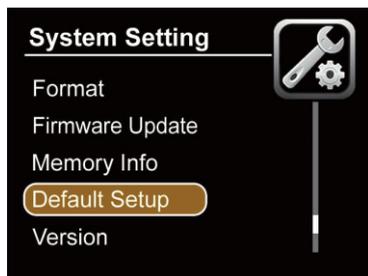
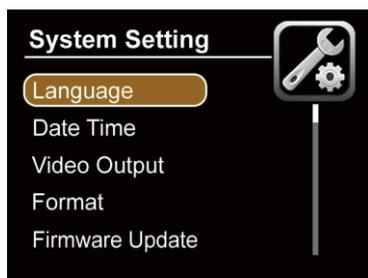
- 10 level can be adjusted

## Overwrite

- Off: The recording will be stop when the disk full
- On: The recording will be overwrite the old one video files when the disk full

# System Setting

Select “System Setting” icon enter into System Setting, press DVR down selector button to display more options.



## Language

- English (English only)

## Date Time

- Choose Date Time press “OK” to confirm
- Press “←, →” key to choose items
- Press “↑, ↓” to set

## Video Output

- It can be chosen PAL or NTSC mode to fit your monitor and TV Video Output.

## Format

- No: The system will not format the SD card.
- Yes: The system will format the SD card.  
(caution: PLS backup the data of the SD card before operating)

## Firmware Update

- No: The system will not be updated.
- Yes: The system will be updated.

## Memory info

- All: The SD full capacity.
- Free: The SD free capacity.

## Default Setup

- No: Customer set
- Yes: Factory set

## Version

- Booc.12.11.05 ( soft Version)

# Event Playback & Delete Files

Select “Event playback” icon enter into System Setting, press DVR down selector button to display more options.

## Event Playback



### Video files

- All recording video files store inside

### Photo files

- All snap photo files store inside

### Audio files

- All recording audio files store inside

### All files

- All the file inside of the SD card

## Delete Files

Please make sure the files you really want to delete, the files won't be found after deleting.

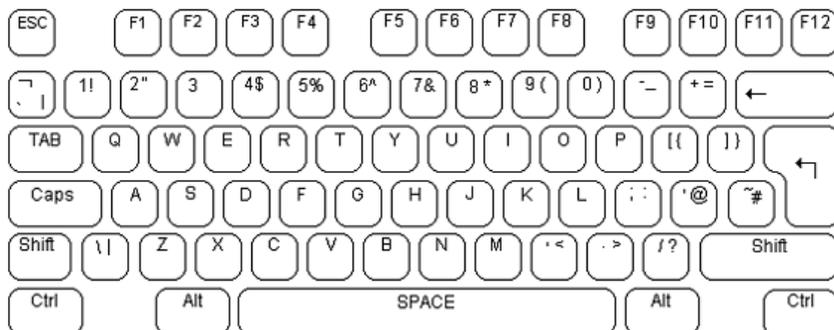


- Press “Playback” key to find the files
- Press “menu” to choose the file you want to delete, one and all.
- Press “OK” to delete it

# 5 OSD Operation

## OSD Operation

Note: This operation is not suitable for the control box which don't have the OSD function.



The font and text size are fixed and cannot be changed.

The basic operation of the text overlay unit is straight forward. A flashing underscore cursor indicates the current screen position. This cursor can be moved the screen by the keyboard cursor keys. The cursor will wrap around the screen left and right, top and bottom. If no key is pressed then the cursor will disappear after approximately ten seconds. The video text overlay unit uses the standard US keyboard mapping. Standard US keyboard mapping used by the video text overlay unit. By default all US units are supplied with this.

The alphanumeric characters in the QWERTY section of the keyboard and the keys of the numeric keypad can be typed directly to the screen as would normally be expected. Each alphabetic character key is normally lowercase. Uppercase characters can be typed by holding down the shift key or pressing the CAPS LOCK key. The keyboards LED indicators will be lit by the unit. To exit CAPS LOCK mode press the key again.

To remove a character from the screen use the backspace key and delete key. This will replace the character immediately to the left of the current cursor position with a blank space and move the cursor to that position. The Delete key has no function. The Home and End keys move the cursor position to the left and right of the current line on the screen. The Return key moves the cursor to the beginning of the next line.

**If the system fails, please refer to the troubleshooting guide.**

The video text overlay unit operates in two modes. In the first mode the text is overlaid over the video input signal. When the video signal is removed the unit automatically switches to generating its own internal dark grey background video signal and will switch back to the external video when this is reconnected. In the second mode the unit generates its own video signal internally, but ignores the external video signal. All keyboard commands operate in the same way in both modes. To switch between modes use the F3 key as shown in the command table below. Each page can have this mode set independently.

ESC	Clear the cursor current settings back to the first line and the first position
F1	The cursor from any page back to the first line and the first position
F2	Select text over internal video
F3	Select text over external video signal
F4	Shift display up
F5	Shift display down
F6	Shift display left
F7	Shift display right
F8	Reset display X-Y position (defaults)
F9	Clear the screen

The video text overlay unit divides its display between four on screen pages. Text written to each of these pages is will be stored in the units non-volatile memory until overwritten. These is no default on screen indication of which page is currently selected. To move between the screen pages use the page up and page down keys or Page up moves toward page1. Page down moves toward page 4.To clear the screen page of text press F9.

# 6 Troubleshooting Guide

## Common Faults & Repair

**If the system fails, please refer to the troubleshooting guide.**

### Video without sound

- Didn't connect microphone or there are faults in microphone
- Didn't connect earphone or there are faults in earphone
- Control box DVR abnormal

### Unable to input letter

- Too quick to restart control box
- There are faults in Control box USB plug
- There are faults in keyboard
- There are faults in control box PCB

### Able to input, but no image

- 1.5M connect wire disconnects
- There are faults in camera installation or Camera damage
- When press F2, the image has already switch to no-image type mode, press F3 return to type mode
- Control box PCB board abnormal

### Time display error

- Control Box DVR board abnormal

### AV1 no image, AV2 display normally

- Control Box DVR abnormal

### AV1 no image, AV2 no image

- If 1.5m connect wire connect between cable wheel and control box
- Does camera head screw tightly
- The aviation jack of control box that connected to monitor looses
- There are faults in monitor
- There are faults in control box DVR

### Battery is unable to be charged

- Charger didn't insert correctly or there are faults in AC plug
- Please don't use non-original charger
- There are faults in charger
- Li-ion battery damage

### The power of battery run out quickly

- Use the full power battery
- The capability of battery is low

### SD card can't work

Didn't insert SD card correctly

The write protection switch of SD card is open

SD card is full, please replace SD card or transfer the files to free the space

DVR SD card slot damage

### Turn on but no power

Battery disconnects

Fuse didn't install or Fuse broke down

There are faults in control box DVR

### Display normally, Camera LED can't light

Camera didn't install correctly

There are faults in camera head

There are faults in cable wheel

There are faults in Control box PCB board

### Monitor can't display

Didn't turn on monitor

Monitor disconnects

There are faults in monitor

There are faults in control box