XFCAM4K8MPA Auto Focus HDMI Camera Help Manual

Content

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1 XFCAM4K8MPA's Basic Characteristic

XFCAM4K8MPA camera is a camera designed by ToupTek that includes multiple modes of output (HDMI+Wi-Fi+USB), where X in 'XFCAM' means a CMOS camera with multiple interfaces, and F means auto focus. It uses ultra-high-performance CMOS sensor. The camera can be directly connected to an HDMI display, or it can be connected to a computer via Wi-Fi or USB, and the image and video can be saved in an SD card for on-site analysis and subsequent research.

Enhanced with an embedded ARM core, this camera integrates various functions inside. With the help of a USB mouse and well-designed UI on the HDMI monitor, all functions could be easily controlled.

The XFCAM4K8MPA camera comes with the built-in auto focus system, which can realize auto focus on specific areas of the scene.

Figure 1 XFCAM4K8MPA and Its Back Panel

By inserting a Wi-Fi module or connecting with a computer via a USB cable, the user can directly control the camera's hardware with the software ToupView or ToupLite. XFCAM4K8MPA camera can be used for tool field inspection, microscope observation, etc.

- Auto/Manual focus with the movement of the sensor
- Sony Exmor/STARVIS back-illuminated CMOS sensor
- 4K HDMI/USB/LAN/Wi-Fi multiple video outputs
- 4K/1080P auto switching according to monitor resolution
- SD card/USB flash drive for captured image and video storage, support local preview and playback
- Embedded XCamView for the control of the camera and image processing
- Excellent ISP with local tone mapping and 3D denoising
- ToupView/ToupLite software for PC
- iOS/Android applications for smart phones or tablets

1.1 XFCAM4K8MPA Datasheet

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity	FPS/Resolution	Binning	Exposure(ms)
XFCAM4K8MPA	Sony IMX334(C) 1/1.8"(7.68x4.32)	2.0x2.0	505mv with 1/30s 0.1mv with 1/30s	60@3840*2160(HDMI) 30@3840*2160(NETWORK) 30@3840*2160(USB)	1x1	0.04~2000

1.2 XFCAM4K8MPA Interface and Other Function

Interface & Button Functions		
	ON/OFF	Power switch
	SD	Comply with SDIO3.0 standard and SD card could be inserted for video and images saving
	LED	LED status indicator
	DC12V	Power adapter connection (12V/1A)
	USB Mouse	USB Mouse for control of XCamView software
	USB3.0	Connect USB flash drive to save picture and video(Host Mode) Connect 5G WLAN module to transfer video wirelessly in real time(AP/STA, Host Mode) Connect the computer to transfer video image(Device Mode)
	HDMI	Comply with HDMI2.0 standard. 4K/1080P format video output and supporting automatic switch between 4K and 1080P format according to the connected monitors
Other Specification for HDMI Output		
UI Operation	With USB Mouse to operate on the embedded XCamView	
Image Capture	JPEG Format with 8M(3840*2160) Resolution in SD Card	
Video Record	Video format: 8M (3840*2160) video file encoded by MP4 and H264 Storage frame rate: 50~60fps (related to SD card speed grade and image resolution)	
Camera Control Panel	Including focus, exposure, gain, white balance (automatic, manual, ROI), color adjustment, sharpness and 3D noise reduction control	
Toolbar	Including Zoom, Mirror, Comparison, Freeze, Cross, Browser Function, Multi-language and XCamView Version Information	
Other Specification for Wi-Fi /USB3.0 Output		
UI Operation	ToupView or ToupLite on Windows/Linux/OSX/Android Platform	
Wi-Fi Performance	Frequency：2.4G Bandwidth：20M Protocol：802.11n Highest rate：150Mbps RF Power 20dBm(Maximum)	
	Frequency：5G Bandwidth：40M Protocol：802.11ac Highest rate：400Mbps RF Power 20dBm(Maximum)	
USB3.0 Performance	5Gbps	
Maximum Connected Devices	WiFi:1~3 (According to the Environment and Connection Distance)/USB: 1	
White Balance	Automatic/manual/ROI	
Recording System	Still Picture or Movie	
Software Environment		
PC Operating System	Microsoft® Windows® XP /Vista /7/8/8.1(32 & 64 bit) OSx(Mac OS X) Linux	
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher	
	Memory:4GB or More	
	USB Port:USB2.0 High-speed Port	
	Display:19” or Larger	
	CD-ROM	

Operating Environment	
Operating Temperature(Celsius)	-10~ 50
Storage Temperature(Celsius)	-20~ 60
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 12V/2A Adapter
Size	
Length x width x height	78 mm (3.07”) x 70 mm (2.76”) x 92mm (3.62”)
Weight	0.47 kg (1.0lbs)

