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5320-AF410

**HIGH-DEFINITION AUTO FOCUS DIGITAL
MICROSCOPE (LARGE VIEW FIELD)**

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SPECIFICATION

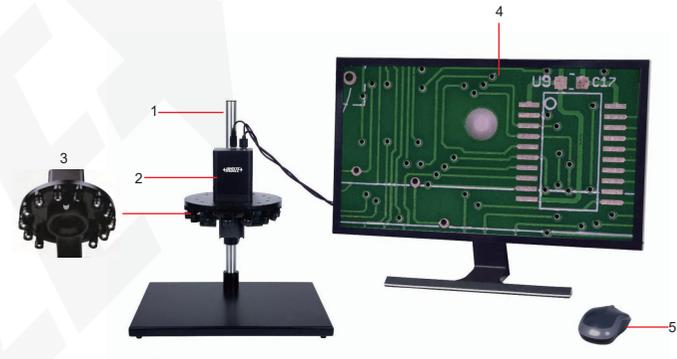
Magnification (on 28" TV)	2.4X~43.7X
View field	14.2×8~255×145mm
Auto focus distance	200~255mm
Sensor	1/2.8" CMOS
Pixel	8M
Resolution	3840×2160
Frame rate	60fps
Output	HDMI/USB/LAN
Power supply	power adapter
Dimension (L×W×H)	400×300×450mm
Weight	5.8kg

MEASURING ACCURACY (ON 28" TV)

Optical magnification	Measuring accuracy
2X	±0.1mm
4X	±0.1mm
6X	±0.04mm
10X	±0.02mm
14X	±0.02mm
18X	±0.01mm

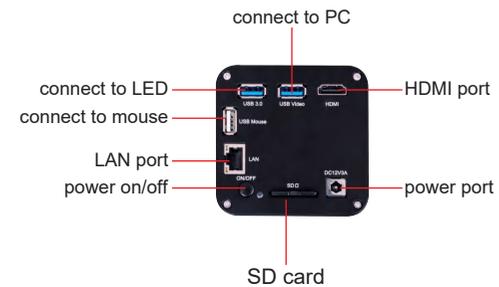
Structure introduction

1 Structure name:

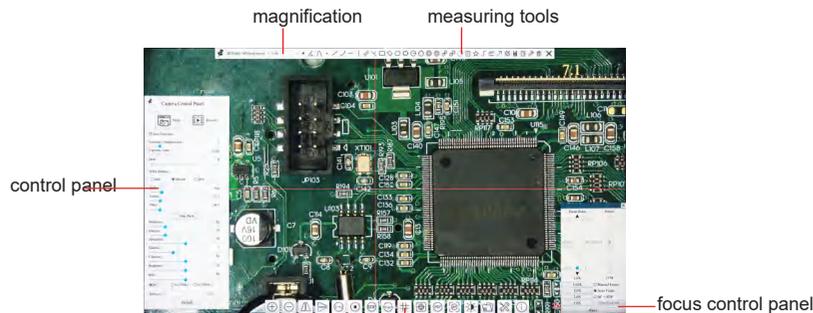


- 1. Microscope stand
- 2. Camera (1/2.8" CMOS Pixel 8M Frame rate: 60fps)
- 3. LED
- 4. LCD (optional)
- 5. Mouse

2 Camera structure



3 Software for LCD (INCLUDED)



1. control panel: move the mouse to the left side of the video window, the camercontrol panel will pop up automatically, left-clicking button to achieve display/ auto hide switch of the camera control panel

