Inspection camera HD Pro



ASSEMBLY AND OPERATING INSTRUCTIONS

Read these instructions completely before operating the device
PLEASE CHARGE BATTERY FIRST BEFORE USE!

OPERATOR'S MANUAL

CAMTEK
SURVEILLANCE PRODUCTS
For all your drain camera needs

⚠ WARNING

1. Do not use the device in flammable and explosive environments.
2. Avoid using the device in extremely cold, hot or humid environments; Otherwise, the device may be damaged, and the damage caused by this behavior is not covered by the warranty.
3. Use it with care to prevent the device from falling from a height. Do not throw, beat or press the device.
4. Avoid using parts from other manufacturers, so as not to damage the device due to incompatibility.
5. If the user disassembles the device without permission, the damage caused by such behavior is not covered by the warranty.
6. Save the data before connecting the USB/TF card. The manufacturer/seller is not responsible for data loss for any reason.
7. Do not disconnect when recording or playing, keep the device in normal working state, otherwise it will damage the device.
8. Do not mix battery charging cables and power cables, otherwise the battery will be damaged or the system will not work properly.
9. The push cable of the system is made of fiberglass and has a certain toughness, but it cannot be bent significantly or forced too hard, otherwise it will be broken.
10. After use, the cable must be retracted into the cable rack and wiped clean.
11. Do not splash water onto the device.
12. Do not overcharge the lithium battery, otherwise it may cause damage.
13. Please only use our company's dedicated charger for charging.
14. There are restrictions on the use of the device. Observe whether the device is in a high-intensity magnetic field environment. For example, the magnetic field generated during the operation of an electric screwdriver can significantly affect the accuracy of the meter. Please keep the device away from high-intensity magnetic field environments for use or storage.

Contents

Product Structure Diagram And Parts List---------- 01

Specifications---------- 01

Application Area---------- 01

Understanding The Device---------- 01

Camera（CD23HT）---------- 02

Cable---------- 03

Remote Control (only used to operate the video recording function)---------- 03

Equipment Connection And Installation---------- 04

System Menu Settings---------- 04

Video Recording Operation---------- 04

Recording Time Limit---------- 05

USB Disk or TF Card Recording---------- 05

Video Format---------- 05

Sound Recording---------- 05

Video Playback---------- 05

Select Video File---------- 05

Fast Playback And Playback---------- 05

Compatible Video Formats---------- 05

How To Use The Keyboard (optional)---------- 05

Mobile Phone Viewing App Function (optional)---------- 06

Battery Precautions---------- 07

Tool kit storage---------- 07

Simple Troubleshooting---------- 08

Attachment 1---------- 08

Attention

1) Please read the user manual carefully,
2) Please format the USB flash disk or USB hard disk on the DVR control box before first use the product
3) Using wireless keyboard,please make sure the battery for keyboard is full.
4) Please use original charger adaptor to charge the battery.

Product Structure Diagram And Parts List



(1) Camera: CD23HT (C23HT optional)
(2) 8-inch Highlight monitor
(3) Cable Reel: 5.2mm 20m/30m/40m
(4) Power Adapter
(5) Controller
(6) Camera Skid
(7) 10-core High-definition Video Cable
(8) Remote Controller
(9) 2.4G Wireless Folding Keyboard (optional)
(10) **Optional:** WIFI module (installed in the controller)

Specifications

Item	Descriptive
Power Adapter	AC：110V~240V DC：12.9 V 3A
Lithium Battery	12V 8000MAH
Length Of Cable	20M/30M/40M
Camera Light Source	9pcs Highlight White LEDS
Camera Angle Of View	123°
Angle Of Lens	Horizontal Angle 101°, Vertical Angle 54°
Lens Focus	10CM
Lens Thread	M8*P0.5
Lens Operating Temperature	-30°C ~ +70°C
Camera Resolution	Color, 2 Million Pixels
Monitor Size	8 " TFT/LCD Color monitor
Monitor Picture Resolution	1280*800 pixel
Monitor Input Voltage	DC 5V
Storage Device	USB disk or TF card (supports up to 512GB) USB exFAT format
DVR Encoding Format	H.264
System Operating Temperature	-20°C~+55°C