1.3 Dimension of XFCAM4K8MPA

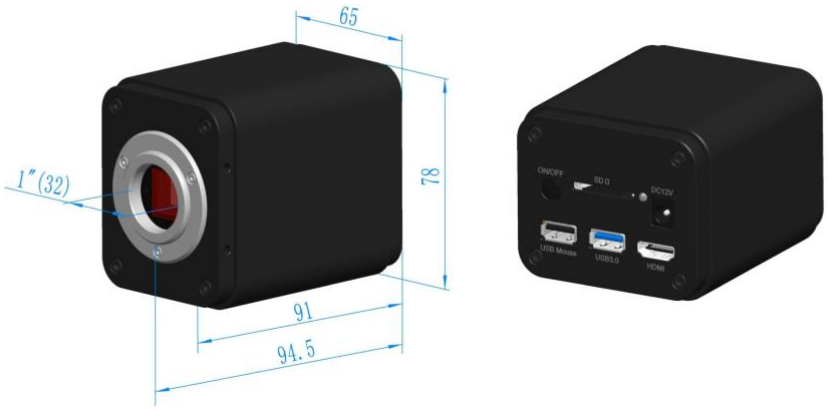


Figure 2 Dimension of XFCAM4K8MPA

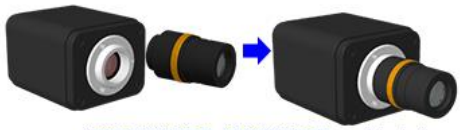
1.4 Packing Information for XFCAM4K8MPA

Figure 3 Packing Information of XFCAM4K8MPA

<table>
<tr><th colspan="4">Standard Packing List</th></tr>
<tr><td>A</td><td colspan="3">Gift box : L:25.5cm W:17.0cm H:9.0cm (1pcs, 1.43Kg/ box)</td></tr>
<tr><td>B</td><td colspan="3">XFCAM4K8MPA</td></tr>
<tr><td rowspan="2">C</td><td rowspan="2">Power Adapter
Input: AC 100~240V 50/60Hz
Output: DC 12V 1A</td><td colspan="2">American standard: Model: GS12U12-P1I 12W/12V/1A: UL/CUL/BSMI/CB/FCC
EMI Standard: EN55022, EN61204-3, EN61000-3-2-3, FCC Part 152 class B, BSMI CNS14338
EMS Standard:EN61000-4-2,3,4,5,6,8,11,EN61204-3,Class A Light Industry Standard</td></tr>
<tr><td colspan="2">European standard: Model:GS12E12-P1I 12W/12V/1A; TUV(GS)/CB/CE/ROHS
EMI Standard: EN55022, EN61204-3, EN61000-3-2-3, FCC Part 152 class B, BSMI CNS14338
EMS Standard:EN61000-4-2,3,4,5,6,8,11,EN61204-3,Class A Light Industry Standard</td></tr>
<tr><td>D</td><td colspan="3">USB Mouse</td></tr>
<tr><td>E</td><td colspan="3">HDMI Cable</td></tr>
<tr><td>F</td><td colspan="3">Wireless network adapter with USB interface</td></tr>
<tr><td>G</td><td colspan="3">CD (Driver & utilities software, Ø12cm)</td></tr>
<tr><th colspan="4">Optional Accessory</th></tr>
<tr><td>H</td><td colspan="3">SD Card（Above 16G, the speed class is Class 10）</td></tr>
<tr><td>I</td><td colspan="3">USB WLAN adapter</td></tr>
<tr><td rowspan="2">J</td><td rowspan="2">Adjustable lens adapter</td><td>C-Mount to Dia.23.2mm Eyepiece Tube (Please choose 1 of them for your microscope)</td><td>108001/AMA037
108002/AMA050
108003/AMA075</td></tr>
<tr><td>C-Mount to Dia.31.75mm Eyepiece Tube (Please choose 1 of them for your telescope)</td><td>108008/ATA037
108009/ATA050
108010/ATA075</td></tr>
<tr><td rowspan="3">K</td><td rowspan="2">Fixed lens adapter</td><td>C-Mount to Dia.23.2mm Eyepiece Tube (Please choose 1 of them for your microscope)</td><td>108005/FMA037
108006/FMA050
108007/FMA075</td></tr>
<tr><td>C-Mount to Dia.31.75mm Eyepiece Tube (Please choose 1 of them for your telescope)</td><td>108011/FTA037
108012/FTA050
108013/FTA075</td></tr>
<tr><td colspan="3">Note: For J and K optional items, please specify your camera type(C-mount, microscope camera or telescope camera), ToupTek engineer will help you to determine the right microscope or telescope camera adapter for your application;</td></tr>
<tr><td>L</td><td colspan="3">108015(Dia.23.2mm to 30.0mm Ring)/Adapter rings for 30mm eyepiece tube</td></tr>
<tr><td>M</td><td colspan="3">108016(Dia.23.2mm to 30.5mm Ring)/ Adapter rings for 30.5mm eyepiece tube</td></tr>
<tr><td>N</td><td>Calibration kit</td><td colspan="2">106011/TS-M1(X=0.01mm/100Div.)；
106012/TS-M2(X,Y=0.01mm/100Div.);
106013/TS-M7(X=0.01mm/100Div., 0.10mm/100Div.)</td></tr>
</table>

1.5 Extension of XFCAM4K8MPA with Microscope or Telescope Adapter

<table>
<tr><th>Extension</th><th colspan="2">Picture</th></tr>
<tr><td>C-mount Camera</td><td>  </td><td>Machine vision; Medical imaging;
Semiconductor equipment; Test instruments;
Document scanners; 2D barcode readers;
Web camera and security video;
Microscope imaging;</td></tr>
<tr><td>Microscope Camera</td><td colspan="2" rowspan="2"> 
XFCAM4K HDMI+AMAXXX(23.2mm Adapter)

XFCAM4K HDMI+FMAXXX(23.2mm Adapter)
 
XFCAM4K HDMI+ATAXXX(31.75mm Adapter)
 
XFCAM4K HDMI+FTAXXX(31.75mm Adapter)</td></tr>
<tr><td>Telescope Camera</td></tr>
</table>

2 XFCAM4K8MPA four Connection Methods

The XFCAM4K8MPA camera rear cover is shown below:

Figure 4 The Layout of XFCAM4K8MPA Camera Rear Cover

You can use the XFCAM4K8MPA camera in 4 different ways. Each application requires different hardware.

2.1 HDMI

The XCamView software of XFCAM4K8MPA camera is controlled by the mouse to display video on HDMI monitor. This mode requires an HDMI camera, HDMI interface monitor, HDMI cable, SD card or U disk, USB mouse and power adapter that came with the camera. The setting steps are as follows:

1) Connect the camera to an HDMI monitor using the HDMI cable;
2) Insert the supplied USB mouse to the camera's USB port;
3) Insert the supplied SD card/USB flash drive (USB3.0 slot, the camera should be in Host Mode) into the HDMI camera SD card slot/USB3.0 slot;
4) Connect the camera to the power adapter and turn it on;
5) Turn on the monitor and view the video in the XCamView software. Move the mouse to the left, top or bottom of the XCamView UI, different control panel or UI will pop up and users could operate with the mouse at ease.

2.2 WLAN AP

The XFCAM4K8MPA camera acts as an AP, and the computer or mobile device is connected to the camera via WLAN.

Please make sure your PC is WLAN enabled.

For Windows user (Windows XP (32bit), Windows 7/8/10 (32/64 bit)), please use ToupView.

For macOS and Linux user (macOS 10.10 or above or Linux distributions with kernel 2.6.27 or higher), please use ToupLite. When connecting the camera with a mobile device, the free ToupView App is required. Just make sure that the

mobile device uses iOS 11 or higher/Android 5.1 or higher operating systems.

The setting steps are listed below:

1) Install ToupView/ToupLite software on PC or install ToupView App on mobile device；

2) Start the camera. After the camera is running, move the mouse to the bottom of the UI and clicking the button on the Synthesis Camera Control Toolbar at the bottom of the video window, a small window called Settings will pop up as shown below. Click USB3.0 property page and choose the Host Mode in USB Mode edit box(The factory default configuration is Device mode). Click Network>WLAN property page and choose the AP in the Wi-Fi Mode edit box(The factory default configuration is AP mode).

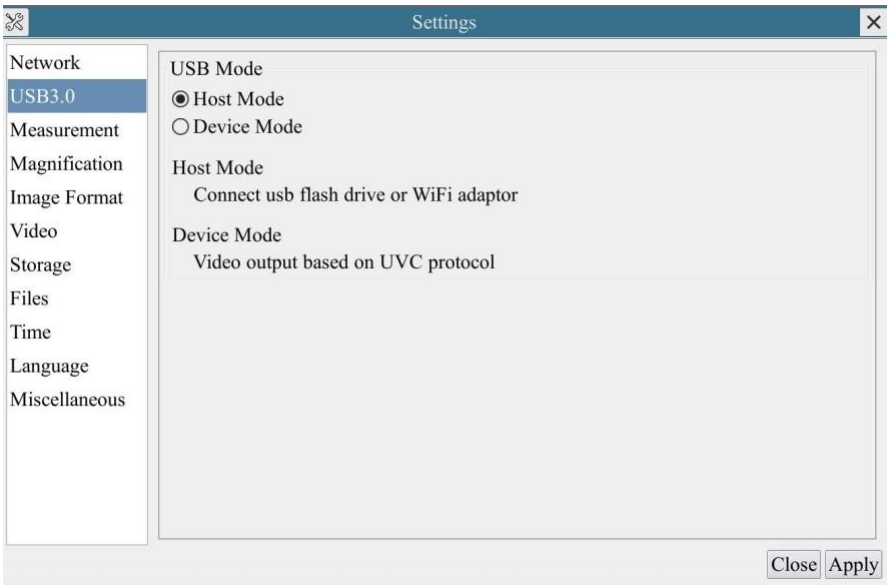


Figure 5 Set the USB3.0 interface to Host mode

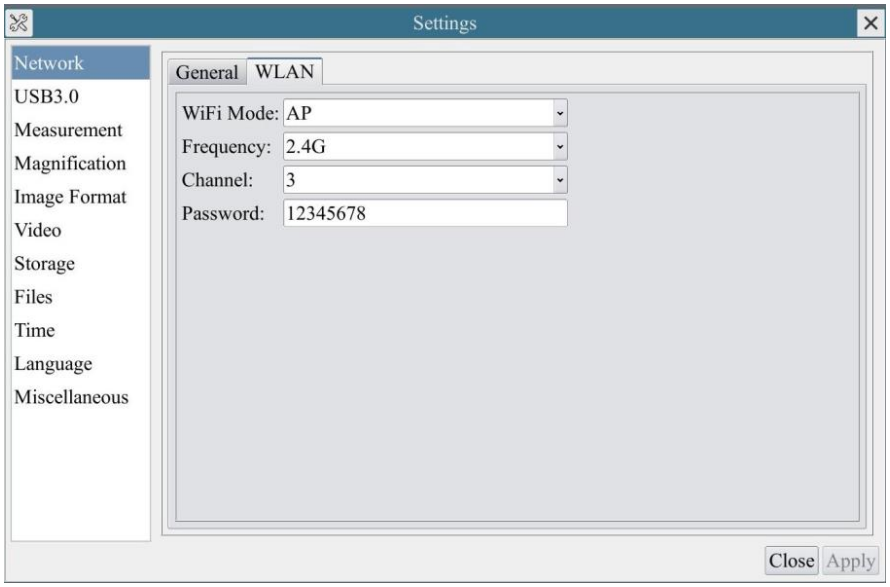


Figure 6 Set Wi-Fi mode to AP

1) Plug the USB WLAN adapter into the camera's USB3.0 port；

2) Connect the PC or mobile device to the camera's WLAN AP point; The network name (SSID) and the WLAN

password (The default one is 12345678) can be found on the camera's Setting>Network>WLAN page in AP mode；

