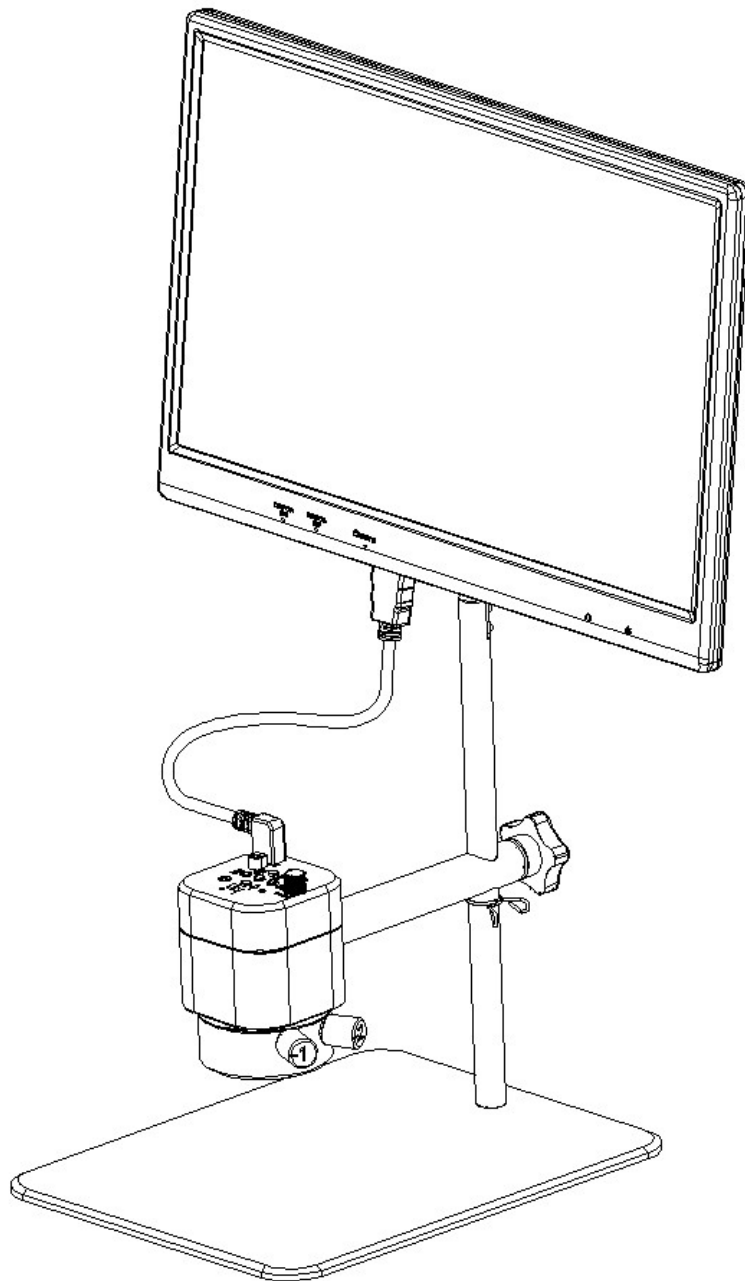

HDMI Microscope

User Manual



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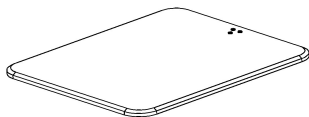
Chapter 1 Notes and Safety Requirements

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 Power connection 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 : -10°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 Power line 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 connect cable in use or standby.
- (10) To avoid electric shock by accident, please power off microscope before you move your display or equipment.
- (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.

