The XFCAMTOP4K8MPA Auto Focus HDMI/WLAN/USB Multi Output C-mount CMOS Camera Help Manual

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1 XFCAMTOP4K8MPA Camera Application

Figure 1 The XFCAMTOP4K8MPA Camera

The XFCAMTOP4K8MPA is a camera designed by ToupTek that includes multiple modes of output (HDMI/WLAN/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 WiFi or USB, and the image and video can be saved in an SD card /USB flash drive 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 XFCAMTOP4K8MPA camera comes with the built-in Auto Focus system, which can realize Auto Focus on specific areas of the sample.

By inserting a WLAN module or connecting to a computer via a USB cable, the user can directly control the camera's hardware with the software ToupView or ToupLite. The XFCAMTOP4K8MPA camera can be used for tool field inspection, microscope observation, etc.

The basic characteristic is listed as below:

- Sony Exmor/STARVIS back-illuminated CMOS sensor
- 4K HDMI/ WLAN/ USB multiple video outputs C-mount camera
- 4K/1080P auto switching according to monitor resolution
- SD card/USB flash drive for captured image and video storage, support local preview and playback
- Auto/Manual focus with the movement of the sensor
- 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

2 XFCAMTOP4K8MPA Camera Datasheet and Functions

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity Dark Signal	FPS/Resolution	Binning	Exposure(ms)
XFCAMTOP4K8MPA	Sony IMX334(C) 1/1.8"(7.68x4.32)	2.0x2.0	505mv with 1/30s 0.1mv with 1/30s	30@3840*2160(HDMI) 30@3840*2160(WLAN) 30@3840*2160(USB)	1x1	0.04~1000

Figure 2 Available Ports on the Back Panel of the Camera Body

Interface or Button	Function Description
USB Mouse	Connect USB mouse for easy operation with embedded XCamView software
USB2.0	Connect USB flash drive to save pictures and videos Connect 5G WLAN module to transfer video wirelessly in real time
USB Video	Connect PC or other host device to realize video image transmission
HDMI	Comply with HDMI1.4 standard. 4K/1080P format video output and supporting automatic switch between 4K and 1080P format according to the connected monitors
ON/OFF	Power switch
SD	Comply with SDIO3.0 standard and the SD card could be inserted for video and images saving
LED	LED status indicator
DC12V	Power adapter connection (12V/1A)
Video Output Interface	**Function Description**
HDMI Interface	Comply with HDMI1.4 standard 30fps@4K or 30fps@1080P
WLAN Interface	Connecting 5G WLAN adapter (USB2.0 slot) in AP/STA mode
USB Video Interface	Connecting USB Video port of PC for video transfer in MJPEG format
Other Function	**Function Description**
Video Saving	Video format：8M(3840*2160) H264/H265 encoded MP4 file Video saving frame rate：30fps in SD card or USB flash drive
Image Capture	8M (3840*2160) JPEG/TIFF image in SD card or USB flash drive
Measurement Saving	Measurement information saved in different layer with image content Measurement information is saved together with image content in burn in mode
ISP	Exposure(Automatic / Manual Exposure) / Gain， White Balance(Manual / Automatic / ROI Mode)，Sharpening， 3D Denoise， Saturation Adjustment， Contrast Adjustment， Brightness Adjustment，Gamma Adjustment， Color to Gray， 50HZ/60HZ Anti-flicker Function
Video /Image Operation	Zoom In/Zoom Out(Up to 10X), Mirror/Flip, Color/Gray, Freeze, Cross Line, Overlay , Auto Focus, Compare(Comparison between real time video and images in SD card/ USB flash drive), Embedded Files Browser, Video Playback, Measurement Function
Embedded RTC(Optional)	To support accurate time on board
Restore Factory Settings	Restore camera parameters to its factory status
Multiple Language Support	English / Simplified Chinese / Traditional Chinese / Korean / Thailand / French / German / Japanese / Italian / Russian
Software Environment under WLAN/USB Video Output	
White Balance	Automatic/Manual/ROI
Color Technique	Ultra-Fine Color Engine
Capture/Control SDK	Windows/Linux/macOS/Android Multiple Platform SDK(Native C/C++, C#/VB.NET, Python, Java, DirectShow, Twain, etc)
Recording System	Still Picture or Movie
Operating System	Microsoft® Windows® XP / Vista / 7 / 8 / 8.1 /10(32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory: 4GB or More
	Display:19” or Larger
	CD-ROM
Operating Environment	
Operating Temperature (in Centidegree)	-10°~ 50°
Storage Temperature (in Centidegree)	-20°~ 60°
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH

3 Dimension of XFCAMTOP4K8MPA

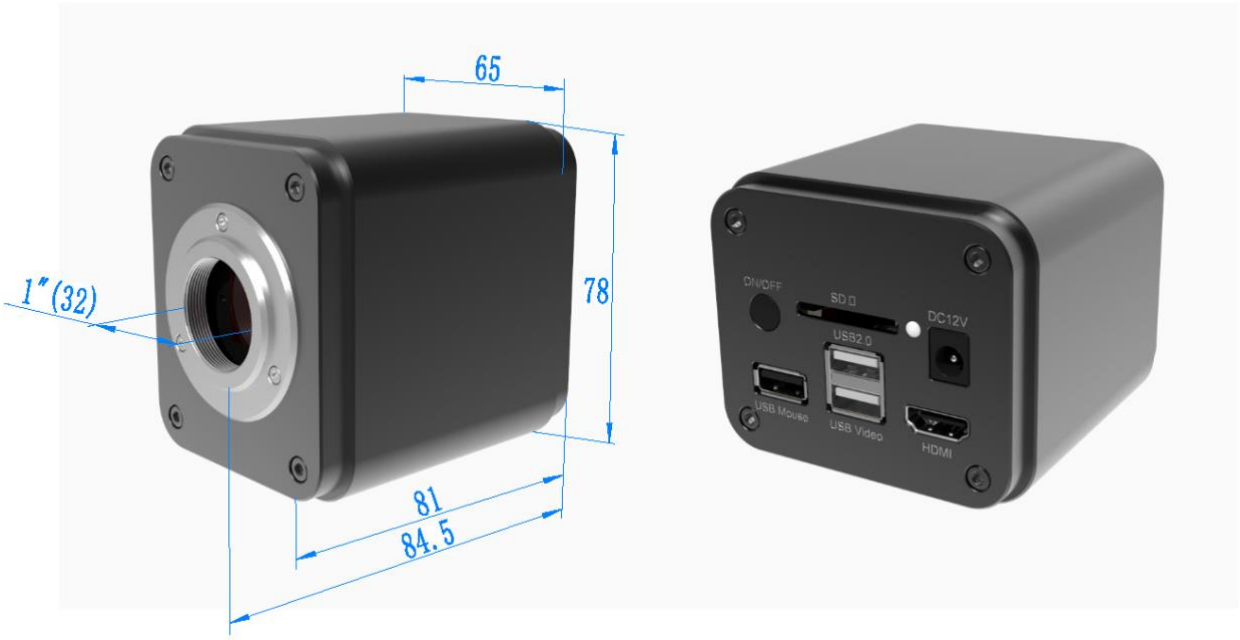


Figure 3 Dimension of XFCAMTOP4K8MPA

4 XFCAMTOP4K8MPA Camera Packing Information

Figure 4 XFCAMTOP4K8MPA Camera Packing Information

Standard Packing List			
A	Gift box : L:25.5cm W:17.0cm H:9.0cm (1pcs, 1.48Kg/ box)		
B	XFCAMTOP4K8MPA Camera		
C	Power Adapter: Input: AC 100~240V 50Hz/60Hz, Output: DC 12V 1A American standard: Model: POWER-U-12V1A(MSA-C1000IC12.0-12W-US): UL/CE/FCC European standard: Model: POWER-E-12V1A(MSA-C10001C12.0-12W-DE): UL/CE/FCC EMI standard: FCC Part 15 Subpart B EMS standard: EN61000-4-2,3,4,5,6		
D	USB Mouse		
E	HDMI Cable		
F	USB2.0 A male to A male gold-plated connectors cable /2.0m		
G	CD (Driver & utilities software, Ø12cm)		
Optional Accessory			
H	SD Card(16G or above; Speed: class 10)		
I	Adjustable lens adapter	C-Mount to Dia.23.2mm Eyepiece Tube (Please choose 1 of them for your microscope)	108001/AMA037 108002/AMA050 108003/AMA075
J	Fixed lens adapter	C-Mount to Dia.23.2mm Eyepiece Tube (Please choose 1 of them for your microscope)	108005/FMA037 108006/FMA050 108007/FMA075
	Note: For I and J 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;		
K	108015(Dia.23.2mm to 30.0mm Ring)/Adapter rings for 30mm eyepiece tube		
L	108016(Dia.23.2mm to 30.5mm Ring)/ Adapter rings for 30.5mm eyepiece tube		
M	Calibration kit		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.)
N	USB flash drive		
O	USB WLAN adapter (In WLAN mode, a USB WLAN adapter is required to operate the camera), different models have different shapes		

5 Software and App

The software or the APP can be downloaded from the following link：

Windows: https://www.touptekphotonics.com/download/

Linux & macOS: https://www.touptekphotonics.com/download/

iOS: https://itunes.apple.com/us/app/toupview/id911644970

Android: https://play.google.com/store/apps/details?id=com.touptek.tpview

6 XFCAMTOP4K8MPA Camera Configurations

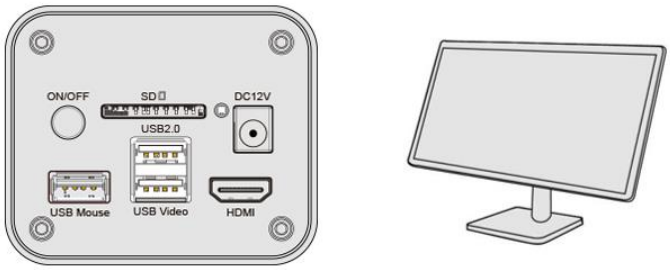
You can use the XFCAMTOP4K8MPA camera in 4 different ways. Each application requires different hardware environment.

6.1 Camera working standalone with built-in XCamView software

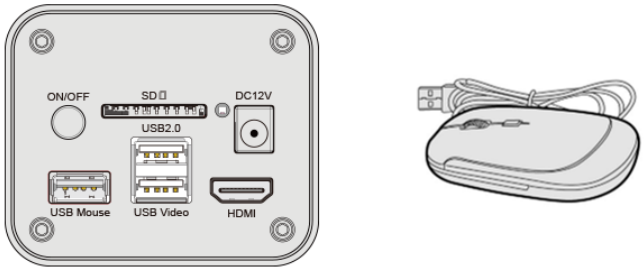
For this application, apart from the microscope, you only need an HDMI monitor, HDMI cable, the supplied USB mouse, and the camera embedded XCamView software. A computer or a network connection is not required to operate the camera in this application. The steps to start the camera are listed as below:

Figure 5 XFCAMTOP4K8MPA Camera with the HDMI Monitor

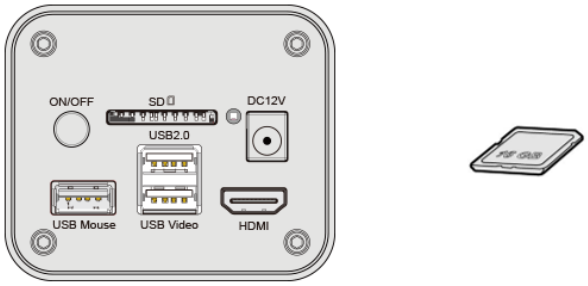
Connect the camera to a HDMI monitor using the HDMI cable;



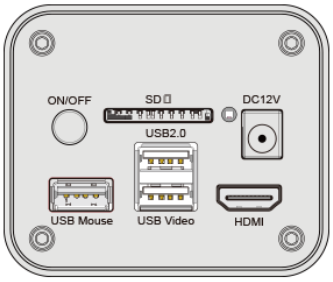
Insert the supplied USB mouse to the camera's USB port;



Insert the supplied SD card/USB flash drive (USB2.0 slot) into the XFCAMTOP4K8MPA camera SD card slot/USB2.0 slot;



Connect the camera to the power adapter and turn it on;



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 toolbar will pop up and users could operate with the mouse at ease.