- Snap: capture image and save it to the SD card or USB flash drive
- Record: record video and save it to the SD card or USB flash drive
- Auto Exposure: when auto exposure is checked, the system will automatically adjust exposure time and gain according to the value of exposure compensation
- Exposure Compensation: available when auto exposure is checked. Slide to left or right to adjust exposure compensation according to current video brightness to achieve proper video brightness
- Exposure Time: available when auto exposure is unchecked. Slide to left or right to decrease or increase the exposure time to adjust the video brightness
- Gain: adjust Gain to reduce or increase brightness of video. The noise will be reduced or increased accordingly
- Red: slide to left or right to decrease or increase the proportion of red in RGB on video
- Green: slide to left or right to decrease or increase the proportion of green in RGB on video
- Blue: slide to left or right to decrease or increase the proportion of blue in RGB on the video
- Auto: white balance adjustment according to the window video every time the button is clicked
- Manual: adjust the red, green or blue item to set the video white balance
- ROI: check the ROI item will display a red ROI rectangle on the video window, drag it to the interested area will perform the white balance according to the area video data
- Sharpness: adjust sharpness level of the video window
- Denoise: adjust denoise level of the video window
- Saturation: adjust saturation level of the video window
- Gamma: adjust gamma level of the video. slide to the right to increase the gamma value and to the left to decrease the gamma value
- Contrast: adjust contrast level of the video. slide to the right side to increase and to the left to decrease video contrast
- Brightness: adjust brightness level of the video. slide to the right side to increase brightness and to the left to decrease brightness
- DC: for DC illumination, there will be no fluctuation under the light source so no need for compensating light flickering

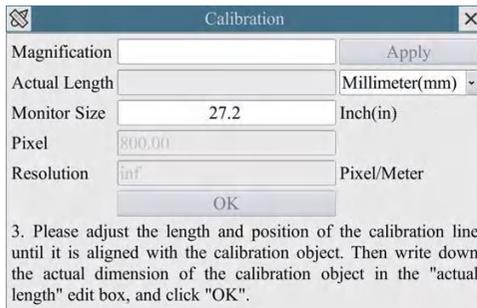
AC (50HZ): check AC(50HZ) to eliminate flickering “strap” caused by 50Hz illumination
 AC (60HZ): check AC(60HZ) to eliminate flickering “strap” caused by 60Hz illumination
 Scence: select different default parameters according to the type of scence
 Default: set all the settings in the camera control panel to the default values

2. Magnification: check "visible" to keep the measurement toolbar fixed. set the units and select the corresponding magnification, or use the mouse wheel to adjust the magnification.
3. Measuring tools

- | | | | |
|--|--|--|---|
| | object select | | annulus |
| | four-point method to measure the angle | | two circles |
| | angle | | three-points two circles |
| | point | | arc |
| | arbitrary line | | annotation text |
| | three-point method to measure the spacing | | polygon |
| | horizontal Line | | export the measurement information to CSV file(*.csv) |
| | vertical Line | | delete all the measurement objects |
| | Three-Point method to measure vertical line | | setting |
| | parallel line | | exit from current measurement mode |
| | rectangle | | center + radius circle |
| | ellipse | | three-points circle |
| | resolution, and to create a correspondence between measurement units and pixel size. You can also enter the display size to ensure accurate digital magnification display. Calibration must be completed using a ruler with an accuracy of at least 1 mm. For the detailed calibration process, please refer to the calibration instructions below | | |
| | automatically measure the distance between two parallel lines
automatically measure circles
automatically measure rings
automatically measure rectangles
automatically measure polygons | | |
| | object position and properties control bar, change the position and properties of objects | | |

3.1 Calibration

1. user needs to prepare an calibration object such as ruler before calibration
2. move the mouse to the upper side of the video window, the measurement toolbar will appear. clicking  calibration on the measurement toolbar to start the calibration
3. the XCamView will pop up a message box: camera resetting for calibration
4. after the reset is finished, a message box: " Please put the calibration object on the stage, adjust the height of the stand until the calibration object is in focus, then click OK button" will pop up
5. after clicking the OK button, XCamView will pop up a calibration dialog shown below



