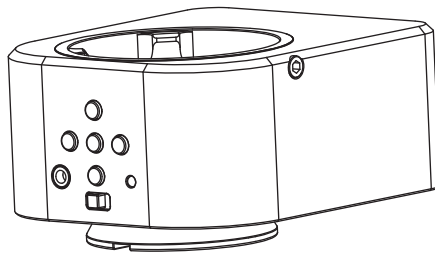


Binocular Stereo Microscope Camera Solution(HDMI Embedded Camera)



Applicable to	Olympus	Nikon	Leica	Zeiss
Model	FN02			
Category	A0	N0	L0	Z0
Physical resolution	2.0MP			

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1.1 Cautions and notes

- (1) To avoid danger or damage incurred to the lens, do not touch the lens or sensor directly with your fingers.
- (2) To avoid failure or electric shock hazard and so on, do not disassemble or modify the internal structure of the device.
- (3) Do not plug in or unplug the USB port or the HDMI port when hands are wet.
- (4) Do not use alcohol and other organic solvents to clean.
- (5) If the lens or sensor is dirty or damp, you should better use dry and non-linen fabric or professional lens tissue to wipe them.
To avoid scratches on the surface, do not touch the lens with your fingers. Wipe the lens or sensor lightly.
- (6) The products are not specifically designed for an outdoor use. Do not expose it to outdoor environment without any protection.
Excessive temperature and humidity will damage the lens. Please avoid using the product under the following environment:
high temperature or high humidity environment, places with direct sunlight, dirt or vibration and places near heat source.
- (7) Please use and store in the following environment:
Operating temperature :0°C~ 40°C;
Storage temperature:-10°C~ 60°C;
Operating Humidity :30~60%RH;
Storage Humidity:10~80%RH.
- (8) If any foreign matter, water or liquid enter into the device by accident, disconnect the USB cable immediately. Please send it to the maintenance center and do not use the hair dryer to dry it by yourself.
- (9) To prevent microscope from being tripped over or dropped, please put away the device's USB cables in use or standby.
- (10) To avoid electric shock by accident, please power off microscope before you move your Windows PC or laptop.
- (11) The cleanliness of the device lens will directly affect clarity degree of contents from the computer screen during preview.
Problems like various circles or spots on the screen may mostly be incurred by dirt on the lens. When cleaning, please use professional lens tissue or other professional detergent to clear the dirt on the lens.
- (12) Registered trademark and copyright information: this product is copyrighted by GUANGZHOU OSTECH ELECTRONIC TECHNOLOGY CO.,LTD.Without written authorization of the company, any organization or individual shall not copy, print or translate any part of this article into another language.

Chapter 2 Package list

1.HDMI embedded camera



2.HDMI cable(2m)



3.USB cable(1.8m)



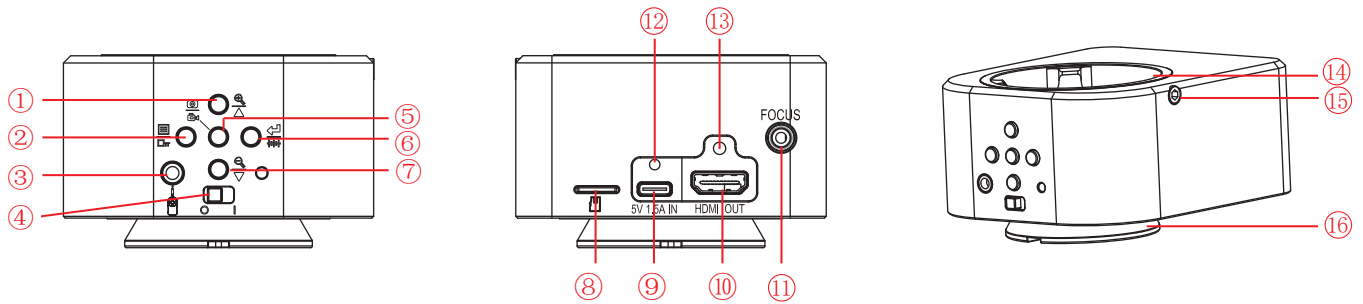
4.Allen key(3mm)