Application Area

1. WATER SUPPLY
2. WASTE WATER
3. ELECTRICAL AIR CONDITIONER
4. CABLE DUCTING
5. DUCTED VACCUM SYSTEMS
6. PLUMBING
7. BUILDINGS

WARNING:

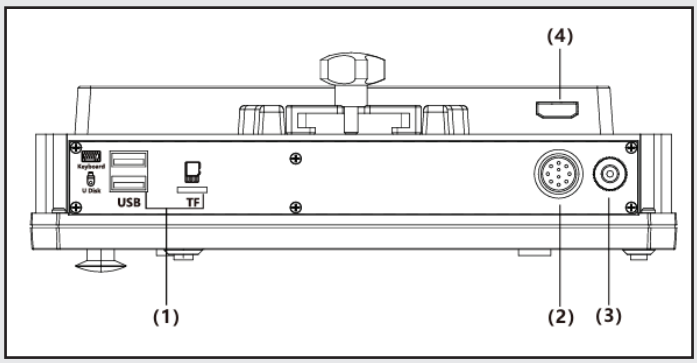
NEVER USE THIS DEVICE IN AN ENVIRONMENT WITH EXPLOSIVE MATERIALS SUCH AS GAS, OIL, ETC

Know Your Device

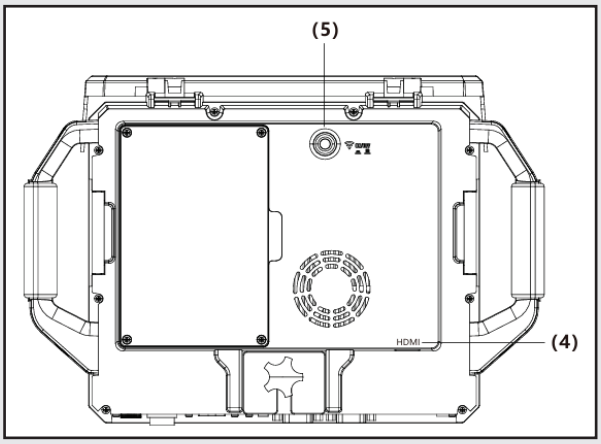


① MIC On/Off: Microphone button. When we need to record during the video, press the button to start recording.
② DVR Control Buttons◀ :Left ▶:Right
▲:UP ▼:Down OK:Confirm
(In real-time state, ◀:Zoom Out Screen
▶:Zoom In Screen)
③ T On/Off:Show or hide text on the screen.
④ DVR Control Buttons PG UP: Last page
PG DOWN: Next page (When using keyboard text input)
REC: Record video button
PHOTO: Take a picture button
STOP: Stop Video Playing
DELETE: Delete video or photo file
EXIT: Exit video Playing or return to the previous menu
MENU: DVR function setting

⑤ REM: Remote receiving window
⑥ Battery: Battery indicator
Discharge Status: When the battery is continuously discharging, the green indicator lights will turn off one by one. When the green light turns into a flashing red light, it means that the battery is low in power.
Please charge the battery.
Charging status: As the amount of battery charge increases, the green lights will be turned on one by one until the battery is fully charged.
⑦ Power Button
⑧ Pan & Tilt camera control button
Left Dial: Rotate the camera to the left
Right Dial: Rotate the camera to the right
Up Dial: Rotate the camera up
Down Dial: Rotate the camera down
Button: Reset the camera
(The above functions are only used by Pan & Tilt camera)
⑨ LED+: Brighten the camera lights
⑩ LED-: Dim the camera lights
⑪ RESET: Reset cable count to zero
⑫ M/FT: Count unit (meters/feet) conversion button



(1) USB And TF Port: When we need to use USB disk and TF card to store video or pretures, insert them into the correce ports.The format of the USB disk is exFAT format.
(2) Video Cable Port
(3) Power Port: DC 12.9V 3A (Do not mix battery charging cables with other type adapter, otherwise the battery will be damaged or the system will not work properly.)
(4) HDMI: High Definition Multimedia Interface.
(5) WIFI Module: Wi-Fi button. Press the button to turn on Wi-Fi. The mobile or tablet can be connected and watched through Wi-Fi settings. If you don't need to use Wi-Fi, press the button again to turn off Wi-Fi.