3) Start the ToupView/ToupLite software or ToupView App and check the configuration. Normally, the active HDMI 4K cameras will be automatically recognized. The live image of each camera is displayed. For the display, the Camera List tool window is used in the ToupView/ToupLite software, and the Camera Thumbnail is used in the ToupView App.

2.3 WLAN STA

XFCAM4K8MPA is connected to a switch or router through the WLAN STA mode, and the user can control the HDMI camera on the mobile device through WLAN.

The setting steps are as follows：

1) Start the camera. After the camera is running, move the mouse to the bottom of the video window and clicking the  button on the Synthesis Camera Control Toolbar at the bottom of the video window, a small window called Settings will pop up as shown below. Clicking Network>WLAN property page and choosing the STA in the Wi-Fi Mode edit box(The factory default configuration is AP mode). Input the to be connected router's SSID and Password as shown below;

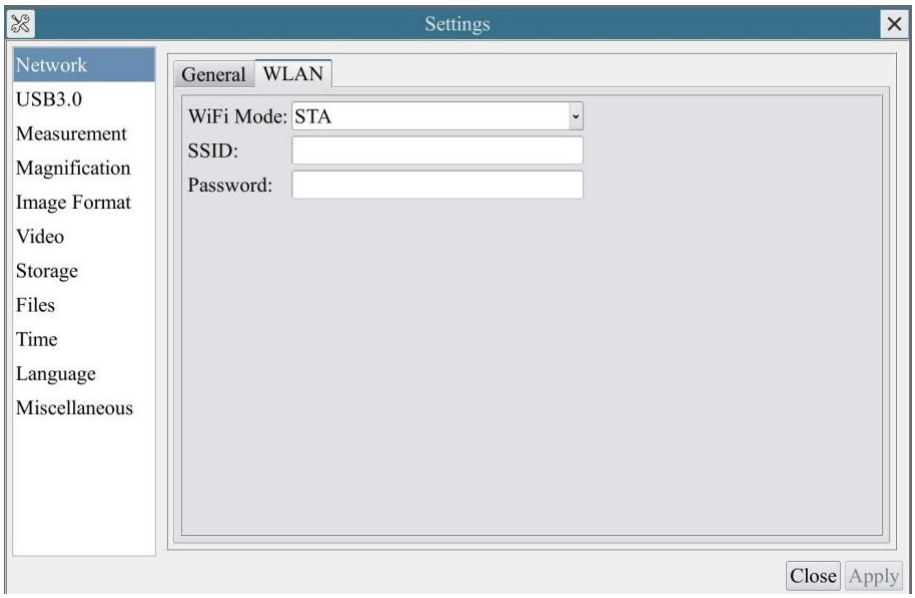


Figure 7 Set the camera's network to Wi-Fi STA mode

2) Plug the USB WLAN adapter into the camera's USB3.0 port(for those connected to router with WLAN STA mode, the USB3.0 port is in Host Mode);

3) Make sure that your PC or your mobile device is connected to the LAN or WLAN of the router; Start the ToupView/ToupLite software or ToupView App and check the configuration. Normally, active HDMI 4K cameras are automatically recognized. The live image of each camera is displayed. For the display, the Camera List tool window is used in the ToupView/ToupLite software, and the Camera Thumbnail is used in the ToupView App; Select the HDMI 4K camera you are interested in. To do so, double click the camera's name in the Camera List tool window if you use the ToupView /ToupLite software; If you use the ToupView App, tap the camera's thumbnail in

the Camera List page.

2.4 USB

Connect XFCAM4K8MPA to the computer via USB3.0 cable.

For Windows user (Windows XP (32bit), Windows 7/8/10 (32/64 bit)), please use ToupView.

For macOS and Linux user (macOS 10.10 or above or Linux distributions with kernel 2.6.27 or higher), please use ToupLite. The steps to start the camera are listed below:

1） Install the ToupView/ToupLite on your PC；

2） Start the camera according to Sec. 7.1. After the camera is running, move the mouse to the bottom of the UI and clicking the  button on the Synthesis Camera Control Toolbar at the bottom of the video window, a small window called Settings will pop up as shown below. Go to USB3.0 property page. Select Device Mode under USB Mode edit box(The factory default configuration is Device Mode). It is important that you select Device Mode, otherwise you cannot connect to computers;

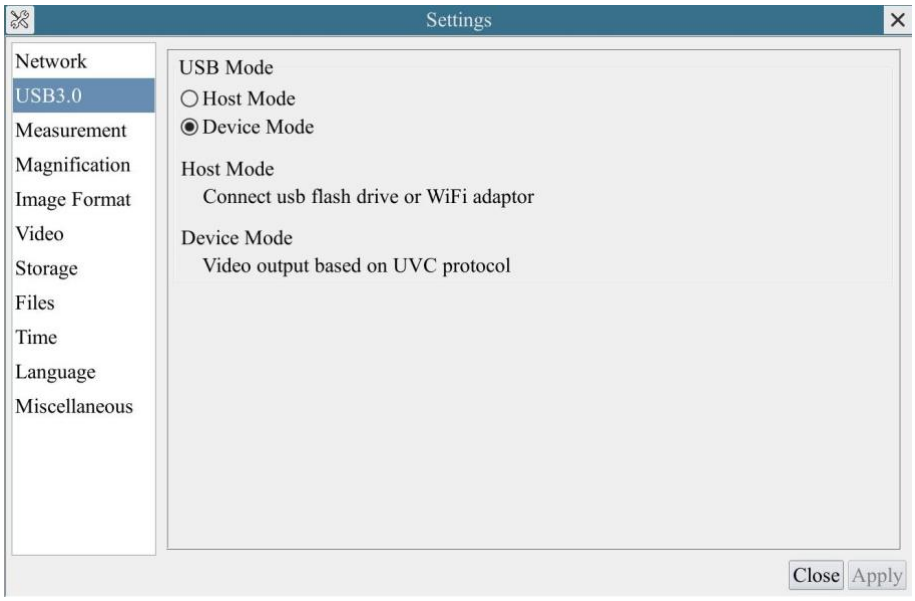


Figure 8 Set the USB3.0 interface to Device mode

3） Connect camera to computer with USB cable. Please use “USB3.0” slot, NOT “USB Mouse” slot as shown below;

4） Open ToupView/ToupLite software. The HDMI camera will be recognized automatically in software.