5.Wired controller



Chapter 3 Hardware introduction



①	Top button	Zoom in/upward/speed retreat function. "Magnification" function will be activated in the mode of photographing and recording. "Upward" function be activated after entering the menu or during browsing. Video playing will be changed into "fast rewind" function in the mode of playing back.
②	Left button	Menu/return/frozen (hot key) function. "Menu" function will be activated in the mode of photographing, playing back and recording. In the mode of photographing and recording, long press (2 seconds) will trigger "frozen" function. After entering the menu, "return" function will be on.
③	Wired controller in	Port for connecting the wired controller.
④	Power on-off	Machine on, machine off.
⑤	Middle button	Record/camera/play back function. "Recording" function is for the mode of recording. "photographing" function is for the mode of photographing. In the mode of playing back, the recording file carries the function of "playing back".
⑥	Right button	Mode/sure/crosshair (hot key) function. Mode includes "camera", "play back" and "record". Without entering the menu, "Mode switch" function will be activated and can be switched successively among three modes, namely photographing, playing back and recording. "Confirm" function will be on after entering the menu. Long press in the mode of photographing and recording activates the mode of "cross line" shortcut key.
⑦	Bottom button	Zoom out/downward/video fast forward function. "Reduction" function is on in the mode of photographing and recording. "Downward" function is on after entering the menu or in the mode of playing back. Video playing will be changed into "fast rewind" function in the mode of playing back.
⑧	TF card slot	TF card slot: TF card slot supports the maximum capacity of 128G. TF card support hot swap. If the recording files or photos are required to be stored, TF card needs to be inserted before recording or photography. Before photography and recording, if the TF card isn't been detected, the machine will remind users to insert TF card. If the TF card reaches its maximum storage capacity, the recording will automatically stop and process saving, and also reminds users to replace new TF card at the same time.
⑨	Power in / image interface(Type C)	The connection port of the Micro USB cable.
⑩	HDMI output interface	Through HDMI cable, connect with external monitor with HDMI interface to realize video, signal transmission, etc.
⑪	Easy focus hole	Internal filament focus structure is used to adjust the 0.43X field lens of the camera to achieve par-focal with electronic imaging and observation under eyepiece.
⑫	Fix USB cable	Lock USB cable screw hole
⑬	Fix HDMI cable	Lock HDMI cable screw hole
⑭	Female interface	Connects to the eyepiece end of the binocular microscope.
⑮	Tighten the screws	Use the accessory Allen key to tighten the screws and fix the eyepiece of the microscope.
⑯	Male interface	Connected to the objective end of the binocular microscope.

4.1 Camera install to a binocular microscope

- (1) Separate the objective end of the binocular microscope from the eyepiece end, as shown in Figure 1:
 - 1) Loosening the fixation screws of the binocular microscope;
 - 2) Remove the eyepiece end of the microscope.
- (2) Installation for HDMI embedded camera:
 - 1) Snap the HDMI embedded camera to the objective end of the microscope, oriented as in Figure 2;
 - 2) Tighten the fastening screws on the objective end of the microscope, fix the HDMI embedded camera on the microscope.
- (3) Installation for the objective end of the microscope, as shown in Figure 3:
 - 1) Snap the eyepiece end of the microscope to the female interface end of the smart embedded camera;
 - 2) Tighten the fastening screws of the HDMI embedded camera and fix the eyepiece end of the microscope on the HDMI embedded camera.

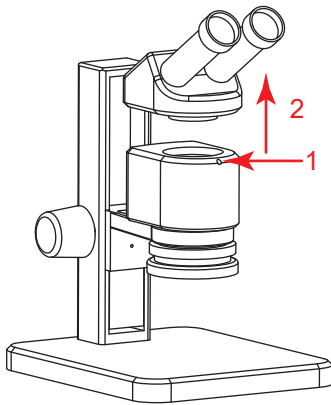


Figure 1

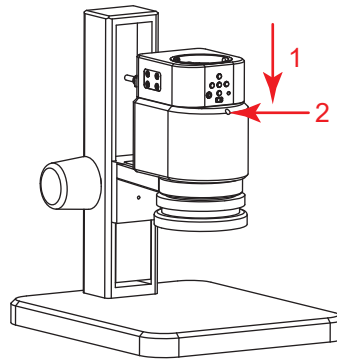


Figure 2

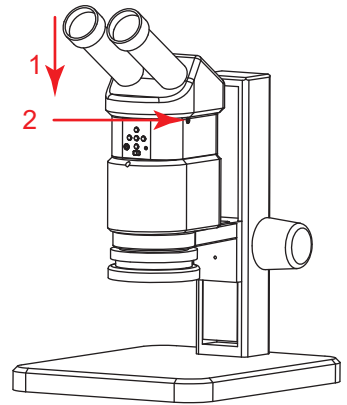


Figure 3

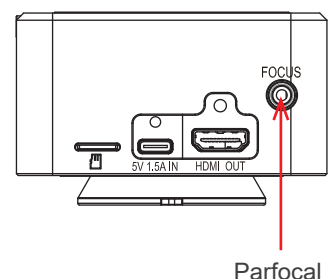
4.2 Remove camera from microscope

Reverse the order with the installation.