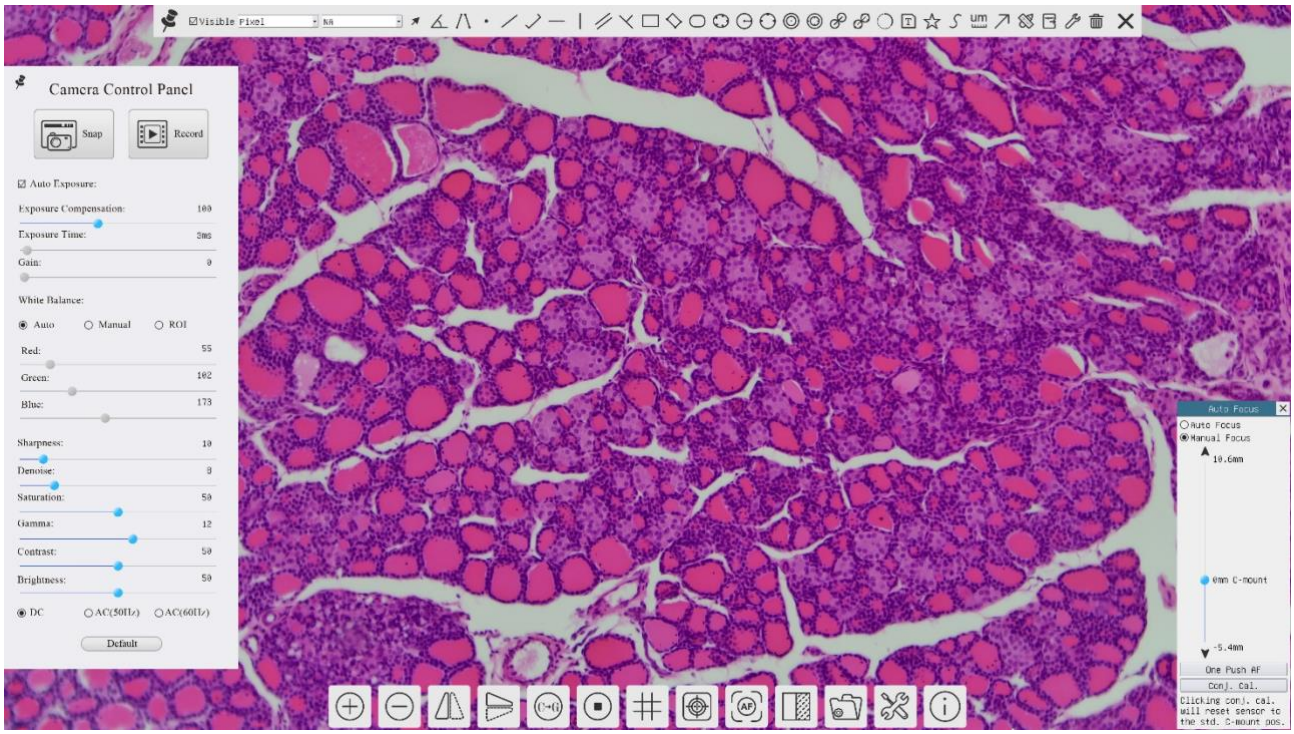


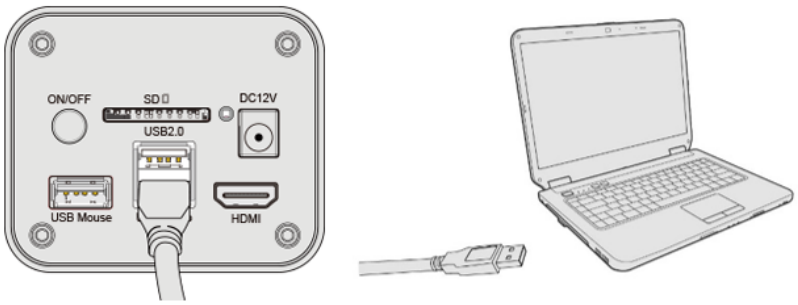
Figure 6 XCamView And XFCAMTOP4K8MPA Camera in HDMI Mode

6.2 Connecting camera to computers with USB2.0 Port

For Windows user (Windows XP (32bit), Windows 7/8/10/11 (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:

Start the camera according to Sec. 6.1. After the camera is running, connect camera to computer with USB cable. Please use “USB Video” slot, not “USB Mouse” slot as shown below.



Install ToupView/ToupLite on your PC or install ToupView App on the mobile device; Run the software ToupView/ToupLite, clicking the camera name in the Camera List group to start the live video as shown in Figure 7.

Notice:

After the USB cable is connected, the mouse will not work. If you want to use the mouse, please unplug the USB cable and restart the camera.

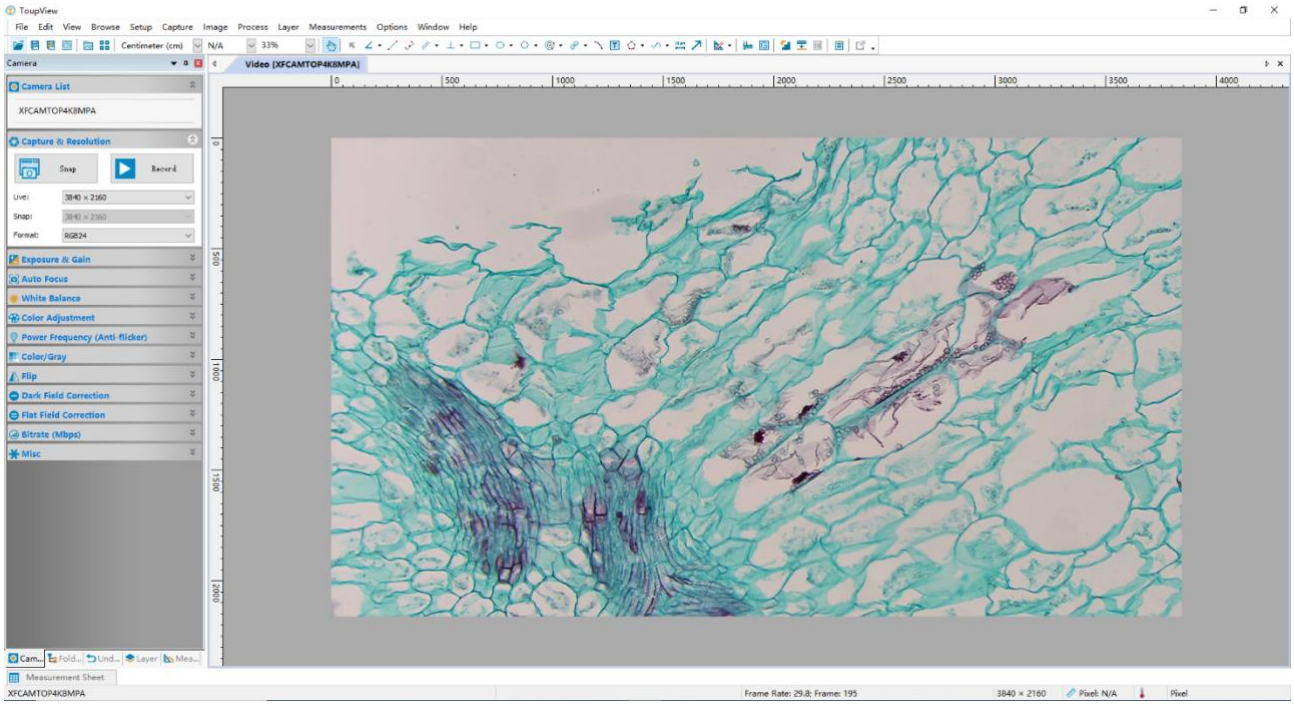


Figure 7 ToupView and XFCAMTOP4K8MPA Camera Operating in USB Mode

6.3 Camera working in WLAN mode (AP mode)

Please make sure your PC is WLAN enabled.