3 Brief Introduction of XFCAM4K8MPA UI and Its Functions

3.1 XCamView UI

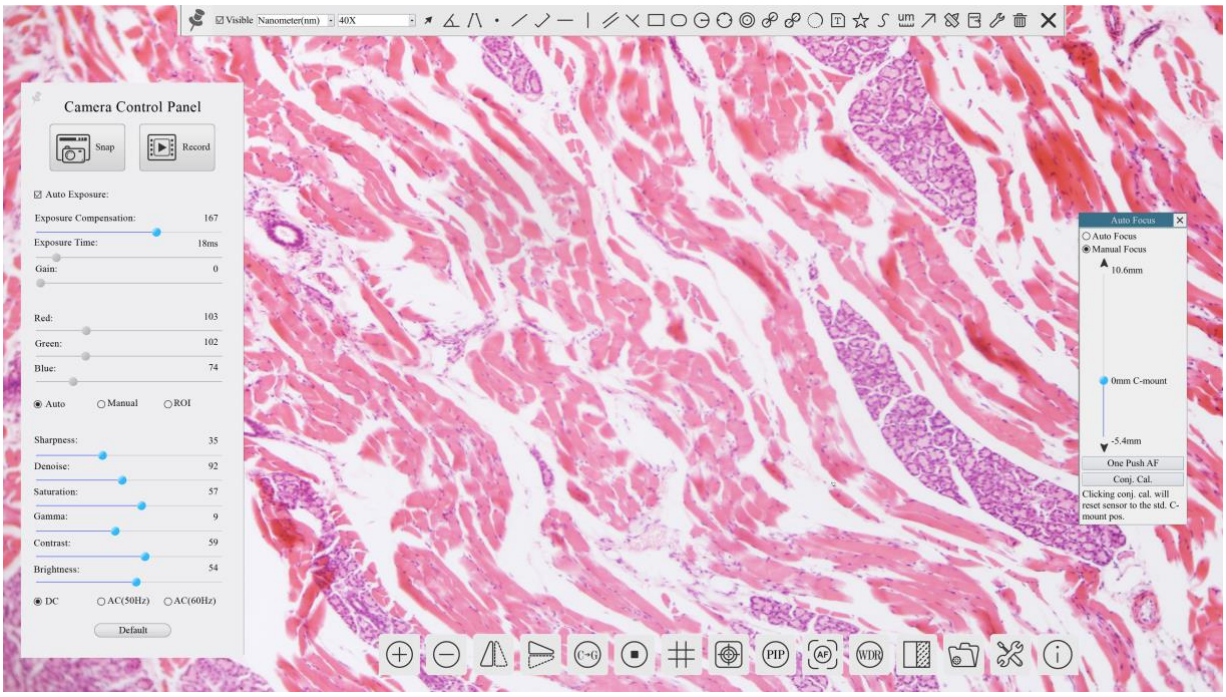
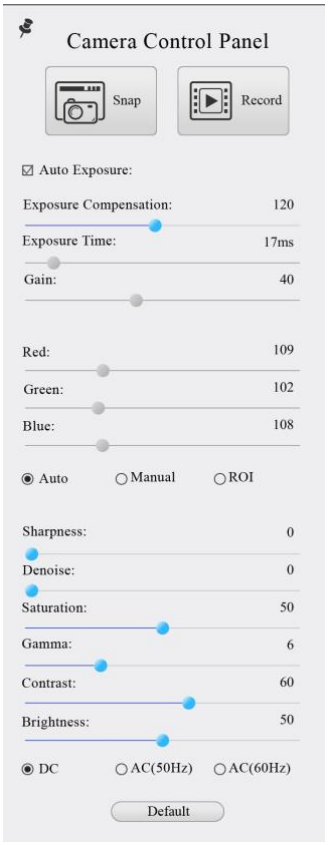


Figure 9 XFCAM4K8MPA Camera Control GUI

The HDMI 4K UI shown in Figure 9 includes a Camera Control Panel on the left of the video window, a Measurement Toolbar on the top of the video window and a Synthesis Camera Control Toolbar on the bottom of the video window.

	Notes
1	To show the Camera Control Panel, move your mouse to the left of the video window;
2	To show the Synthesis Camera Control Toolbar, move your mouse to the bottom of the video window;
3	When user moves the mouse cursor to the bottom of the video window, the Synthesis Camera Control Toolbar will pop up automatically. Click the  button and the Auto Focus Control Panel will appear for autofocus operation;
4	Move the mouse cursor to the upper side of the video window, the Measurement Toolbar will pop up for the calibration and measurement operations. When user left-clicks the Float/Fixed button  on the Measurement Toolbar, the Measurement Toolbar will be fixed. In this case the Camera Control Panel will not pop up automatically even if users move mouse cursor to left side of the video windows. Only when user left-clicks the  button on the Measurement Toolbar to exit from measuring procedure will they be able to do other operations on the Camera Control Panel, Auto Focus Control Panel or Synthesis Camera Control Toolbar. During the measuring process, when a specific measuring object is selected an Object Location & Attributes Control Bar  will appear for changing location and properties of the selected objects.

3.2 The Camera Control Panel on the Left Side of the Video Window

Camera Control Panel	Function	Function Description
	Snap	Capture or Snap image from the current video window
	Record	Record video from the current video window
	Auto Exposure	When Automatic Exposure is checked, the system will automatically adjusts exposure time according to the value of Exposure Compensation value
	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 brightness value
	Exposure Time	Available when Auto Exposure is unchecked. Slide to left or right to decrease or increase exposure time to adjust the video brightness
	Gain	Adjust Gain to decrease or increase the video brightness. 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 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
	Denoise	Slide left or right to denoise the video
	Saturation	Adjust Saturation level of the video
	Gamma	Adjust Gamma level of the video. Slide to the right side to increase gamma and to the left to decrease gamma.
	Contrast	Adjust Contrast level of the video. Slide to the right side to increase contrast and to the left to decrease contrast.
	DC	For DC illumination, there will be no fluctuation in light source so no need for compensating light flickering
	AC(50HZ)	Check AC(50HZ) to eliminate flickering caused by 50Hz illumination
	AC(60HZ)	Check AC(60HZ) to eliminate flickering caused by 60Hz illumination
	Default	Restore all the settings in the Camera Control Panel to default values

The Camera Control Panel controls the camera to achieve the best image quality according to the specific applications; It will pop up automatically when the mouse cursor is moved to the left side of the video window (in measurement status, the Camera Control Panel will not pop up. Only when measurement process is terminated will the Camera Control Panel pop up by moving mouse cursor to the left side of the video window). Left-clicking button to achieve Display/ Auto Hide switch of the Camera Control Panel.

3.3 The Measurement Toolbar on top of the video window

The Measurement Toolbar will pop up when moving mouse cursor to any place near the upper edge of the video window. Here is the introduction of the various functions on the Measurement Toolbar:

Icon	Function	Icon	Function
 	Float/ Fix switch of the Measurement Toolbar		Show / Hide Measurement Objects
	Select the desired Measurement Unit		
	Select Magnification for Measurement after Calibration		
	Object Select		Angle
	4 Points Angle		Point
	Arbitrary Line		3 Points Line
	Horizontal Line		Vertical Line
	Parallel		3 Points Vertical Line
	Rectangle		Ellipse
	5 Points Ellipse		Circle
	3 Points Circle		Annulus
	Two Circles and its Center Distance		3 Points Two Circles and its Center Distance
	Arc		Text
	Polygon		Curve
	Scale Bar		Arrow
	Execute Calibration to determine the corresponding relation between magnification and resolution, which will establish the corresponding relationship between measurement unit and the sensor pixel size. **Calibration** needs to be done with the help of a micrometer. For detailed steps of carrying out **Calibration** please refer to **ToupView** help manual.		
	Export the Measurement information to CSV file.		Measurement Setup
	Delete all the measurement objects		Exit from Measurement mode
	When the measurement ends, left-click on a single measuring object and the Object Location & Properties Control Bar will show up. User could move the object by dragging the object with the mouse. But more		

	accurate movement could be done with the control bar. The icons on the control bar mean Move Left, Move Right, Move Up, Move Down, Color Adjustment and Delete.

