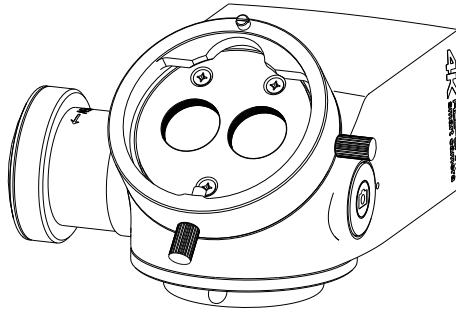


ALL-CAM4 4K Camera System

User' s Manual

(Please carefully read this manual & electronic manual in the U disk attached to this module before use)



PC2003-UM01-EN

Version: A2

2022-08-03

Alltion (Guangxi) Instrument Co., Ltd.

Product Information:

Product Name: 4K Camera System

Product Model: ALL-CAM4

Date of Manufacture: Please see the instrument label

Manufacturer:

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Safety Caution

We would like to inform you about safety aspects which must be observed when handling this device. This chapter contains a summary of the most important information concerning matters relevant to instrument safety.

Prompt Symbols

The following safety information has been incorporated into the user manual. Please note this information and be particularly careful in these cases.



Warning, indicating that there is potential hazard, it may cause danger to the user if the prompted contents are not followed!



Note, indicating that there is risk to damage the product, it may cause damage or malfunction to the product if the prompted contents are not followed!



Annotation, promoting the user of the instrument, or providing the useful information to the user.



In case of serious incident related to this equipment, please report to ALLTION and the competent authority.

Information Symbol

Use the following information symbols in this user manual:

- Listing
- ✓ Prerequisite for an action
- ◆ Prompt for action
- Result of an action

Target Population

Users who operate surgical microscope should be sure to be able to have the use of surgical microscopy techniques.



This user manual is intended to provide guidance for the users to provide product assembly, use and troubleshooting information. Users need to have the skills of operating microscope.

Intended Use

ALL-CAM4 is a kind of camera device that is used to match the surgical microscope. It provides an image output method for all kinds of operation microscope.

Normal Use

- ALL-CAM4 is required with use of surgical microscope, it cannot get a good image output when it uses alone.
- The product also provides a beam splitter adaptor, with conventional function of beam splitter, through the interface with adaptor fitting assistant mirror and accessories.
- For disposal, please observe the instructions in this manual as well as the applicable legal regulations in your country.

Working Environment

- Ambient Temperature Range: -10°C ~ +38°C;
- Relative Humidity Range: 10% RH ~ 80% RH;
- Barometric Pressure Range: 700 hPa~1060 hPa;
- Power Supply: DC 12V/3A

Storage Environment

- Ambient Temperature Range: -5°C ~+40°C
- Relative Humidity Range: <60% RH;
- Barometric Pressure Range: 500 hPa~1060 hPa

Safety Characteristic

- Supply Voltage: DC 12V
- Classified by input fluid protection degree: IPX0;
- Max input power: 10-25VA

Information on Power Adapter

- Input: AC 100-240V, 50-60Hz。
- Output: DC 12V/3A




The Operator Attention

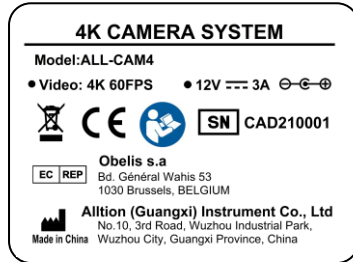
- ✓ Please thoroughly familiarize yourself with the contents of the user manual before starting up the system. Also observe the user manuals for accessories and other system components.
- ✓ Please keep the user manual where it is easily accessible at all times for the persons operating the system.
- ✓ Please observe all symbols and labels attached to the device!
- ✓ Modifications and repairs of this device may only be performed by ALLTION service staff or other persons authorized by ALLTION.
- ✓ Do not place any fluid-filled containers on top of the instrument. Make sure that no fluids can seep into the instrument.








Please note that local legislation takes priority over the above-mentioned normative requirements. If you have any questions, please contact your local ALLTION dealer.