Camera（CD23HT）

Working Environment：
1. Temperature：-20℃～+70℃
2. Humidity：less than 90%RH (non-condensation)

Technical Specifications:
1. Power Input: DC 9~13V, 13W（max）
2. Camera Module:
   1) Image Sensor: 1/3 inch CMOS
   2) Effective Pixel Array: 1920(H)x1080(V)
   3) White Balance: Automatic
   4) Gain Control: Automatic
   5) Signal-to-noise Ratio：>52dB(AGC OFF)
   6) Video Output：1.0Vp-p/75R
   7) Input Voltage：DC3.3-5V
   8) Current Consumption: 110mA
   9) Video Format: NTSC/PAL
   10) Frame Rate: 30FPS/25FPS

3. Dynamic Balance：

1) Mechanical dynamic balance

4. Emitter: Positioning of the camera (with built-in transmitter) (optional).
If the camera modelis set to T, it indicates that the camera has a built-in transmitter. The positioning range is about 4 meters deep in non-metallic pipe or 3 meters deep in cast iron pipe. All cameras can be equipped with emitter heads according to your needs.

5. Light Source：

1） LED quantity：9PCS
2） Luminous flux：450LUX
3） LED current：0.3A
4） Beam Angle：120°

External Interface

CAM: Pins 1 to 4 are connected from inside to out, respectively received VIDEO, GND, +12V, LED＋.

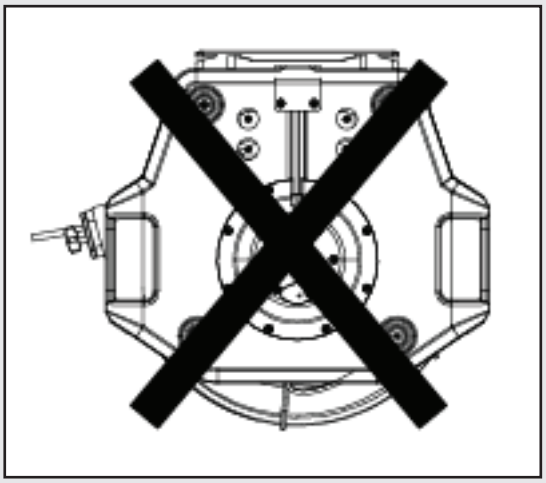
CABLE

1. Meter Counter
2. Video Cable Port
3. Cable : Diameter: 5.2MM Length 20M/30M/40M (optional)
4. Handle
5. Cable outlet (By rotating the knob below the cable outlet, you can adjust the tightness of the bayonet at the baffle to jam the cable)



Attention:

When we lift the device from the hanale on the back, the direction of the cable is down. Do not place the device hard to avoid the exposed cable and slip ring parts from being damaged.



Remote Control

1. REC：Record button
2. SNAP：Take a picture button
3. ▲：Up button (record key in real-time state)
4. ▼：Down button (camera key in real-time state)
5. ◀：Left button (when playing back video)
6. ▶：Right button (under playback video status)
7. OK：Confirm button
8. MENU：Menu button (enter menu setting)
9. STOP：Stop button
10. ESC：Return key
11. PLAY：Play button
12. DEL：Delete key



Equipment Connection And Installation

1. Important Note: When you connecting the camera to the monitor, you must firstly turn off the power to avoid the device being damaged.
2. Equipment Installation And Use Steps:
   1) Tighten the camera to the corresponding connector on the cable reel.
   2) Connect the video cable on the cable reel to the video interface of the controller.
   3) Press the power button to start the controller.
   4) Put the camera connected to the cable into the pipeline to be tested, and release the cable until the camera reaches the location to be tested.
   5) Detection (the brightness can be adjusted by the "LED＋" and "LED-" buttons on the controller).
   6) Video recording (please refer to video recording operation).
   7) After completing the inspection, retract the camera and wipe it clean, then place it back in its original position.