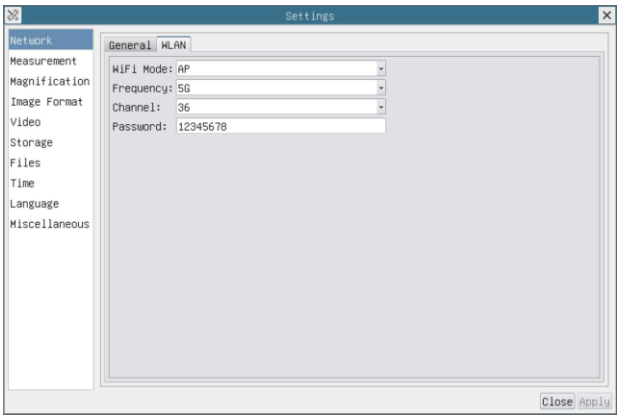
Figure 8 The PC or Mobile Device Connect to the Camera through WLAN

For Windows user (Windows XP (32bit), Windows 7/8/10/10/11 (32/64 bit)), please use ToupView.

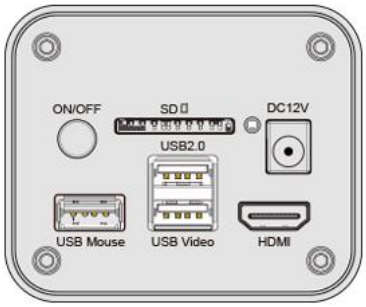
For macOS and Linux user (macOS 10.10 or above or Linux distributions with kernel 2.6.27 or higher), please use ToupLite. When connecting the camera with a mobile device, the free ToupView App is required. Just make sure that the mobile device uses iOS 11 or higher/Android 5.1 or higher operating systems.

The steps to start the camera are listed below:

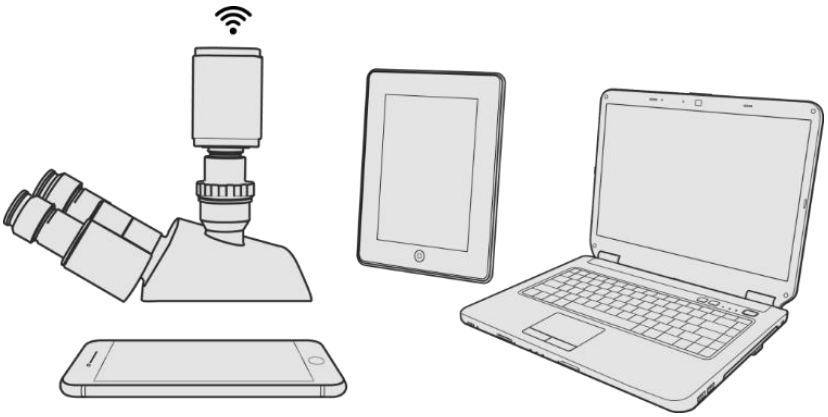
Start the camera according to Sec. 6.1. After the camera is running, move the mouse to the bottom of the GUI and clicking the button on the Synthesis Camera Control Toolbar at the bottom of the video window, a small window called Settings will pop up as shown below. Click Network>WLAN property page and choose the AP in the Wi-Fi Mode edit box(The factory default configuration is AP mode).



Plug the USB WLAN adapter into the camera's USB2 .0 port;



Install ToupView/ToupLite on your PC or install ToupView App on the mobile device, 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.



Start ToupView/ToupLite software or ToupView App and check the configuration. Normally, the active XFCAMTOP4K8MPA cameras will be automatically recognized. The live image of each camera is shown in Figure 9. For the display, clicking the camera name in the Camera List group in ToupView/ToupLite software, or the Camera Thumbnail is in ToupView App.

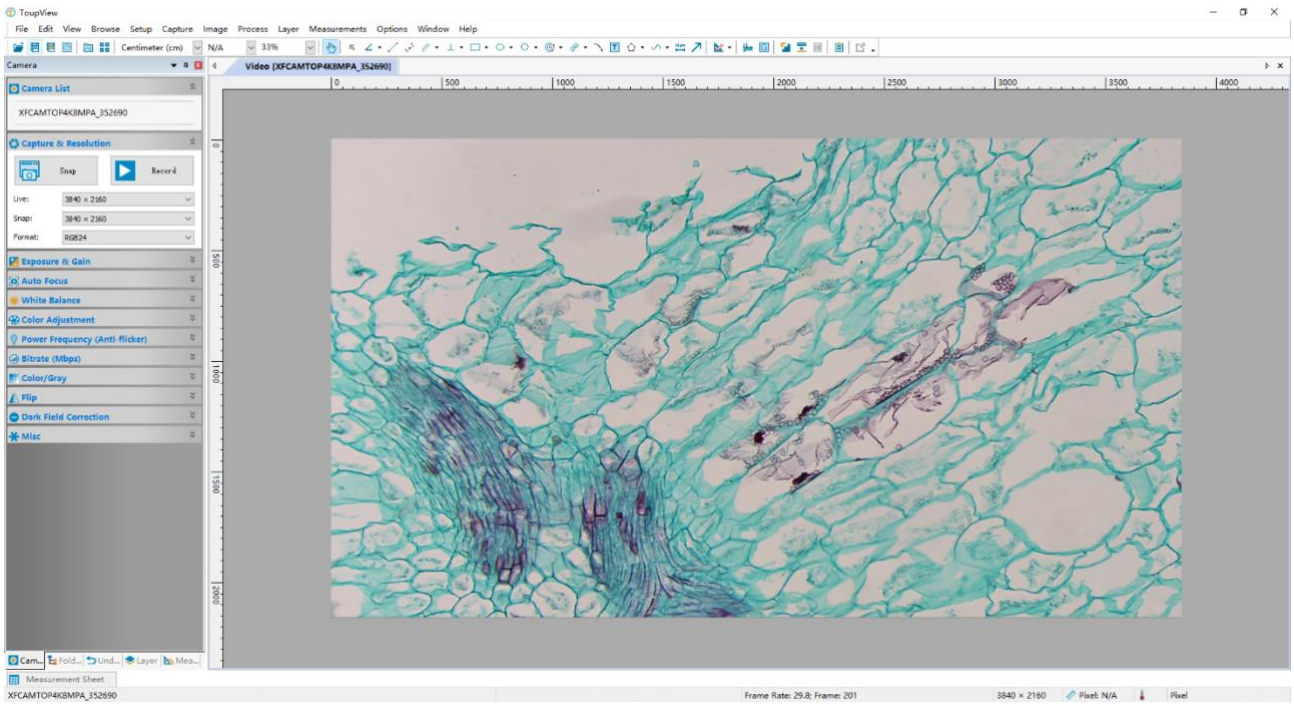


Figure 9 ToupView and XFCAMTOP4K8MPA Camera in WLAN AP Mode

6.4 Connecting multi-cameras to the router through the WLAN STA mode for the network application

Multi XFCAMTOP4K8MPA cameras are connected to router through the WLAN STA mode, and the user can control the HDMI camera on the computer or mobile device through WLAN.