Symbols and Labels on the Device

USB 3.0	1	USB 3.0 Interface
DC 12V	2	Power Supply Interface, DC 12V
HDMI	3	HDMI2.0 Interface
USB 2.0	4	USB 2.0 Interface
	5	Audio input interface
OPEN →	6	Optical splitter interface lock ring loose direction
	7	Photo/Video
	8	Date of manufacture



9 Label

-  Power Adapter: DC 12V, current 3A
middle contact is positive
-  No dumping to dustbin directly
-  CE label
-  Caution, Follow the User Manual
-  Serial number

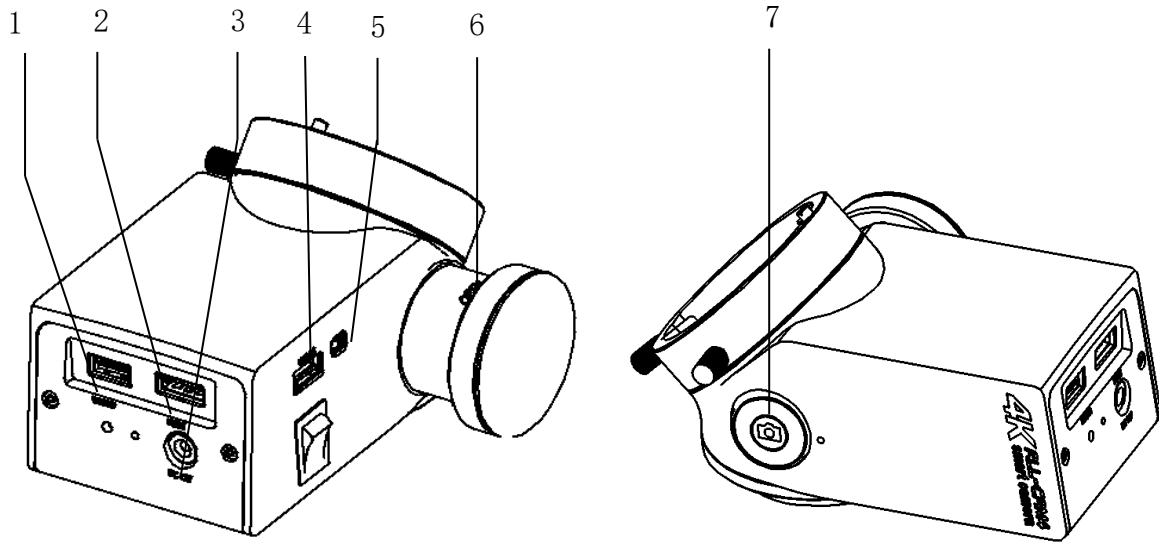


Fig 1: The Symbols of Product

Product overview

Product Features

- Compatible with the surgery microscope of suitable interface size
- Sony high performance sensor with low noise, high sensitivity and high color rendering.
- Dual-core 2*A73@1.6GHz+2*A53@1.2GHz, 4GB DDR4+8GB eMMC.
- HDMI interface 4K 60FPS fully high definition real-time image output
- Support WIFI function, support WIFI image transmission (Use WINDOW system、Android system and iOS(Apple) system client terminal software)
- Equipped with USB3.0, available connect with external U-disk——for taking JPG image and recording MP4 format video
- Equipped with 3.5 audio input interface, support audio input
- Camera parameters can be set with the mouse, and multiple groups of user

parameters can be saved for the convenience of different users

- Photographing, video recording functions are available with buttons
- The wireless remote control pedal is optional for photographing and video recording
- It can be directly with the use of the surgical microscope in conform interface size.
- One-channel optical splitter interface
- Adapter wide voltage input: AC100-240V 50-60Hz
- With the function of selecting interested area (AOI)
- Built-in video zoom, flip function
- Built-in image and real-time video comparison function

Product Composition

- 1 Main Unit
- 2 Power Adapter
- 3 HDMI high definition video transmission cable: Long 5 meter
- 4 U Disk: Full version of the electronic manual is stored in U disk memory.
- 5 Wireless Mouse