6. adjust the "calibration line" to ensure it aligns with the scale lines of the "calibration object". fill in the aligned actual size into the "actual length" edit box and click the "OK" button
 7. enter the current default magnification of 18 and click "Apply". Input the actual length. the default monitor size is 27.2 inches; adjust if different. Monitor size affects the display magnification.
 8. the calibration line spans several pixels, which the system will automatically populate.
 9. the number of pixels per meter is calculated based on the actual length of the calibration line and the number of pixels it spans.
4. Control toolbar

 zoom In the video window	 LED brightness control
 horizontal flip	 settings
 color/gray	 zoom out the video window
 EDF	 vertical flip
 display cross line	 video freeze
 PIP	 stitch

 image overlay	 auto focus control panel
 browse images videos	 check the version of XCamView

NOTE: 

This function is for importing drawings. Once imported, the drawing cannot be moved enlarged, or reduced

When using this function, the drawing must have a resolution within the range of 3840*260 within a 3840x2160 rectangular frame

After the drawing is imported, its coordinate position will be at the bottom-left corner of the image area

 Settings

 Network	network settings, connect to PC
Measurement	basic measurement settings
Magnification	magnification and corresponding resolution
Image Format	image format settings and object saving methods
Video	video resolution and other related settings
Storage	storage (USB flash drive or SD card)
Files	naming method for images and videos
Time	time settings
Auto Focus	focusing mode, focusing area, display size settings
ISP	metering mode, color, and other definitions
EDF	EDF settings
Stitch	Stitch settings
Voice Control	voice control settings
Language	language settings
Miscellaneous	scale and partial save settings

5. Focus control panel

- 5.1 zoom slider: move the zoom slider to change the zoom ratio, the value will be displayed below the slider. It can be edited to set the desired zoom ratio
- 5.2 zoom button: there are 4 zoom buttons, users can set specific zoom ratio for the quick control
- 5.3 focus slider: move the focus slider to change the focus lens position; the focus lens position value will be displayed below the slider. It can be edited to set the desired focus lens position
- 5.4 manual focus: with Manual Focus radio button is checked, users can move the focus slider to change the focus lens position to get a clear image. The position value of the focus lens below the slider can be set by the user
- 5.5 autofocus: with autofocus radio button is checked, the system will automatically focus the object on the stage, the focus lens position value under the focus slider will be refreshed in real-time; when the ROI or object state is changed, the camera will perform the auto focus operation automatically
- 5.6 with AF+EDF checked, system turns on the autofocus mode, which requires the user to change the focus area in sequence to focus on multiple different targets in the same scene. after all targets are successfully focused, move the mouse to the bottom of the video window click , and then the camera will perform EDF on the previously focused images and output the fused image.

NOTE: the EDF synthesis feature in the measurement toolbar, manually adjust the focus until different targets appear clear, move your mouse to the video window and click the corresponding icon  the camera will perform depth-of-field fusion on the previously successfully focused images and output the merged image

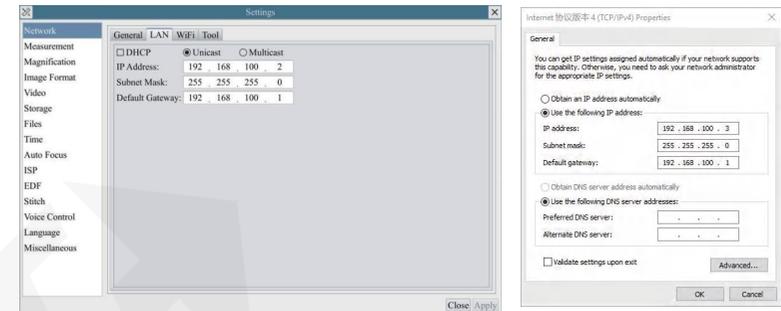
- 5.7 after clicking reset, the magnification is fixed at 18X. once the reset is complete, observe a flat object (such as a ruler) and adjust the stand until the video image is clearest to achieve the standard working distance

NOTE: before taking measurements, always perform a reset and adjust the stand until the video of the flat object under test is clear. This ensures the camera is at the standard working distance and guarantees accurate measurement results.