System Menu Settings

Video Playback: Play previously recorded video	
Photo Playback: Show previously taken photos	
System Settings	
Language Settings	English, Chinese, French, Spanish, German Polish, Korean, Italian, Turkish, Russian
OSD Settings	Upper left center text, lower left center text
Save Setting	Disk status, remaining capacity, total capacity DISK1 and 2. Format Disk
Restore Factory Settings	Press the "Yes" button again to achieve a master reset(Restore factory settings)
About	Solid Compilation Date, Solid Version
Time Setting	24-hour system, date format, month, day, hour, minute, second
Image Settings: CVBS, HDMI resolution, brightness, chroma, contrast, noise reduction	
Video Settings: Video packaging duration, video frame rate, video image quality, video compression method Photographic quality, video mode, video coverage	

Video Recording Operation

1. Install No. 7 battery on the remote control.
2. Insert the USB disk/removable hard drive into the USB port, or insert the TF card into the corresponding slot. If the connection is successful, you can see a capacity prompt for the USB disk/TF card in the lower right corner of the screen.
4. Press the REC button on the remote control to enter the recording system; At this point, you can see a new file naming prompt on the screen.
5. If you need to record, you can press the MIC button on the controller to start recording.
6. If you need to take a photo, please press the SNAP button on the remote control, then edit the file name, select "Confirm", and the photo will be successfully taken.
7. Press the PLAY button on the remote control to quickly enter the file management interface, select the file to play, or delete the file.
8. If you need to manage your video content, you can press the MENU button on the remote control, go back to the menu page, and select the playback section to edit and manage the video content.

Attention:

1. If you have already inserted a USB disk/TF card before starting the device, the device may not recognize the USB disk/TF card. In this case, please unplug and reinsert.
2. The system needs to wait for 10-20 seconds each time it starts up.
3. Supports a maximum memory of 512GB for USB disk and TF cards.
4. The recorded video files will be found in the USB disk or TF card directory. You can use the display menu, press the REC button to start recording, and press the STOP button to stop recording. During the recording process, the screen will display the recording time and time limit.

Recording Time Limit
Sometimes you may forget to press the stop button after turning on the recording. This module will set a time limit of 30 minutes. If the recording time exceeds 30 minutes, the system will continue recording with a new file name. This section is available in 1/5/10/15/30/60 minutes and can be selected for debugging in the settings.

USB Disk or TF Card Recording
The device can record through USB disk or TF card, and the recorded video is stored in USB disk or TF card, and can be played on the screen. USB disk and TF card format exFAT.

Video Recording Format
The default video recording resolution is 1920*1080. A 30-minute recording will take up storage of 800MB. The video recorded by the device is MP4 format.
Note: The video player of the device may not support some downloaded videos.

Sound Recording
Press the MIC button on the panel to record voice while recording; Press again to turn off sound recording.

Video Playing
You can press the MENU button on the screen to enter the Video mode. The module can display recorded videos or other compatible videos stored into a USB disk or TF card. Incompatible video's types cannot be displayed.

Select Video File
Enter "VIDEO" mode, the set will display all of the available video files on the screen. You can use the or button to select desired video and press OK button to play. Use OK/STOP button to start or pause the playing. Use ESC/STOP button to stop or go back to previovs menu.

Fast Forwarding And Rewinding
You can use or button on the remote control to fast forwarding or rewinding (1X, 2X,4X or 8X). Press the Ok button to pause the video playing, and press the OK button again to return to normal speed.

How To Use The Keyboard (Optional)

1. Keyboard Functions
1) The keyboard has a 0-9 numeric input.
2) Use the Caps key to switch between uppercase and lower case English.
3) Moving the cursor is controlled by the four arrow keys on the keyboard.