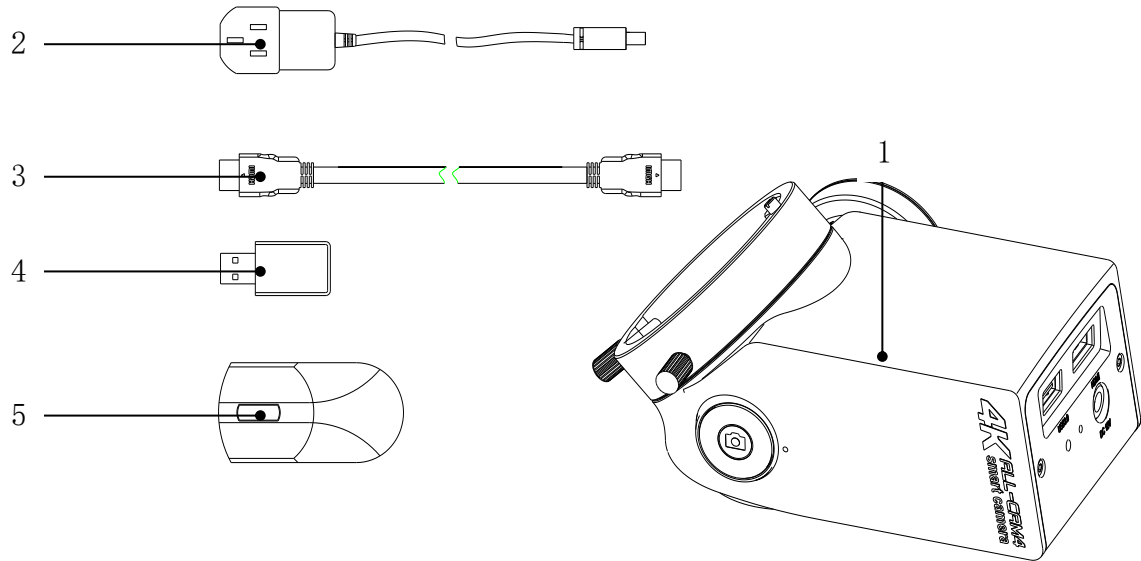


Fig 2: Product Composition

Product Overview

- 1 **USB3.0:** Used to plug external memory such as USB3.0 U disk
- 2 **HDMI 2.0 output interface:** HDMI A type interface, output real-time image
- 3 **USB2.0:** Used add mouse.
- 4 **3.5 Audio Input Interface:** Connecting microphones enables audio input
- 5 **Wireless pairing indicator:** This indicator of constant OFF, and lights on during wireless pairing
- 6 **Pairing switch jack:** Press the pairing switch in the hole with needle
- 7 **Power socket:** Connect with the adapter, DC 12V input
- 8 **Power switch:** Press the Power switch, green indicator lights on
- 9 **Optical splitter interface:** With conventional optical splitter function
- 10 **Camera button:** ① Press shortly for photo or long touch for video shooting. ② There is the indicator light which flashes when shooting photos or videos.
- 11 **System restore button:** When the camera fail to start the system, press

the restore button by pin coupled with the activate file in the U-disk and boot. Hold 10s and release to restore the system automatically.