Note:

1) When user left-clicks Display/Hide button  on the Measurement Toolbar, the Measurement Toolbar will be fixed. In this case the Camera Control Panel will not pop up automatically even if moving the mouse cursor to the left edge of the video window. Only when user left-click the  button on the Measurement Toolbar to exit from the measurement mode will they be able to doing other operations on the Camera Control Panel or the Synthesis Camera Control Toolbar.

2) When a specific Measurement Object is selected during the measurement process, the Object Location & Attributes Control Bar  will appear for changing the object location and properties of the selected objects.

3.4 Icons and functions of the Synthesis Camera Control Toolbar at the bottom of the video window

Icon	Function	Icon	Function
	Zoom In the Video Window		Zoom Out the Video Window
	Horizontal Flip		Vertical Flip
	Color/gray		Video Freeze
	Display Cross Line		Image Overlay
	Picture in Picture		Auto Focus
	Wide Dynamic Range		Compare Image with the Current Video
	Browse Images and Videos in the SD Card		Settings
	Check the Version of XCamView		

The  Setting function is relatively more complicated than the other functions. Here is more information about it:

3.4.1 Setting>Network>General

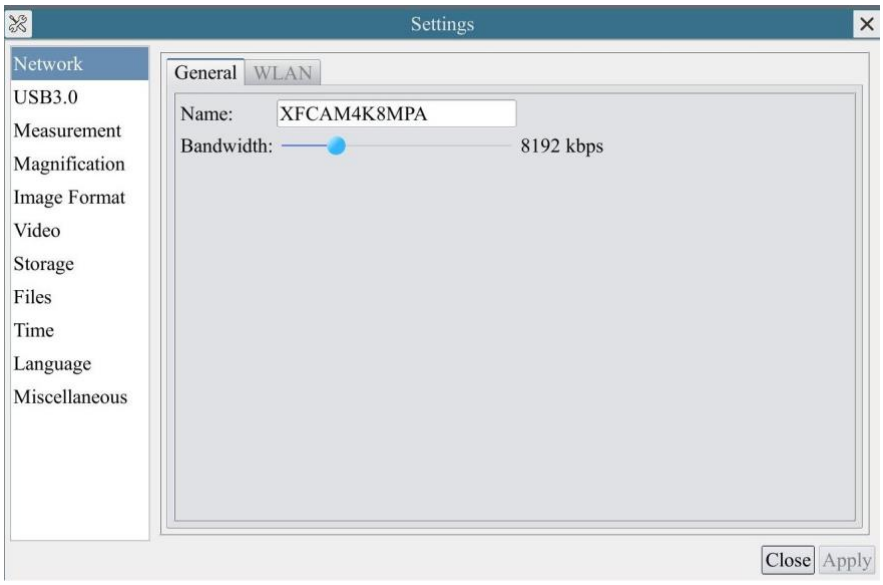


Figure 10 Comprehensive Network Settings Page

The network setting is divided into general and WLAN, which are described as follows:

Name	The current camera name recognized as the network name
Bandwidth	The encoding bandwidth for the video transmission stream. The larger the bandwidth, the higher quality the video.

3.4.2 Setting>Network>WLAN

Wi-Fi Mode	AP mode.
Channel	Channel for the AP mode.
Frequency	Wi-Fi frequency.
Password	Camera Password for the AP mode.

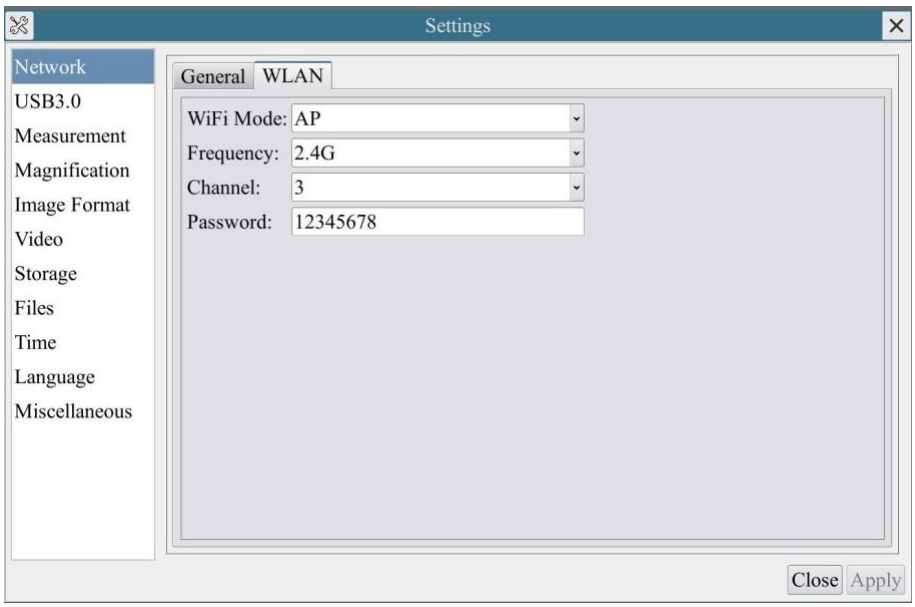


Figure 11 AP mode

Wi-Fi Mode	STA mode.
SSID	SSID for the STA mode.
Password	Router Password for the STA mode.