Chapter 2 Packing List

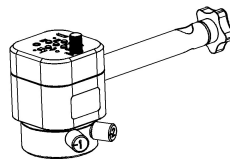
1、Bottom plate



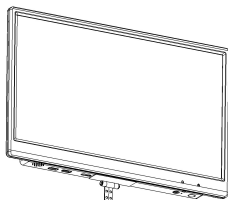
2、Column



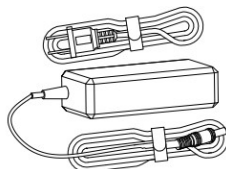
3、Camera



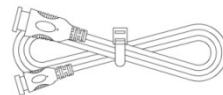
4、Monitor



5、AC/DC adapter



6、HDMI cable



7、Screwdriver



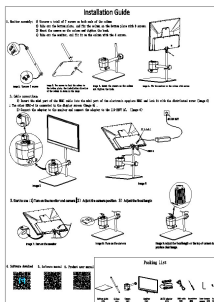
8、Inner hexagon spanner



9、Screw



10、Quick installation guide

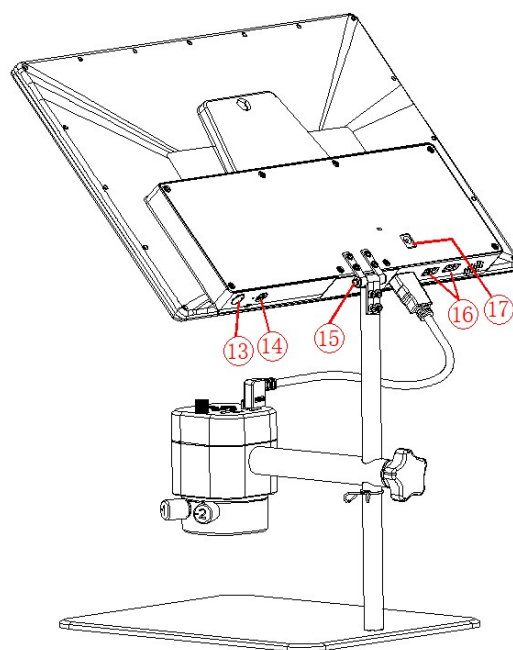
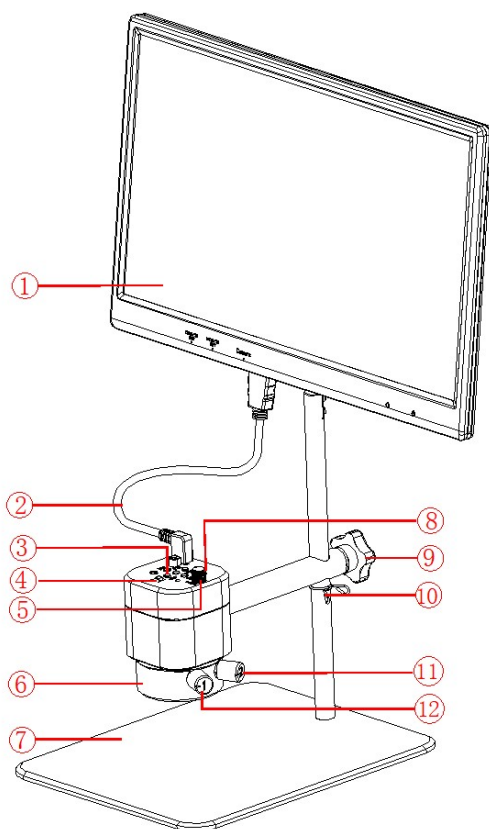


11、Wired controller(optional accessories)



Chapter 3 Function Introduction of Each Part

3.1 Name and Function for Each Part of Microscope



- ① Display screen : 15.6" display screen, For image display and USB power supply interface.
- ② HDMI cable : Power supply and signal transmission between camera and display screen.
- ③ Push-button : 5 buttons can match to each other to achieve different functions.

Ⓐ **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.

Ⓑ **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.

Ⓒ **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.

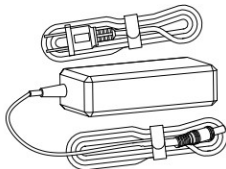
④ **Middle button:** Record/camera/play back function. “Recording” function is for the mode of recording. “photographing” function is for the mode of photographing. In the mode of playing back, the recording file carries the function of “playing back”.

⑤ **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.

- ④ digital camera Switch : Put the switch to right: turn on the digital camera; put the switch to left: turn off the digital camera.
- ⑤ Focus knob : Rotate the knob to implement the focus function;
Rotate clockwise: back focal length decreases and object distance increases;
Rotate anticlockwise: back focal length increases and object distance decreases.
- ⑥ light lamp : The coaxial light and the diffuse reflection coexist, and the two effect lights are respectively controllable; the coaxial light lamp adopts a circular distribution of 13 light beads at a small angle; the diffuse reflection light is distributed by 18 high-brightness light beads, and the brightness is uniform.
- ⑦ Bottom plate : Aluminium alloy bottom plate.
- ⑧ TF card slot : The location of TF card, photos and videos will be stored in TF card.
- ⑨ Mobile knob : Loosen the knob anticlockwise and the stand can be adjusted at any angle; tighten the knob clockwise and the current position of the digital camera can be fixed.
- ⑩ Anti-slip ring : Prevent the microscope from slipping
- ⑪ Adjustment knob of the coaxial light : Rotate Clockwise: turn on the coaxial light/strengthen coaxial lightness; rotate counterclockwise: Reduce the coaxial lightness/turn off the coaxial light.
- ⑫ Adjustment knob of the diffuse reflectance light : Rotate Clockwise: turn on the diffuse reflectance light/strengthen the diffuse reflectance lightness; rotate counterclockwise: weaken the diffuse reflectance lightness/turn off the diffuse reflectance light.
- ⑬ Monitor switch : Press and hold the on key for more than 4 seconds to turn on or off. (the digital camera stops working after the monitor is turned off)
- ⑭ Wired controller interface : Connect to the wired controller which is an optional accessory to adjust parameters of the monitor.