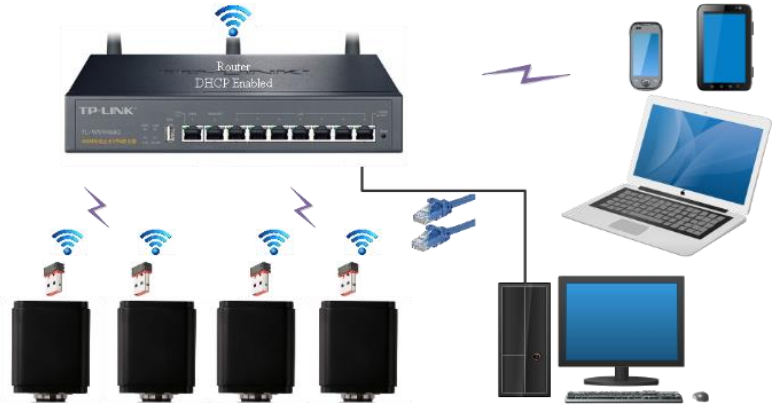
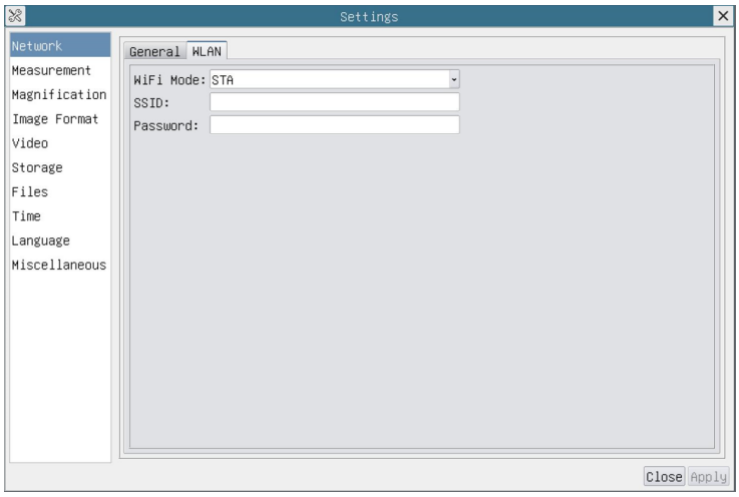


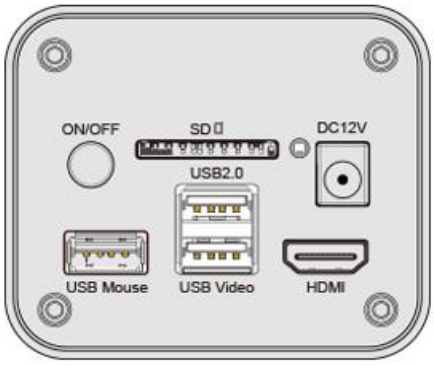
Figure 10 Multi XFCAMTOP4K8MPA Cameras Connecting to the Router through the WLAN Style

Start the camera according to Sec. 6.1. 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:

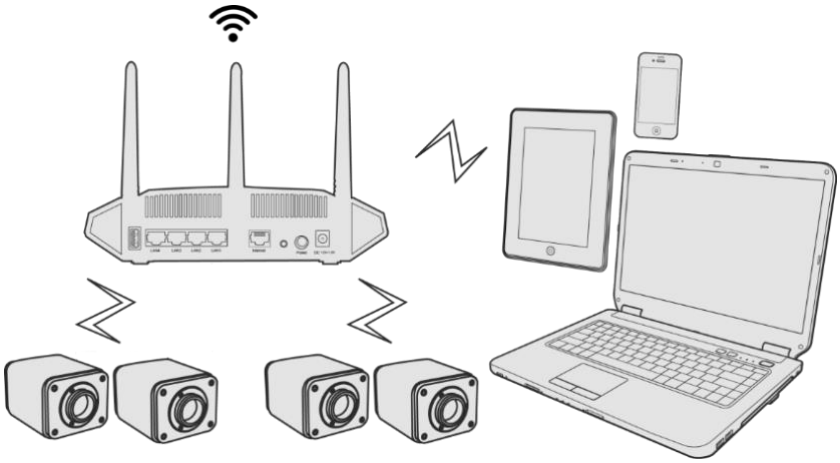


Install ToupView /ToupLite software on your PC. Alternatively, install the free ToupView App on the mobile device;

Plug the USB WLAN adapter into the camera's USB2.0 port(for those connected to router with WLAN STA mode);



Finally, as shown below, 4 XFCAMTOP4K8MPA series cameras are connected to the same router in WLAN STA mode (the number of cameras depends on user preference or router performance).



Make sure that your PC or your mobile device is connected to the of the router in LAN or WLAN method; Start ToupView/ToupLite software or ToupView App and check the configuration. Normally, active XFCAMTOP4K8MPA cameras are automatically recognized. The live image of each camera is displayed. For the display, Camera Control Panel is used in ToupView/ToupLite software, and Camera Thumbnail is used in ToupView App; Select the XFCAMTOP4K8MPA camera you are interested in. To do so, double click the camera's name in Camera List group on the Camera Control Group if you use ToupView /ToupLite software; If you use ToupView App, tap the Camera's Thumbnail in Camera List page(See Figure 11)

About the routers/switches

It is suggested that routers/switches supporting 802.11ac 5G segment should be selected to achieve better wireless connection experience.