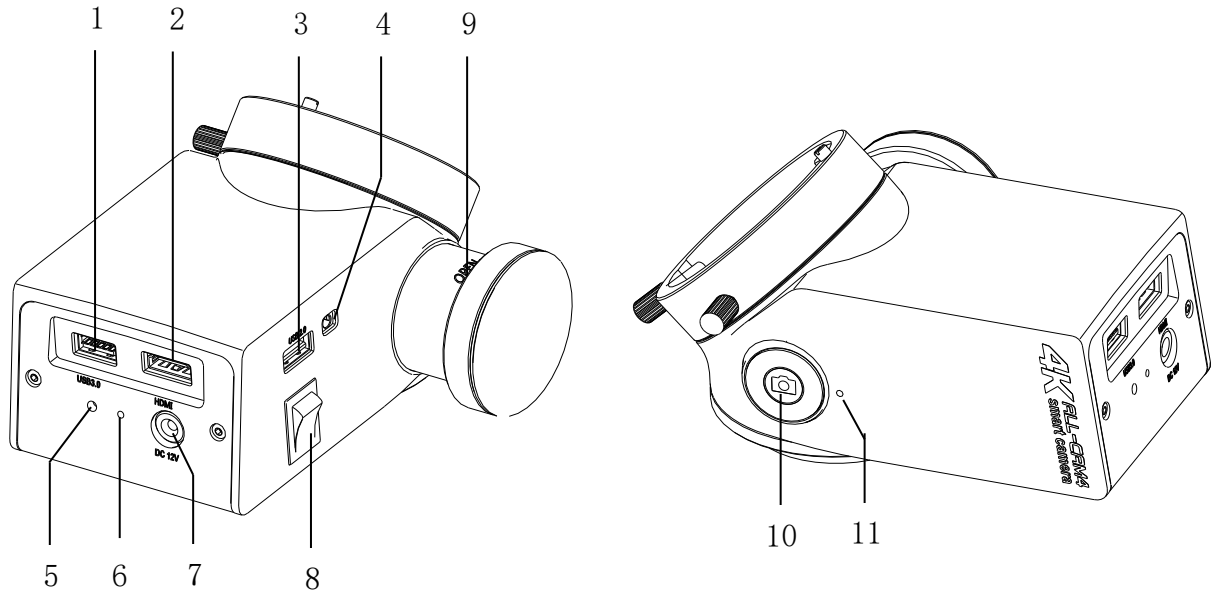


Fig 3 Product Overview

Main Technical Parameters

Technical Parameters		
Camera Features	Image Sensor	Sony high performance sensor with low noise, high sensitivity and high color rendering
	Interface	HDMI2.0 1pc
		USB2.0: 1pc
		USB3.0: 1pc
		3.5 Audio Interface: 1pc
	Resolution	4K (3840 x 2160) 60FPS (16: 9)
Store	Need connect with external U-disk (supports FAT32、exFAT and NTFS formats) Picture: JPG format, Video: MP4 format	

	WIFI	Support WIFI function, support WIFI image transmission
	Power Supply	12V
	Power Consumption	10-25VA
Physical Property	Weight	0.7kg
	Dimension	155*125*82
Optical	Camera optical splitter ratio	2:8
	Optical splitter interface ratio	2:8(Optical 5:5)
Software	Video Setting	4K 30FPS, 1080P 30FPS
	Snap Setting	8M(3840*2160), 2M(1920*1080)

	Base Functions	Freezing, Snap Image, Video Recording, Automatic Exposure, White Balance, Image Echo, Crosshairs
	Image Effects	Exposure Value, Best Brightness, Gain, Red Gain, Blue Gain, Saturation, Contrast, Sharpness, ALC, HDR, Customize user parameters
	Advance Functions	Horizontal Flip, Vertical Flip, Enlarge, Reduce, AOI, Image Contrast
	System Settings	Auto Name/Manu Name, Time Show/Time Hide, Show LOGO/Hide LOGO, Built-in WIFI/external WIFI, Language, Image resolution, Naming settings, System Update, Version Information

	Measuring function	Measuring Tool: P2P、P2L、L2L、C2C、P2C、L2C、Angle、 Arc、Circle、Rec、Polygon、Crease、Text、Del All、Color Settings、To Pictures、To Excel、 Calibrating Tool、 Information, Ruler Display
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Product Assembly

Installation of ALL-CAM4



Risk of injury to the patient caused by ALL-CAM4 or parts falling down!

- The consistence between the interface in this product and installation interface of microscope should be confirmed before assembly.
 - After every change in configuration and before every use, make sure that the modules and accessories are securely locked in position. Make sure that all securing screws and locking screws are firmly tightened!
 - Never Install or remove the modules during a surgical procedure or above the patient!
-

- ◆ Unscrew the locked screws(1), take down binocular(3)
- ◆ Install ALL-CAM4 (4) on the top of microscope, screw the lock screws (1)
- ◆ Install binocular on the top of ALL-CAM4 (4), screw the lock screws (2)