2. How To Operate

1.USB connection mode

1) After the device starts up normally, remove the receiver from the keyboard packaging and plug in the USB port at the bottom of the controller. This USB is only compatible with this keyboard and cannot be mixed.
2) Turn the power switch to ON to turn on the keyboard, and the blue light will be on.
3) 2.4G mode: General factory default system
4) Press the FN+2.4G keys on the keyboard to set it to 2.4G mode

2. Bluetooth mode

After turning on the keyboard, long press CONNECT or FN+Bluetooth 1, Bluetooth 2 on the keyboard. Press and hold for 3 seconds in combination, the blue light will flash, and Bluetooth device 1 will enter the searched state Device side → Open system settings → Turn on Bluetooth → Search and add to use

3. At this point, you can pre edit the text information and then record a video; Text information can also be edited during video recording.



Appendix 1: Punctuation Symbols

,	。	(	)	?
:	;	*	/	@
-	<	>		

Appendix 2: Function Keys

Caps lock	English Case Toggle Key
Four arrow keys	Up, Down, Left, And Right
Backspace、 Delete	Delete
Enter	Carriage Return
Space Key	Spacebar

Mobile Phone Viewing App Function (Optional)

Android/Apple iOS operating process:

1. Scan the QR code below with your phone or tablet, or search and download "ulink-Camera" from the software store to install the latest version of the APP.
2. press the "POWER" button, start the display screen of the control box.
3. press the WIFI switch button on the back shell of the control box.
4. Open the app store, search for the "ulinkCamera" app, and click to download and install it.
5. Open your phone, enter the "Settings" interface, select "WLAN", find the WiFi“ WiFi_XXXXXX”corresponding to the device , and enter the WiFi password “12345678”.
6. Open the app and click "Enter Now" to view the real-time screen.

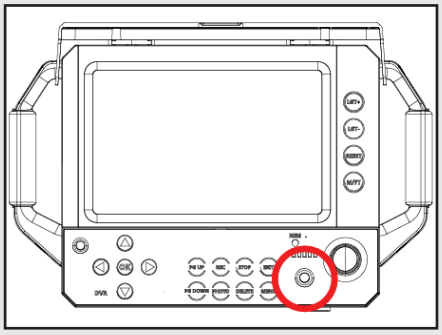
Note: Please refer to Attachment 1 for specific operations.

1: Scan the QR code below with your phone or tablet to install the latest version of the APP.

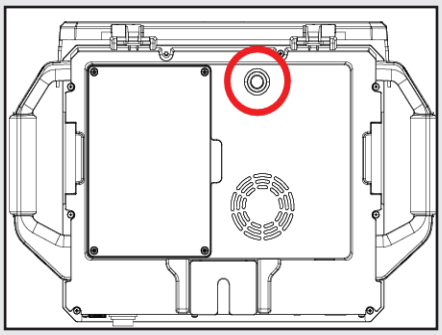
Android

Apple

2: Turn on the power



3: Turn on the WIFI switch



3: Click on Settings to enter WIFI connection settings, select the device, enter the password to connect successfully.





ulinkCamera Function List

1. Camera rotation, swing, and reset.
2. Camera light brightness adjustment.
3. Video recording, drawing, playback, deletion, and export.
4. Video zoom (via gesture control).
5. Microphone on/off.
6. Photo capturing, drawing, playback, deletion, and export.
7. Distance information display, reset, and unit switching (metric/imperial).
8. Controller battery status display and low-battery warning.

Battery Precautions

1. Machine Charging Precautions:

1) Charging in flammable and explosive environments is strictly prohibited.
2) Avoid charging in extremely cold, hot, or humid environments.
3) Please use a dedicated charger, 12.9V 3A adapter. Do not mix battery charging cables with other type adapter, otherwise the battery will be damaged or the system will not work properly.
4) When fully charged, cut off the power supply. Do not overcharge to avoid damaging to the controller and battery.
5) The controller allows to be used while charging under normal operating voltage.
6) The controller battery takes 8 hours to be y fully charged, and can work for 5-6 hours on a full charge.