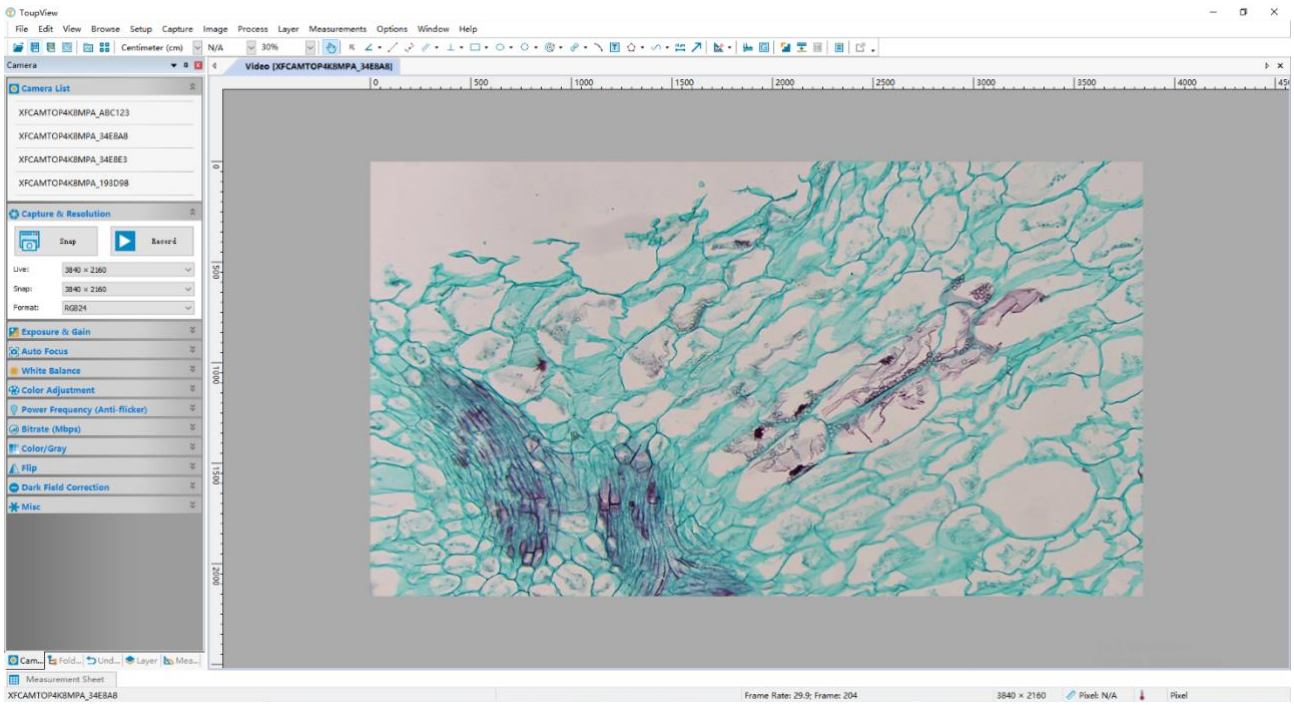


Figure 11 ToupView and XFCAMTOP4K8MPA Camera in WLAN STA mode

7 Brief Introduction of XFCAMTOP4K8MPA UI and Its Functions

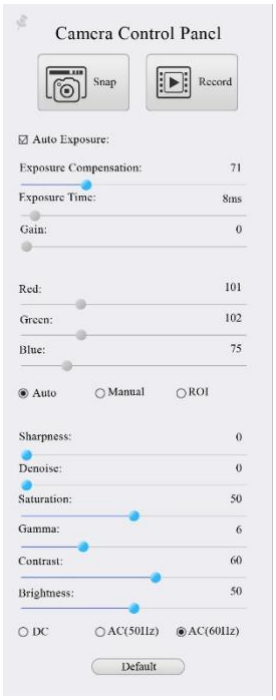
7.1 XCamView UI

The XFCAMTOP4K8MPA UI shown in Figure 6 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. See Sec.7.2 for details
2	Move the mouse cursor to the top of the video window, a Measurement Toolbar will pop up for 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 window. 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, or the 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 object. See Sec.7.3 for details.
3	When users move mouse cursor to the bottom of the video window, the Synthesis Camera Control Toolbar will pop up automatically. See Sec.7.4 for details.
4	When users move mouse cursor to the bottom of the video window, the Synthesis Camera Control Toolbar will pop up automatically. Clicking the button and the Auto Focus Control Panel will appear for autofocus operation;

7.2 The camera control panel on the left side of the video window

The Camera Control Panel controls the camera to achieve the best video or 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. The Camera Control Panel will only pop up when the measurement process is finished or terminated while user's cursor on the left edge of the video window). Left-clicking button to achieve Display/Auto Hide switch of the Camera Control Panel.

Camera Control Panel	Function	Function Description
	Snap	Capture image and save it to the SD card/ USB flash drive
	Record	Record video and save it to the SD card/ 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 the current video brightness to achieve proper brightness value
	Exposure Time	Available when Auto Exposure is unchecked. Slide to left or right to reduce or increase exposure time, adjusting brightness of the video
	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 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.
	Contrast	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 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

7.3 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:

Figure 12 The Measurement Toolbar on the Upper Side of the Video Window

Icon	Function
	Float/ Fix Switch of the Measurement Toolbar
Visible	Show / Hide Measurement Objects
Pixel	Select the desired Measurement Unit
NA	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
	3 Point Rectangle
	Ellipse
	5 Point Ellipse
	Circle
	3 Points Circle
	Annulus
	3 Points 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(*.csv)
	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 Measurement Toolbar, Measurement Toolbar will be fixed. In this case 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 Measurement Toolbar to exit from the measurement mode will they be able to doing other operations on Camera Control Panel or Synthesis Camera Control Toolbar.

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

7.4 Icons and functions of the Synthesis Camera Control Toolbar on the bottom of the video window

Figure 13 The Synthesis Camera Control Toolbar on 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
	Auto Focus		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:

7.4.1 Setting>Network>General

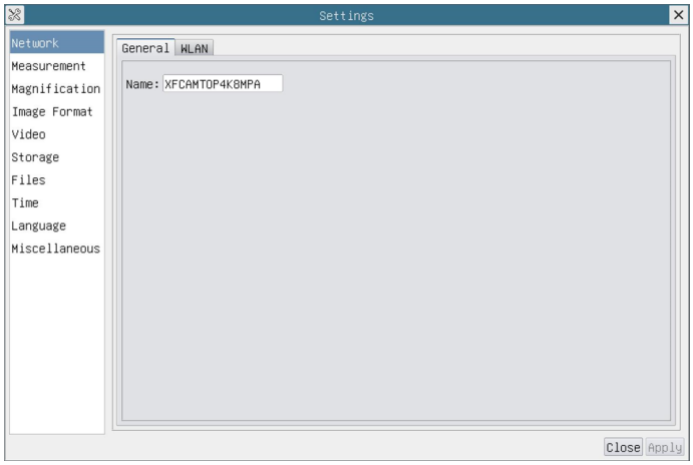


Figure 14 Comprehensive Network General Settings Page

Name	The current camera name recognized as the network name

7.4.2 Setting>Network>WLAN

Wi-Fi Mode	AP/STA mode to select;
Channel/SSID	Channel for the AP mode and SSID for the STA mode. Here, the SSID is the router's SSID;
Password	Camera Password for the AP mode. Router Password for the STA mode