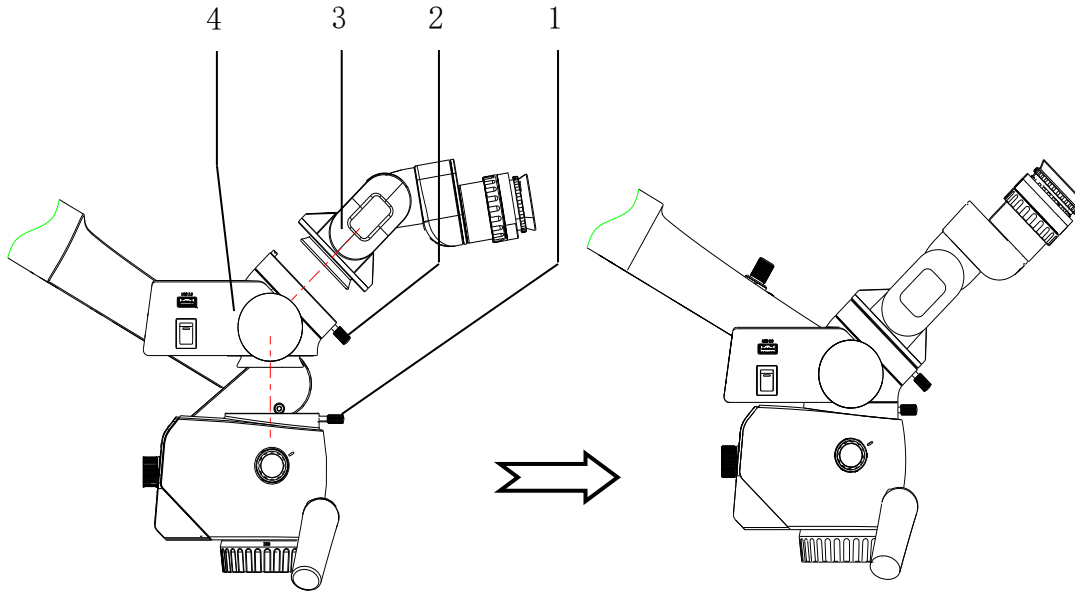


Fig 4: Assemble the ALL-CAM4 in the surgery microscope

Wiring



If the power supply plug is not matched with the standard of the local socket, please contact the local dealer or merchant to replace it.



Please check the input channel of the HDMI video transmission line is in line with the display channel of the display, otherwise the display has no image output.

Connect the wires according to the Fig5 below:

Installation Confirmation

- ◆ Press the Power switch, observe if the Power indicator lights on, identify if power is supplied;
- ◆ Observe if the image displays on the LCD, identify if the high definition video transmission cable is connected correctly.

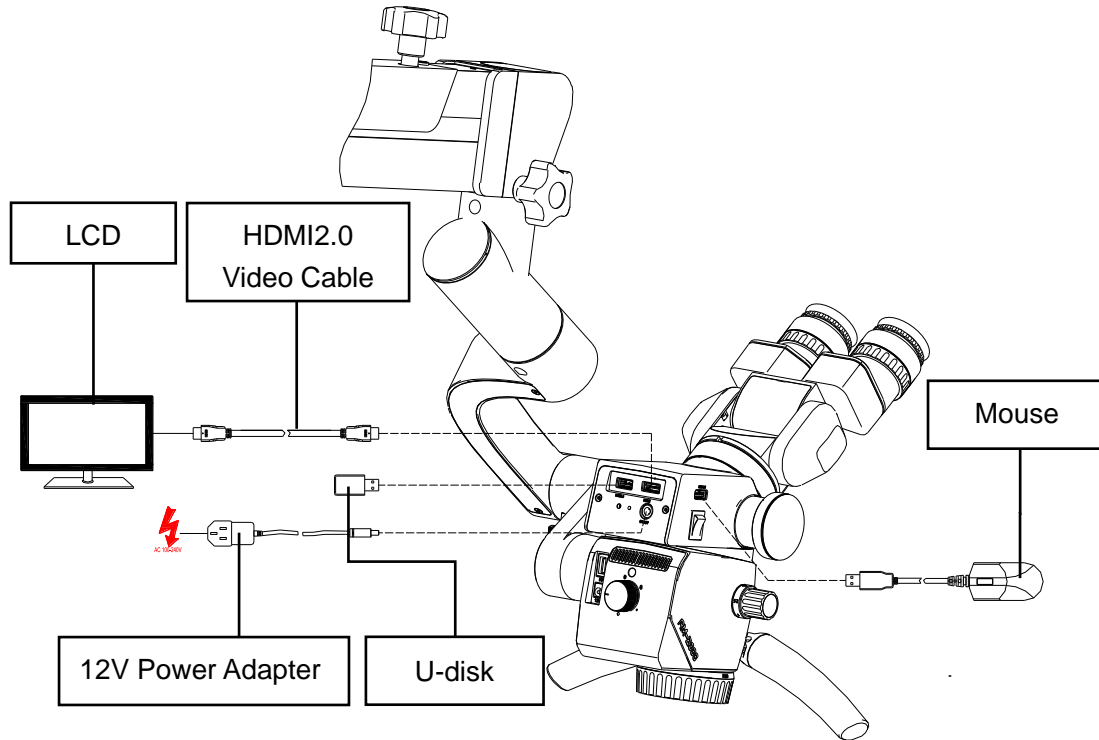


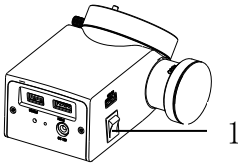
Fig 5: ALL-CAM4 Wiring

Product Operation

Powering the System Up and Down

Prerequisite condition

- ✓ The power cable has been connected
 - ✓ The HD video cable has been connected
-



Press the Power switch(1)

- The system has been switched on if the green lamp in the power switch is light.
- Display Boot Interface on the monitor.