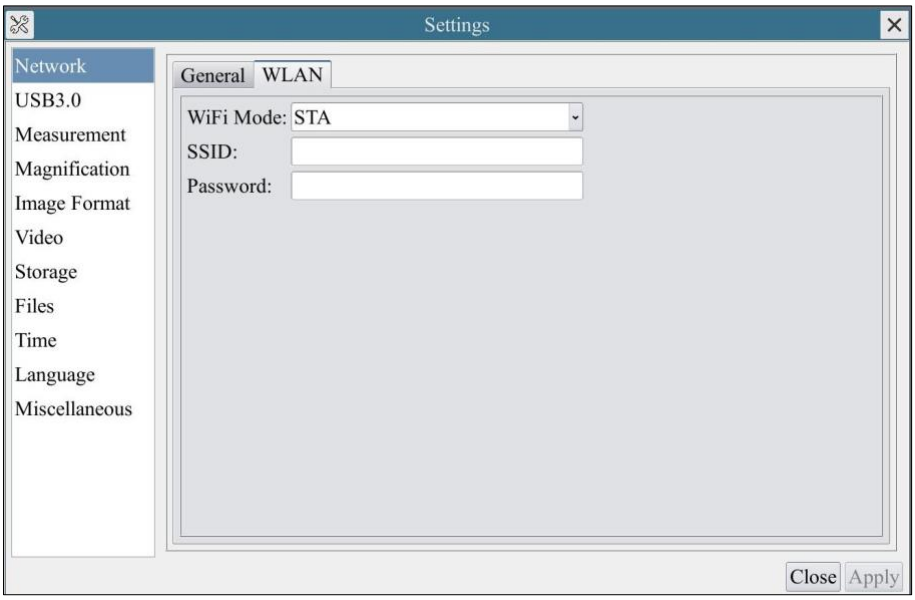


Figure 12 STA mode

3.4.3 Setting>USB3.0

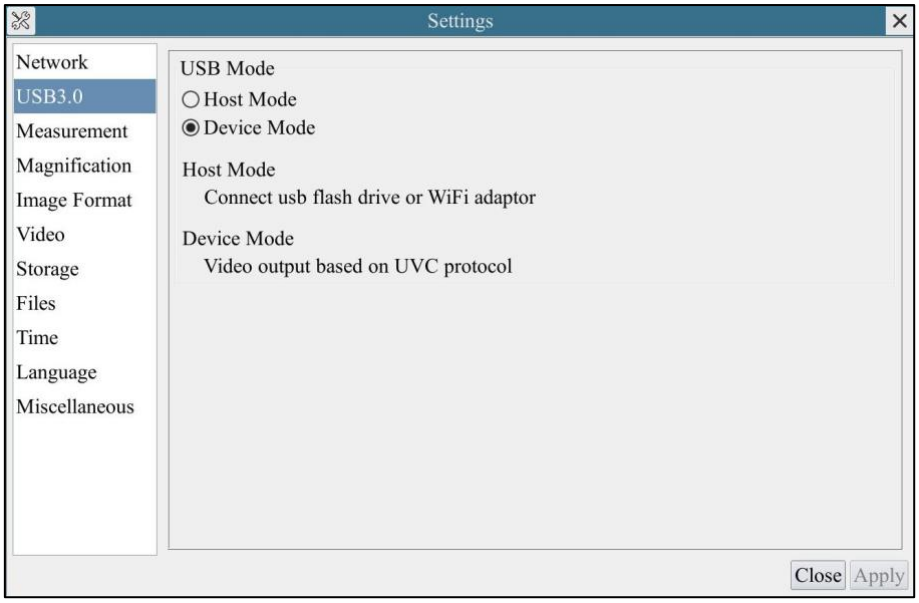


Figure 13 USB Mode Choice

Host Mode：	Connect USB flash drive or Wi-Fi adaptor
Device Mode：	Video output through connection to PC with USB cable

3.4.4 Setting>Measurement

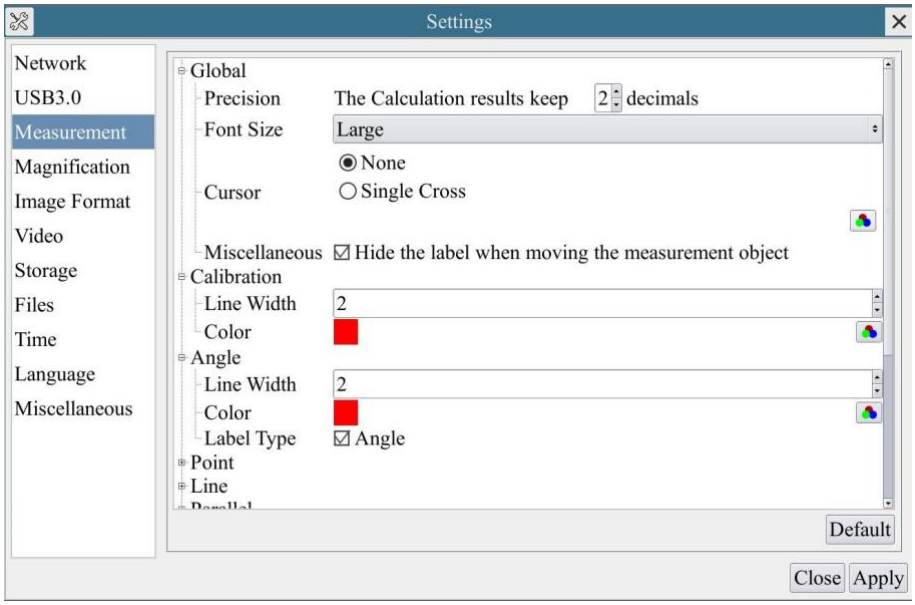


Figure 14 The Measurement Setup

Global	Precision	Used to set the number of digits after the decimal point of the measurement result
	Font Size	Used to set the font size of the measurement data
	Cursor	Used to turn on the cursor
	Miscellaneous	Used to hide the label when moving the measurement objects
Calibration	Line Width	Used for defining width of the lines for calibration
	Color	Used for defining color of the lines for calibration
Angle	Line Width	Used for defining width of the lines for angle
	Color	Used for defining color of the lines for angle
	Label Type	Used for defining label type of the lines for angle
Point, Line, Parallel Line, Vertical Line, Rectangle, Circle, Ellipse, Annulus, Two Circles, Arc, Text, Polygon, Curve, Scale Bar, Arrow		
Note: Left-click the along with the Measurement command mentioned above will unfold the corresponding attribute settings to set the individual property of the Measurement Objects.		

3.4.5 Setting>Magnification

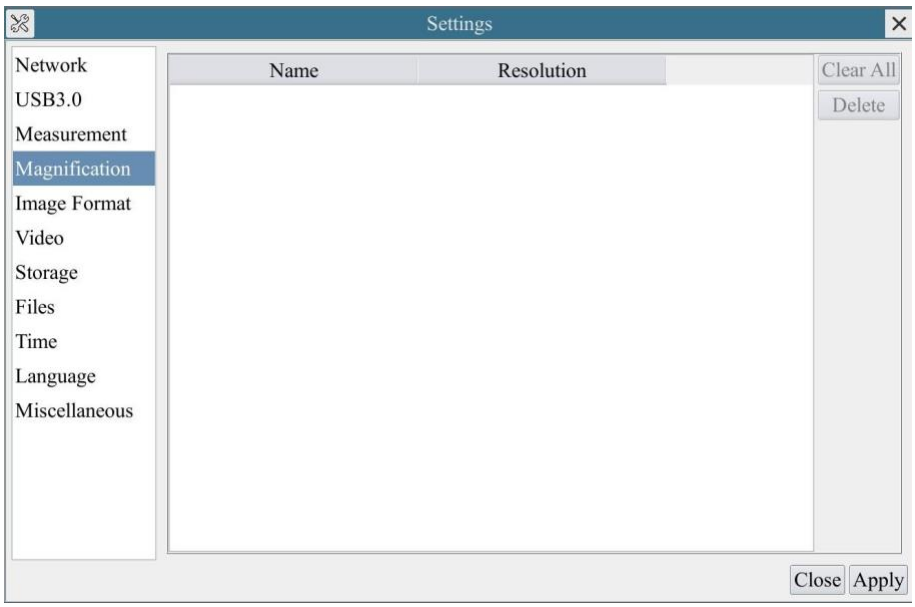


Figure 15 Comprehensive Magnification Calibration Settings Page

Name	Names such as 10X, 40X, 100X are based on magnification of the microscopes. For continuous zoom microscopes, ensure that the selected magnification coincides with the scale alignment line on the microscope zoom knob; Users could also edit the name of the magnification with other information, for example, microscope mode, users name, etc.
Resolution	Pixels per meter. Image device like microscopes have high resolution value.
Clear All	Click the Clear All button will clear the calibrated magnifications.
Delete	Click Delete to delete the selected magnification.

3.4.6 Setting>Image Format

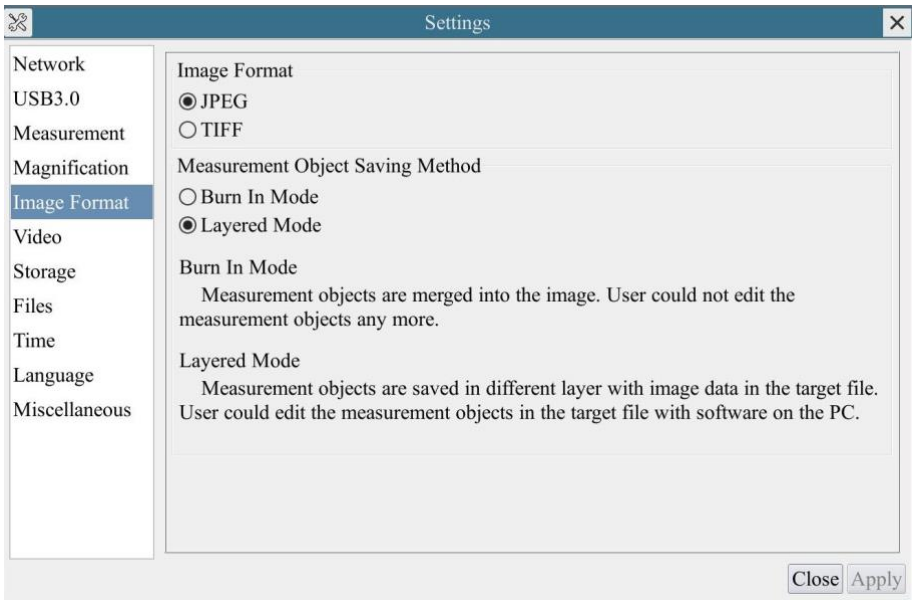


Figure 16 Comprehensive Image Format Settings Page

Image Format	JPEG: The extension of JPEG file can get very high compression rate and display very rich and vivid images by removing redundant images and color data. In other words, it can get better image quality with the least disk space. If measurement objects are available, the measurement objects will be burned into the image and the measurement cannot be edited. TIFF: TIFF is a flexible bitmap format mainly used to store images including photos and artistic images.
Measurement Object Save Method	Burn in Mode: The measurement objects are merged into the current image. User could not edit the measurement objects any more. This mode is not reversible. Layered Mode: The measurement objects are saved in different layer with current image data in the target file. User could edit the measurement objects in the target file with some software on the PC. This mode is reversible.