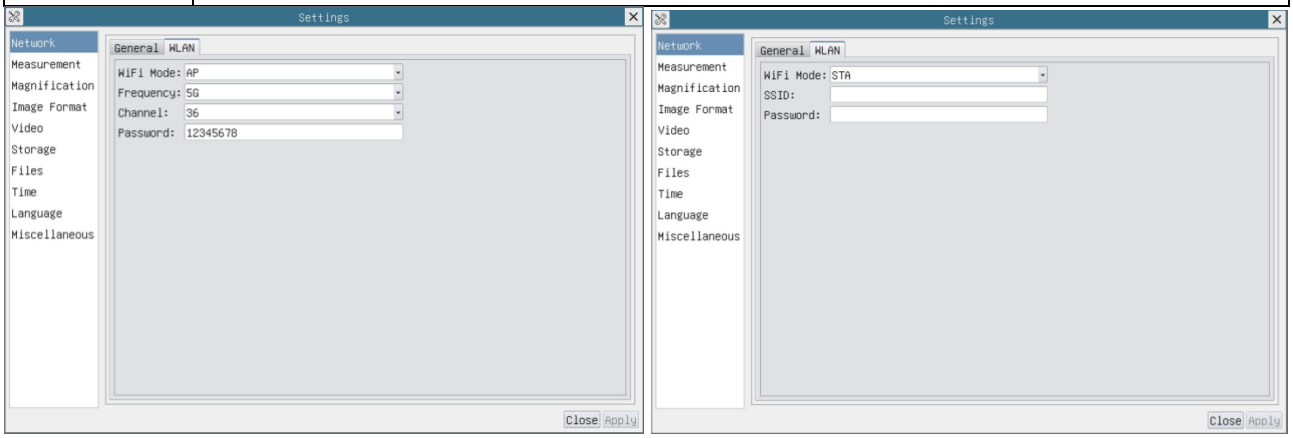


Figure 15 Network Setup

7.4.3 Setting>Measurement

This page is used for the define of the Measurement Object properties.

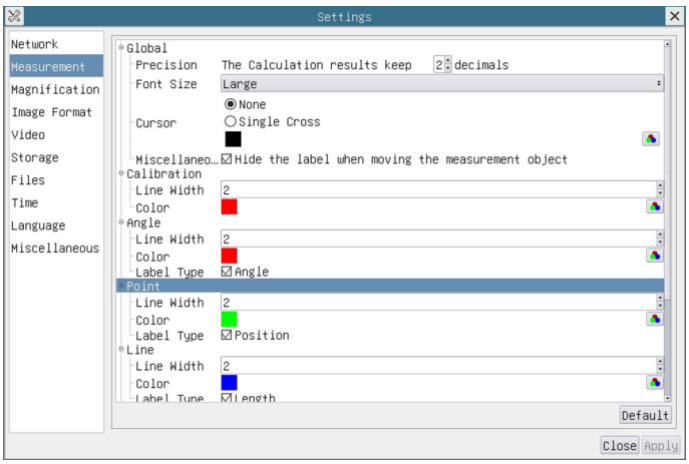


Figure 16 The Measurement Setup

Global	Used for setting digits behind the decimal point for measurement results;	
Calibration	Line Width	Used for defining width of the lines for calibration;
	Color	Used for defining color of the lines for calibration;
	EndPoint	Type: Used for defining shape of the endpoints of lines for calibration: Null means no EndPoint, rectangle means rectangle type of endpoints. It makes alignment more easily;
Object Select, Angle, 4 Points Angle, Point, Arbitrary Line, 3 Points Line, Horizontal Line, Vertical Line, Parallel, 3 Points Vertical Line, Rectangle, 3 Point Rectangle, Ellipse, 5 Point Ellipse, Circle, 3 Points Circle, Annulus, 3 Points Annulus, Two Circles and Its Center Distance, 3 Points Two Circles and Its Center Distance, Arc, Text, Polygon, Curve, Scale Bar, Arrow,		
	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.	

7.4.4 Setting>Magnification

This page's items are formed by the Measurement Toolbar's Calibration command.

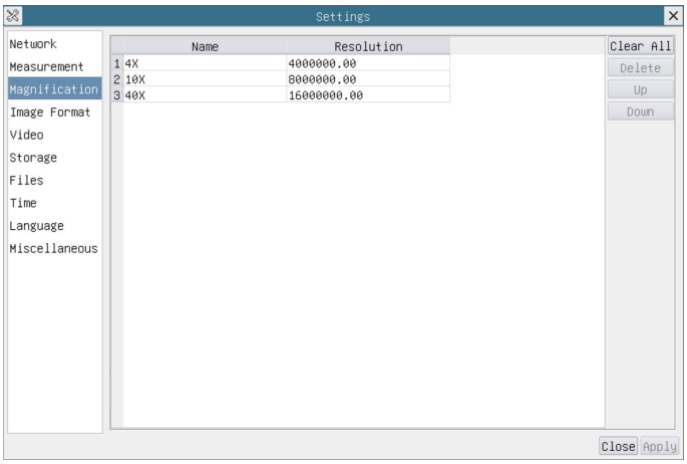


Figure 17 Comprehensive Magnification Settings Page

Name	Names such as 4X, 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;
Up	Select a row in the magnification ratio and click Up to move up the currently selected magnification ratio;
Down	Select a row in the magnification ratio and click Down to move down the currently selected magnification ratio;

7.4.5 Settings>Image Format

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 Saving 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 reversable. 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 reversable.