Wireless Remote Control Pairing



The wireless remote control has been well paired before leaving the factory. For pairing it again, please operate according to the following mode:



Foot switch belongs to the selection of accessories

Prerequisite
condition

- ✓ Product is in a state of switched on
 - ✓ Foot switch is in a state of switched on
-

- ◆ **Pairing:** Under the On state, press the pairing button (1) of the wireless module with needle till the wireless pairing indicator (2) light on, then kick the photo button(3) 4 second of pedal switch, the indicator (4) of pedal switch light on and light off after 4 second, then indicator (2) (4) flashes 2 times, and lights off, finish pairing;

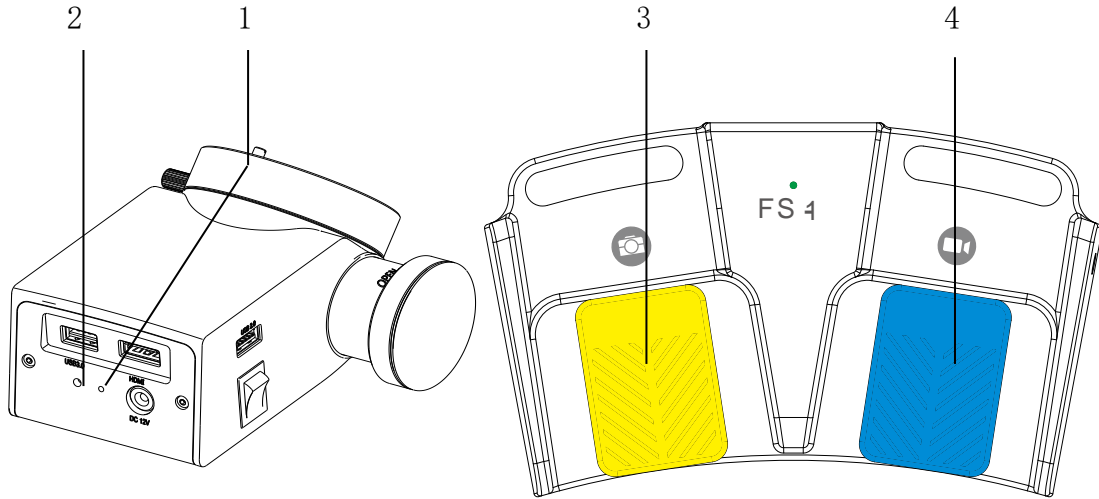
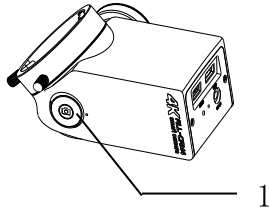
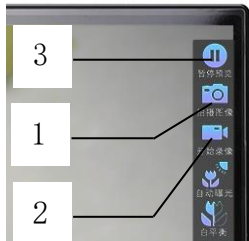


Fig 6: Wireless Remote Control Pairing

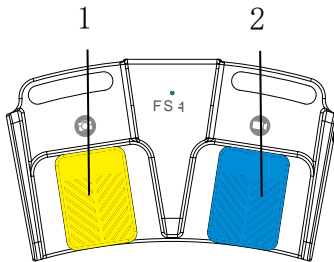
Photographing、 Video Recording and Freezing



- Press button(1) shortly for photo shooting
- Long touch button(1) beyond 3s for photo shooting and touch 3s to quit
- There is an indicator light which flashes when photos or videos



- Press button(1) for photographing
- Press button(2) once to record video, press it again to exit video recording
- Press button(3) once for freezing the current display image, press it again to exit image freezing



- Press button(1) for photographing
- Press button(2) once to record video, press it again to exit video recording

Photographing、 Video Recording and Freezing Icon



Freezing Icon

- Once the picture in the camera enters into freezing status, it also will be shown that the pause preview icon located in the upper right corner in the display
-



Photographing Icon

- Photograph icon is shown on the upper right corner located in the display during the process of photographing.
-

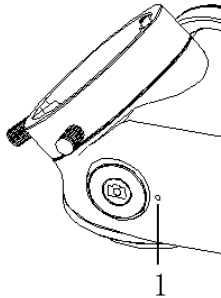


Video Recording Icon

- Video icon is shown on the upper right corner located in the display during video recording.
 - Video resolution, format and time are shown on the upper left corner located in the display during the video recording, round icon of video time, and of red flashing are to represent this format.
-



System repair



When the camera can't start the system, please repair it by the following steps.