4.3 Parfocal

- (1) Place a flat specimen (such as a business cards, etc.) on the microscope's carrier table, adjust the diopter of the eyepiece to 0, adjust the microscope's magnification to the minimum, and adjust the microscope's objective distance to the clearest visualization;
- (2) Adjust the focal length in clockwise or counterclockwise direction with the allen key that we provided until the image from monitor is clear, you can realize parfocal in this way.

Note: as soon as parfocal is completed on the minimum magnification, the other magnification is basically free of adjustment and achieve parfocal as well.




5.1 System requirements for HDMI work mode

Display: for best observation effects, 1080P or higher resolution with HDMI A interface, screen of 19 or higher inches with size proportion 16:9 should be used.


5.2 Introduction of each function

- (1) The machine contains altogether 5 press buttons. For press button instruction, please refer to chapter 3. Besides, the machine can also connect a wired controller with 5 press buttons via a connection device.
- (2) Short press refers to press time 0.2s~1s. Long press refers to press time more than 2s or above. (Without special reference, press below all means short press).
- (3) For 10 seconds without operation, the system will automatically hide the icon on the screen desk for users to watch the video more conveniently. The icon on the desk can be awakened by pressing the left button and the other 4 buttons will execute the command of the current press button while been awakened. (Users can press arbitrary button to awake the desk icon).
- (4) The maximum magnification ratio of the zoom in function button: x4. Zoom out function button can only be available when being zoomed in first.
- (5) The highest resolution pixel of photography is:1920x1080;
- (6) Shutdown save parameter: Each time the camera eyepiece is started, the current parameter is the parameter of the last shutdown. When you initialize the parameter, you can restore the factory settings by using the "Restore defaults" in the menu.

1. Photography


The top right corner icon "  " displays for photography mode. Please ensure the TF card insertion, press "middle button" for picture shooting. Pictures will be automatically saved into the Photo file under TF card file Microscope. File name format: "Photo_00001.jpg", "Photo_00002.jpg", ...

2. Record

The icon "  " on the top right corner of the screen displays for recording mode to record sound and video files. Please ensure the TF card insertion, press "middle button" for recording and press "middle button" again to exit recording. Records will be automatically saved into the Video file under TF card file Microscope. File name format "Video_0001.mov", "Video_0002. Mov" ...

Note: The maximum capacity of recording file is 4G. When 4G capacity is reached, a new recording file will be started.

3. Playback



The top right corner icon "  " displays for Playback mode. Flip over for observation by pressing "Top Button" or "Bottom button". Pressing button "Left button" can enter the file attributes interface, which includes three operation functions such as delete, protect and slide show.

"Photo_xxxx.JPG" on the top right corner means the picture is an photo.

"Video_xxx.MOV" on the top right corner means the picture is a video. Press

"Middle button" to play/pause recording. Press "Top Button" or "Bottom button" can fast forward or fast backward during playing. pressing "Right button" exit playing.

4. Frozen

Under the mode of camera or recording, long press “left button” and the right side of the desk will display the icon , which is the frozen screen. You can long press “the left button” or short press any button to defrost the screen and the icon  disappears. Each button's function is performed after unfreeze.


5. Menu Setup

Pressing “Left Button” to enter the menu bar interface. Through button “ Top Button” and “Bottom Button” to move the cursor up and down for selecting the required function. Press “Right Button” to enter into setup. After setup, press “Left Button” to exit menu bar.

Note: common functions are set up on the menu bar, namely exposure compensation, white balancing, 3 sequence, image quality, HDR, resolution ,sharpness, shooting ways, color, quick preview, button press sound ,auto power off, language ,frequency ,image rotation ,frozen and date/time.

6. Exposure setup

Under the mode of camera or recording, press the “left button” to enter the menu bar. Press the “top button” or the “bottom button” to select the menu bar “exposure EV” and then press the “right button” to enter the exposure setup interface.