- ⑮Rotating shaft : Satisfies the display up and down flip.
- ⑯USB power supply interface : It is a 5V 2A power output interface, provide power to digital camera through USB cable.
- ⑰Power interface : Power supply to the monitor.

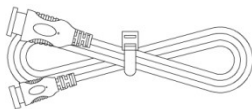
3.2 Accessory Introduction



AC/DC adapter: : Connect and supply power to the monitor.



Wired controller: : Connecting with electronic eyepiece or monitor for adjusting parameters.
(optional accessories)



HDMI cable : Connecting the electron microscope to the display can realize signal

Chapter 4 Installation Guide

4.1 Methods of application of electron microscope

- 1、Display assembly:
- 1) Unscrew a total of 7 screws on both ends of the column
 - 2) Take out the bottom plate, and fix the column on the bottom plate with 3 screws.
 - 3) Mount the camera on the column and tighten the knob.
 - 4) Take out the display screen, and fix it on the column with the 4 screws.

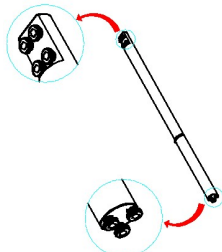


Figure 1. Unscrew 7 screws

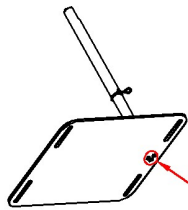


Figure 2. Use screws to lock the column to the bottom plate, the installation direction of the column is shown in the image

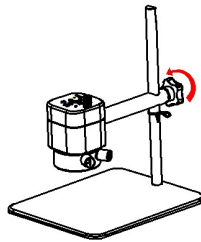


Figure 3. Mount the camera on the column and tighten the knob.

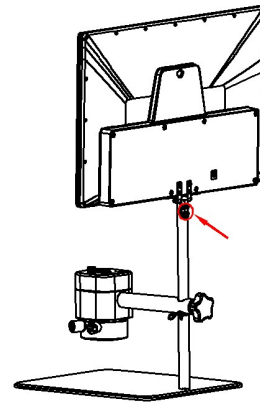


Figure 4. Fix the display screen on the column with screws

2、Cabling:

- 1) Connect mini port of the HDMI cable with the HDMI Mini port of the camera, and fasten it with the screws provided, as shown in Figure 5; the other end HDMI-A is connected to the display monitor, as shown in Figure 6.
- 2) Power the display screen with provided 110-240V AC plug, as shown in Figure 6.

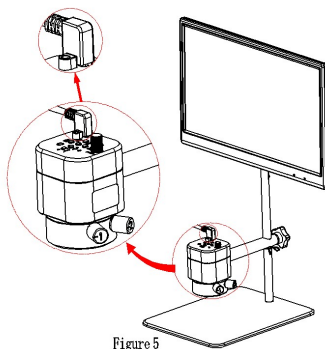


Figure 5

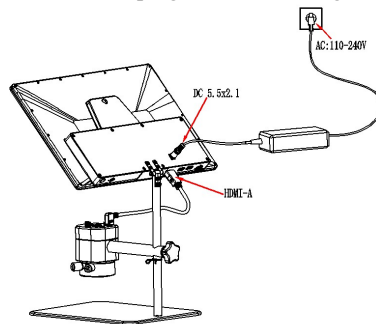


Figure 6

3、start to use:

- 1) Turn on the monitor and camera
- 2) Adjust the camera position
- 3) Adjust the focal length

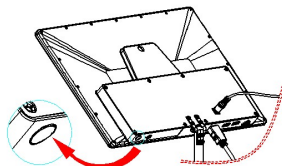


Figure 7: Turn on the monitor

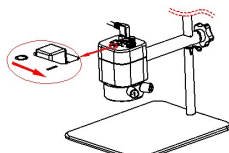


Figure 8: Turn on the camera

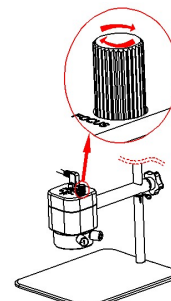



Figure 9: Adjust the focal length on the top of camera to produce clear image.

Chapter 5 Instructions


5.1 Introduction of Various Functions

- a) The machine contains altogether 5 press buttons. For press button instruction, please refer to chapter 4-1. Besides, the machine can also connect a wired controller with 5 press buttons via a connection device.
- b) 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).
- c) 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) .
- d) The maximum magnification ratio of the zoom in function button: x4. Zoom out function button can only be available when being zoomed in first.
- e) The highest resolution pixel of photography is:1920x1080;
- f) 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.

A
S

Then the screen shows the icon M. (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.

A
S

Now the screen will display the icon M. (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

R 128
G 128
B 128

 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.

Note: From automatic white balance to manual white balance: the value of manual white balance is the white balance under the current background. From single automatic white balance to manual white balance: the value of manual white balance is the previous single automatic white balance.

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.