- Put the following five U-disk locations (config, kernel, logo.jpg, rootfs.ext4, u-boot.bin) to the U disk root directory of the FAT32 format
 - Insert the U disk to the USB3.0 interface;
 - Press the system repair key (1), boot, wait for the 10s to release the system repair key (1), and the system can be automatically fixed.
-

Camera Operating System Introduction

Please refer to **ALL-CAM2 Camera Operating System User's Manual**
(ALLCAM2-UM03-EN) in the random U disk for the introduction of the camera operating system.

Monitor the images via WIFI

1. Camera's video showed with Web Browser

Mobile phones or computers can be connected with ALL-CAM4 by WIFI, and then camera's video can be displayed with Web browser. More information refer to the manual **ALL-Cam2 Camera's video show with Web browser User's Manual (ALLCAM2-UM04-EN)** in random U-disk. Disk attached to this module if you want to get more detailed information.

2. Camera's video showed with APP

Mobile phones or computers can be connected with ALL-CAM4 by WIFI, and then camera's video can be displayed with APP. More information refer to the manual **ALL-Cam2 Camera's video show with APP User's Manual (ALLCAM2-UM09-EN)** in random U-disk. Disk attached to this module if you want to get more detailed information.

Android APP: Copy the app CamSys.apk from the U-disk to the Android client and install to use.

Apple OS APP: Download and install CamSys from App Store.

Windows client: Start the the application CamSys.exe from file CamsysWin in the U-disk.

Notice: WIFI of 4K camera only support AP mode.

Troubleshooting and After Sale Service

Troubleshooting

Faults	Possible Reason	Solutions
Power switch indicator not light	External power supply is not connected correctly	Check if the external power supply is connected
	The power adapter is broken.	Check if the power adapter is working properly
Without image output	External display is not connected correctly	Check if the external display is under normal conditions, such as whether the signal source is selected correctly
	HDMI cable Problem	Check if the HDMI cable is under normal conditions, such as damage to the HDMI cable, or excessive length of the HDMI line leading to serious signal attenuation without image.
	Display the Boot Interface, no image, menu functions available	FPC wiring loosening in camera

	Display the Boot Interface, no image, menu functions unavailable	The software of the camera is damaged and needs to be replaced with the manufacturer.
Color distortion	The color is adjusted improperly	Factory Reset, white balance again
	White balance is not operated correctly	
System halted	The instrument runs slowly and is prone to crash.	USB3.0 U-disk is required to use and be plugged with USB3.0 port on the camera. Big quantity of photos and videos in storage might result in the slow reaction. Release the space of storage and update the system can help to solve.
	System crash	Reboot system or update system
	The instrument is overheat	Check the heat emission system of the instrument
Image is not clear	Camera lens is dirt	Wipe the camera lens
	Incorrect focus	Adjust the focus

WIFI client terminal doesn't display image	Connect USB WIFI hardware or not	Check if the WIFI hardware is connected, check if the WIFI function is enabled
	Check if the IP address is accordant with the camera IP address	Check if the client terminal software IP address is accordant with the camera IP address Update the system
Unmatchable with pedal switch	Operating without pairing process	Please pair according to the pairing method in the instructions.
	The antenna of the pedal switch is not connected properly	Poor antenna connection will result in no signal to be transmitted and received, so it is necessary to ensure that the antenna is connected properly
	Damage of remote control module	(1) Press the pairing button at the receiving module to check if the red indicator is on; it should be on normally. If off the receiving module is damaged. (2) Press the Photo button of the pedal switch for 4 seconds, the green light will on 4 seconds then off. Otherwise, the

		transmitter module is damaged.
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After-Sale Service

Any unauthorized repair to the camera should not enjoy warranty services. In order to safely deliver the instrument to Alltion (Guangxi) Instrument Co., Ltd. for repair, please keep the original package case and materials of the instrument.

Two-years warranty service --- the charge for components and labor have been included in the product purchased by you.

For more information:

Phone: +86-774-2836101

Email: sales@alltion.com or sales@alltion-microscope.com

Web: <http://www.alltion.com>

The information needed to identify the device and its manufacturer is available and kept up to the newest IFU on the above website.