Then the screen shows the icon . (Note: font flashes: stands for the cursor is located in current position. Red font: stands for the status of been selected.)

Press the “top button” or “bottom button” to move the cursor. Press the “right button” to select the current status and the font color will turn red. Press the “left button” to exit the exposure setup interface.

- (1) The cursor points to A, the real-time automatic exposure function will be started by pressing the “right button” and the color of the letter A will turn red.
- (2) The cursor points to S, the single real-time automatic exposure function will be started by pressing the “right button” and the color of the letter S will turn red.
- (3) The cursor points to M, the manual exposure can be started by pressing the “right button” and the color of the letter M will turn red and a flashing red number 0 will also appear on the right side. Press the “top button” or “bottom button” to change the current number value (the valid adjustment range is -10~+10 and the default value is 0). Press the “right button” to save the number value and the number value will be covered simultaneously.

7. White balance adjustment

Under the mode of camera or recording, press the “left button” to enter the menu bar. Press the “top button” or the “bottom button” to select the menu bar “white balance WB” and then press the “right button” to enter the interface of the white balance setup.

Now the screen will display the icon . (Note: font flashes: stands for the cursor is located in current position. Red font: stands for the status of been selected.)

Press the “top button” or the “bottom button” to move the cursor. Press the “right button” to select the current status and the font color will turn red. Press the “left button” to exit the White balance setup interface.

- (1) The cursor points to A, the real-time automatic white balance function will be started by pressing the “right button” and the color of the letter A will turn red.
- (2) The cursor points to S, the single automatic white balance function will be started by pressing the “right button” and the color of the letter S will turn red.
- (3) The cursor points to M, the manual white balance can be started by pressing the “right button” and the color of the letter M will turn red and a group of value will also appear on the right side. The flashing red number is the value currently been selected. Press the “top button” or “bottom button” to change the current number value (the valid adjustment range is 1-255). Press the “right button” to switch the value R, G and B consequently.

Whichever value letter (R / G / B) is selected, as long as the “left button” is pressed, RGB current number value will be saved and altogether RGB and the number value will be covered.

8. Crosshair mark

Under the mode of camera or recording, long press the “right button” to recall the crosshair mark and then long press the “right button” to cancel the crosshair mark. The default cross line invoked by shortcut key is the first kind. If either of the other two shortcut keys of the cross line is needed, other cross lines will be firstly invoked via menu and current cross line is controlled by shortcut key. There are three kinds of crosshair marks (“crosshair mark” menu can be found in the menu bar):

1. Cross (default)
2. Grid
3. Concentric circles

Chapter 6 Disclaimer

(1) In order to protect the legitimate rights and interests of users, please carefully read the instructions, disclaimers and safety instructions provided with this product before using it. The company reserves the right to update the above documents. Please operate the product according to the instructions and safety instructions.

(2) Once you begin to use the product, you shall be deemed to have read, understood, recognized and accepted all terms and contents of the product's instructions, disclaimers and safety instructions. Users undertake to be responsible for their actions and all consequences. User undertakes to use the product only for legitimate purposes and agrees to these terms and any relevant policies or guidelines that the company may establish.

(3) In the process of using this product, please strictly abide by and execute the requirements including but not limited to the instructions and safety instructions. All personal injuries, accidents, property losses, legal disputes and other adverse events that cause conflicts of interest caused by violation of the safety instructions or irresistible factors shall be borne by users themselves, and the company shall not assume any responsibility.

(4) Safety instructions:

- 1) Please do not use wet hands to plug and unplug the power supply of the equipment.
- 2) Please be sure to use a regular brand power socket, and make sure the grounding is well grounded to prevent electric shock.
- 3) Please be sure to make regular safety checks on sockets and plugs to avoid potential electrical safety hazards caused by aging and short circuit.
- 4) Please be sure not to use the product in a humid or hot environment to ensure the safety of the product.
- 5) Please be sure to loosen bundle cords of the power cable before using, to avoid electromagnetic induction and heating, thus increasing the heat dissipation speed.
- 6) Please be sure not to use the product equipment or socket or other places in high or easy to fall, so as to avoid damage.
- 7) Before opening the socket power supply, please be sure to turn off the load power switch of the product equipment.
- 8) The company reserves the rights to improve product, upgrade technology and change parameters without prior notice.

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