Tool Storage Bag



Tool storage bag, can be used to store keyboard, camera, remote control, and charger at the same time. Fix the tool kit at the connection below the controller, and the tool kit can be adjusted for elasticity

Simple Troubleshooting

Trouble	Reason / Solution
No Signal	1. Read this product manual again and connect again according to the instructions.
	2. Recheck whether the camera is tightened.
	3. Check whether there is any debris inside the copper thimble on the camera or the camera female connector on the cable reel,If yes, please clean it up.
	4. Check whether each connector is intact.
The camera light is dim or no light	Click the LED+/LED - button on the right side of the controller to increase the brightness of LED+and decrease the brightness of LED -.
Unable To Record	1. Check if the USB disk format is in exFAT format on the PC. No, please format it in exFAT format.
	2. Try replacing a USB disk or TF card of another brand and recording again.
	3. After closing the recording in sequence, follow the correct operating steps to restart.
Recording Abnormality	After closing the recording in sequence, follow the correct operating steps to restart.
Image Flicker	The battery is too low, please charge it in a timely manner.
Battery Cannot Be Charged	Please check carefully against the instructions and contact aftersales customer service if unable to resolve the issue.
The right side of the HDMI video output image is not full screen	The issue is that the refresh rate is incorrect, and the controller needs to match the refresh rate of the camera. When turned on, the controller will display the transmission frame rate of the camera. Based on this data, set the corresponding refresh rate in the MENU/IMAGE controller. This way, HDMI will be displayed in full screen.
Keyboard crashes and does not work	When inserting USB disk, TF cards, and Bluetooth keyboards, it is necessary to strictly follow the interface identification instructions.
Counter count invalid	There are restrictions on the use of the device. Observe whether the device is in a high-intensity magnetic field environment. For example, the magnetic field generated by the operation of an electric screwdriver can significantly affect the accuracy of the meter. Please keep the device away from the high-intensity magnetic field environment in a timely manner.
Unable to charge, short usage time after charging	Choose a suitable charger. The 12.9V charging port should use a 12.9V charger and cannot be used with a 13.5V charger, and vice versa. Different chargers have different voltages and currents. Please choose the standard adapter.
Controller panel operation button failure	The failure of control panel operation buttons has randomness, and the probability of failure varies from person to person. If the button fails, multiple attempts can be made.
When connecting to a phone via WiFi, the real-time image is not clear	After logging into the APP, in the real-time operation interface, the APP will default to standard definition mode, and parameter settings need to be manually adjusted to adaptive high-definition or high-definition mode.
The coil is difficult to disassemble during maintenance	The coil is stuck by the guide hook. Refer to the coil disassembly and repair video for disassembly and assembly.

Attachment 1

WIFI System Operation Guide

Quick Start of WiFi System



01: Pan&tilt Camera operation interface: Up, Down, Left, Right, Rst(Reset).
02: Brightness adjustment of LED lights: increase (slide right), decrease (slide left).
03: The camera pull distance value is displayed. Display overlay in the video.
04: Horizontal/vertical screen switching. (Not supported on iOS system)
05: Switch between metric and imperial systems.
06: Reset the meter count to zero.
07: You can choose to eliminate text and graffiti.
08: You can do graffiti freely.
09: Text overlay editing. Display overlay in the video.
10: Display the date and time recorded in the video
11: Power level display.
12: Video recording function. After clicking on it, there are recording pause and recording end functions .
13: Take screenshots of the video.
14: MIC icon. Click on it to turn the microphone on or off .
15: File management: After opening, you can replay recorded videos and view saved images after taking photos and screenshots. Click 'Manage' to choose to delete or share the corresponding files.
16: Settings: Click to adjust the graffiti line width and color, as well as the text size and color. You can choose to show or hide the camera's operation interface.
17: Return button to exit the page.