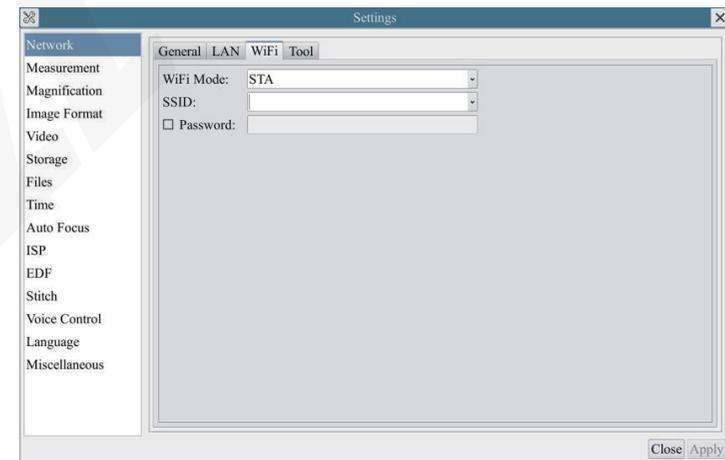
4 PROFESSIONAL SOFTWARE (INCLUDED, FOR COMPUTER)

1. connection: USB LAN AP

- 1.1 USB: one end of the USB3.0 cable is connected to the camera's USB VIDEO port, and the other end is connected to the PC's 3.0 interface. The PC software will automatically recognize the camera. Select the corresponding camera in the camera list (Settings, Network, General).
- 1.2 LAN: connect one end of the network cable to the camera's LAN port and the other end to the PC's network port. configure the network settings as shown in the diagram below.



1.3 AP Connection

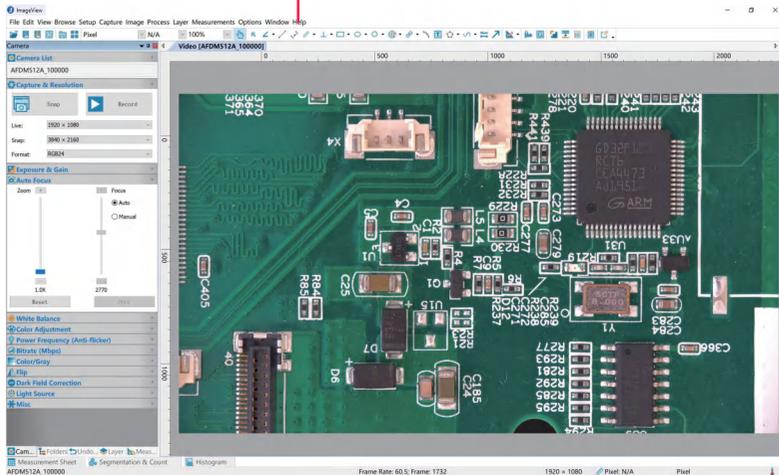


WiFi Model: select AP, insert the wifi adapter into the camera's 3.0 port, and connect the PC or mobile device to the camera's wireless access point.

Note: camera name and password

1.4 open the software 

software operation instructions



Attention

- ◆ To avoid danger or damage incurred to the lens, do not touch the lens or sensor directly with your fingers.
- ◆ To avoid failure or electric shock hazard and so on, do not disassemble or modify the internal structure of the device.
- ◆ Do not plug in or unplug the anything port when hands are wet.
- ◆ 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.
- ◆ 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.
- ◆ Please use and store in the following environment:
 Operating temperature: 0°C~ 40°C
 Storage temperature: -20°C~ 60°C
 Operating Humidity: 30~80% RH
 Storage Humidity: 10~60%RH
- ◆ If any foreign matter, water or liquid enter into the device by accident, disconnect the power cable immediately. Please send it to the maintenance center and do not use the hair dryer to dry it by yourself.
- ◆ To avoid electric shock by accident, please power off microscope before you move your computer or laptop.
- ◆ 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.
- ◆ Please do the confocal adjustment after changing camera adapter or auxiliary objective