3.4.7 Setting>Video

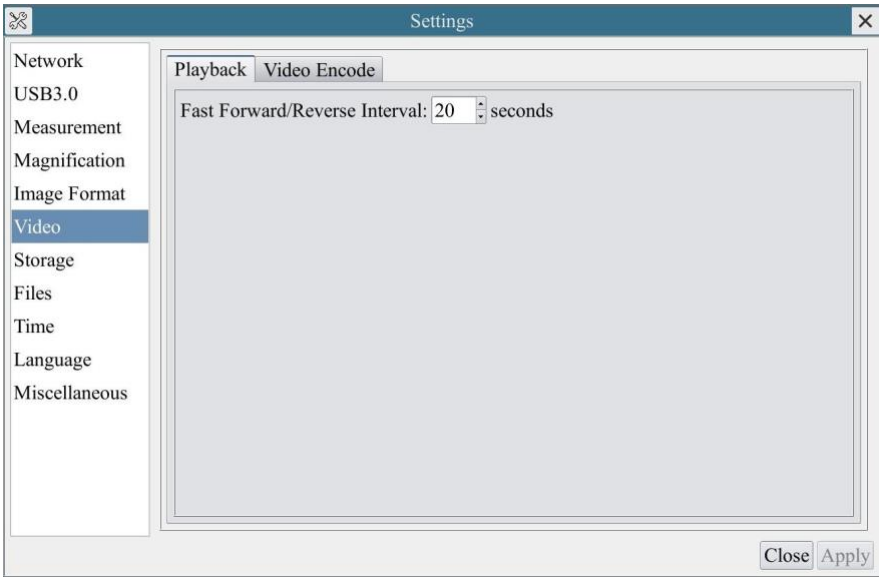


Figure 17 Comprehensive Setting of Video Play

Video Playback	Fast Forward/Reverse internal in second unite for Video Playback.
Video Encode	Select the Video Encode format. Can be H264 or H265. Compared with H264, H265 has a higher H265 compression ratio which is primarily used to further reduce the design flow rate, in order to lower the cost of storage and transmission.

3.4.8 Setting>Storage

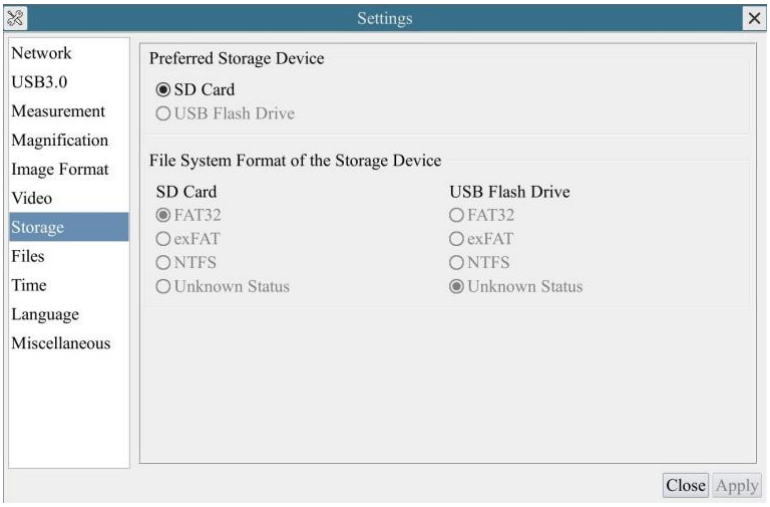


Figure 18 Comprehensive Setting of SD Card Setting Page

Preferred Storage Device	SD Card: Select it to save the video and image to the SD card. USB flash drive: Select it to save the video and image to the SD card.	
File System Format of the Storage Device	FAT32	The file system of SD card is FAT32. The maximum video file size of single file in FAT32 file system is 4G Bytes.
	exFAT	The SD card file system format is exFAT. The exFAT file system is a file system suitable for flash memory introduced by Microsoft over windows embeded5.0. It was mainly introduced to solve the problem that FAT32 does not support 4G or larger files.
	NTFS	The file system of SD card is NTFS. The maximum video file size of single file is 2T Bytes. Use PC to format the SD cards and switch between FAT32 and NTFS.
	Unknown Status	SD card not detected or the file system is not identified.

3.4.9 Setting>Files

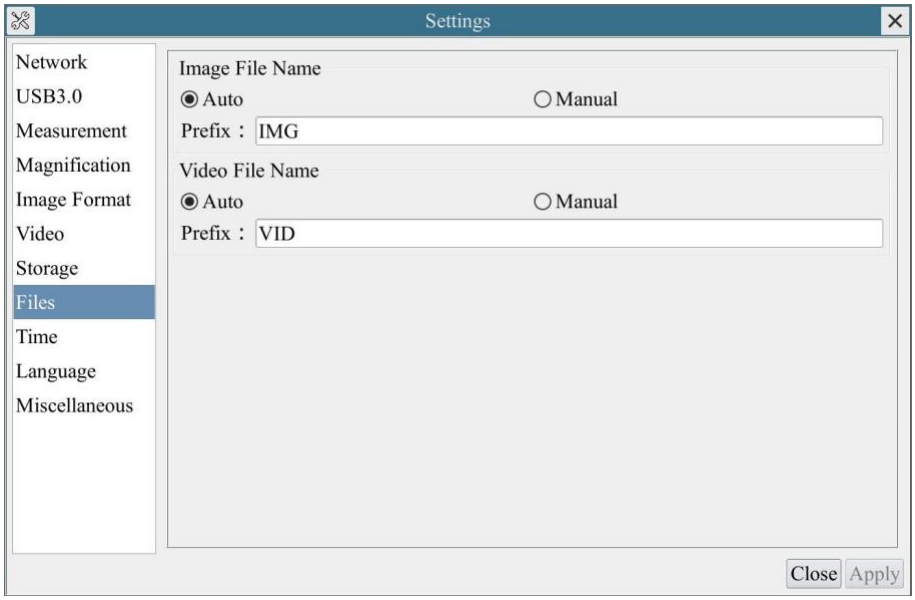


Figure 19 Comprehensive Setting of Files Name

Image or Video File Name Paradigm	Provide Auto or Manual naming paradigm for image or video file;
Auto	With specified name as the Prefix and XCamView will add digital after the Prefix for the Image or Video file;
Manual	A file dialog will pop up to enter the Image or Video file name for the captured Image or Video.

3.4.10 Setting>Time

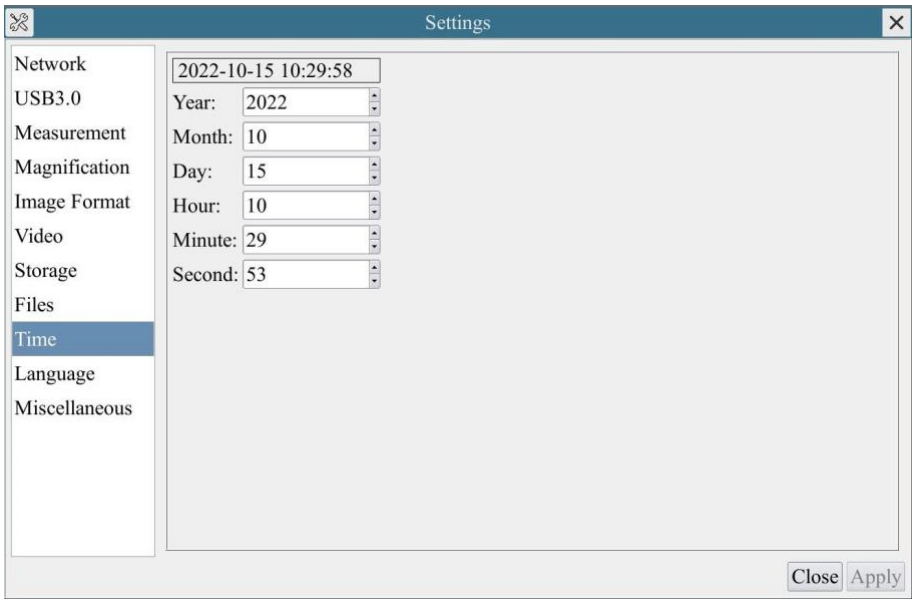


Figure 20 Time Setting

Time	User can set Year, Month, Day, Hour, Minute and Second in this page.

3.4.11 Setting>Language

Figure 21 Comprehensive Setting of Language Selection Setting Page

English	Set language of the whole software into English;
Simplified Chinese	Set language of the whole software into Simplified Chinese;
Traditional Chinese	Set language of the whole software into Traditional Chinese;
Korean	Set language of the whole software into Korean;
Thailand	Set language of the whole software into Thailand;

French	Set language of the whole software into French
German	Set language of the whole software into German
Japanese	Set language of the whole software into Japanese
Italian	Set language of the whole software into Italian
Russian	Set language of the whole software into Russian

3.4.12 Setting>Miscellaneous

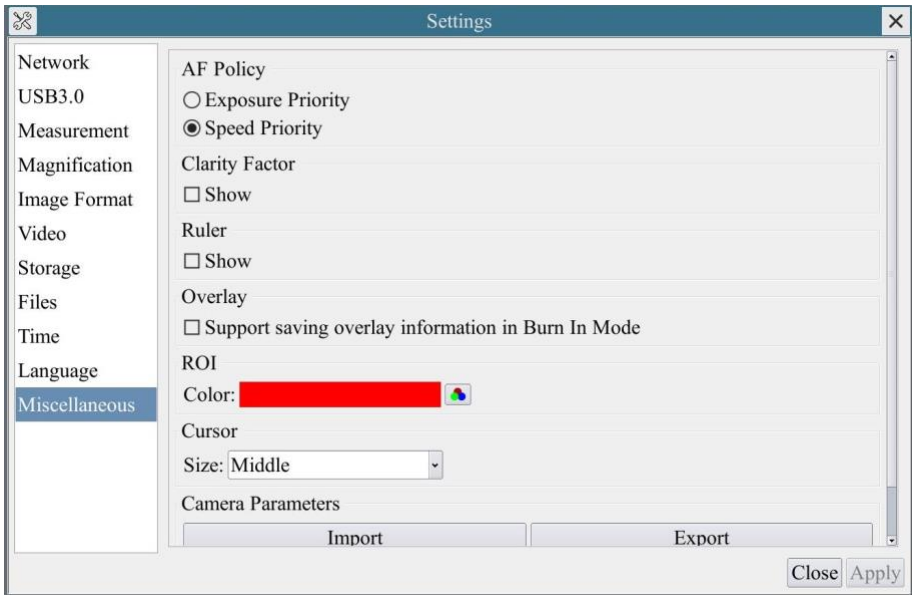
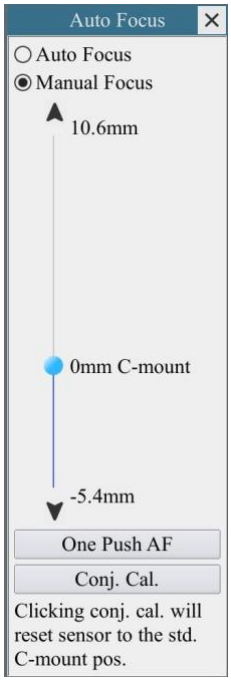


Figure 22 Comprehensive Settings of Miscellaneous Settings Page

AE Policy	Exposure Priority: Set the maximum of exposure priority auto exposure time as 100ms and the maximum of exposure gain as 100; Speed Priority: Set the maximum of auto exposure time as 33ms and the maximum of exposure gain as 40.	
Clarity Factor	Check this will show the Clarity Factor on the video window screen to tell if the camera is focused correctly or not.	
Ruler	Check this will show a ruler with a scale.	
Overlay	Check this will support saving overlay information in Burn in Mode.	
ROI：Color	Choosing the ROI rectangle line color.	
Cursor	Choosing the Cursor size according to the screen resolution or personal preference.	
Camera Parameters	Import	Import the saved camera parameters from the SD card/U disk to the current camera
	Export	Export current camera parameters to SD card/U disk for easy import into other cameras
Reset	Restore the camera parameters to factory defaults.	

3.5 Auto Focus Control Panel on the Right Side of the Video Window

<table>
<tr>
<td rowspan="5"> 
</td>
<td>Auto Focus</td>
<td>With Auto Focus button checked, the system will start autofocus according to status of the specimen till it stays in focus;</td>
</tr>
<tr>
<td>Manual Focus</td>
<td>With Manual Focus checked, users should reset position of the camera sensor by using the mouse to scroll up and down till the specimen stays in focus;</td>
</tr>
<tr>
<td>One Push AF</td>
<td>Click One Push button can carry out autofocus operation for just once;</td>
</tr>
<tr>
<td>Conjugate Correction</td>
<td>Left-click the Conjugate Correction button can reset the camera sensor to standard C-mount position. Conjugate Correction allows users to get sensor position calibrated while ensuring that the camera video window is clear as well as image seen from eyepiece is clear. Suggest users do Conjugate Correction when using the camera for the first time to ensure the camera sensor at the standard C-mount position. This ensures the object plane, eyepiece image plane and camera adapter image plane at the standard position;
Note: 1) When height of the specimen changes, users must make sure the sensor at the standard C-mount position while adjusting the coarse and fine focus knob of microscope to focus; 2) Before doing measurement please do Conjugate Correction to make sure accuracy of the measurement results (please refer to Measurement Toolbar> Conjugate Correction... for details).</td>
</tr>
</table>

3.6 Focus Region in the Video Window

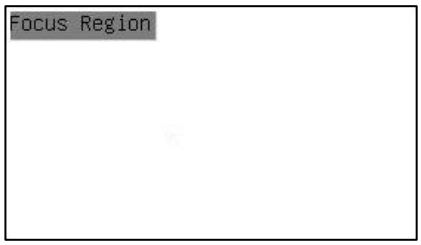


Figure 23 Focus Region

The Focus Region is used for selecting the region of interest for auto focus operation. When user clicks the  button on the Synthesis Camera Control Toolbar, the Focus Region will show up as well with the Auto Focus Control Panel. Users can click any part of the video window to reset the focus region for Auto Focus operation.

When users close the Auto Focus Control Panel, the Focus Region will also be closed automatically.

Note: When Auto Focus is working, moving mouse cursor to upper side of the video window does not make the Measurement Toolbar pop up.