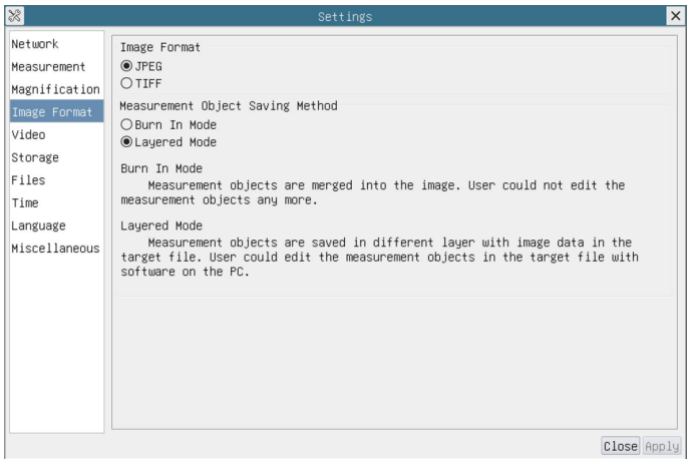


Figure 18 Comprehensive Image Format Settings Page

7.4.6 Setting>Video

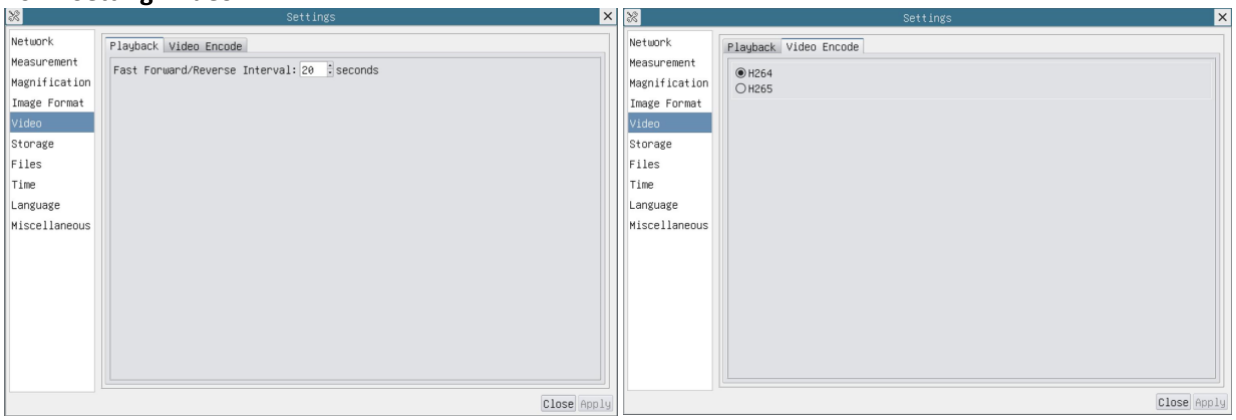


Figure 19 Comprehensive Setting of Video page

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 compression ratio which is primarily used to further reduce the design flow rate, in order to lower the cost of storage and transmission

7.4.7 Setting>Storage

Figure 20 Comprehensive Setting of Storage Page

File System Format of the Storage Device	List the file system format of the current storage device(SD Card or USB Flash Drive) 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 file system of SD Card is exFAT. The maximum video file size of single file in exFAT file system is 16E Bytes; NTFS: The file system of SD Card is NTFS. The maximum video file size of single file is 2T Bytes. Unknown Status: SD Card not detected or the file system is not identified;
Note: For USB Flash Drive, USB 3.0 interface is preferred.	

7.4.8 Setting>Files

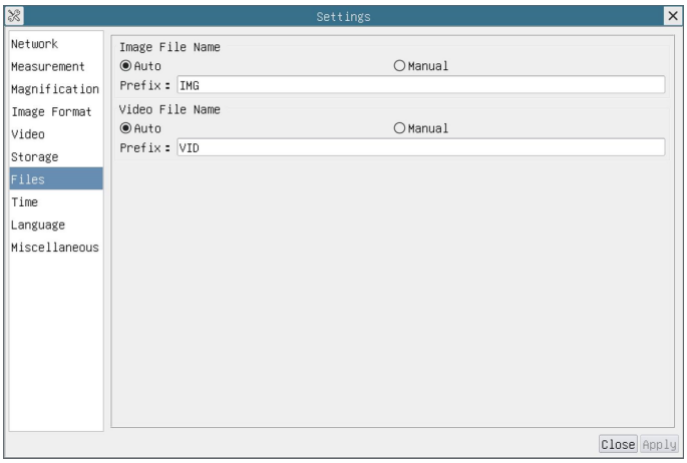


Figure 21 Comprehensive Setting of Files Name

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.

7.4.9 Setting>Time

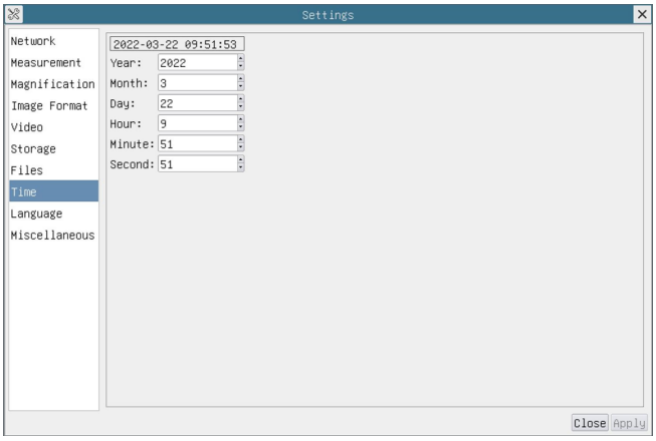


Figure 22 Time Setting

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

7.4.10 Setting>Language

Figure 23 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;

7.4.11 Setting>Miscellaneous

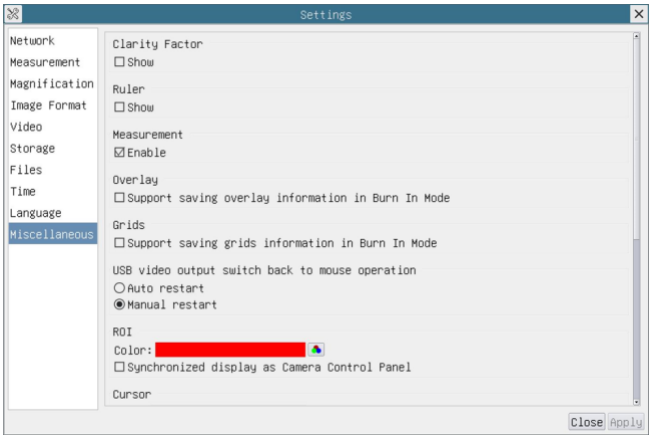
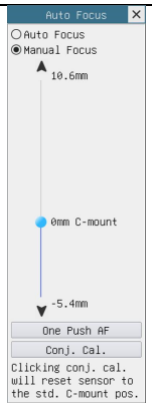


Figure 24 Comprehensive Miscellaneous Settings Page

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	Select to Show the ruler in the video window, otherwise not to display the ruler;
Measurement	Select to Show the measurement toolbar in the video window, otherwise not to display the measurement toolbar;
Overlay	Select to support saving overlay information in Burn In Mode, otherwise it will not support;
Grids	Select to support saving grids information in Burn In Mode, otherwise not to support;
USB video output switch back to mouse operation	Select Automatic restart or Manual restart to switch from USB video output to mouse operation;
ROI Color	Choosing the ROI rectangle line Color , Check Synchronized display as Camera Control Panel to display it synchronously
Cursor	Choosing the Cursor size according to the screen resolution or personal preference
Auto Exposure	Define the maximum automatic exposure time;
Auto Exposure Region	Select the AE reference area;
Camera Parameters Import	Import the Camera Parameters from the SD Card or USB flash drive to use the previously exported Camera Parameters
Camera Parameters Export	Export the Camera Parameters to the SD Card or USB flash drive to use the previously exported Camera Parameters
Reset to factory defaults	Restore Camera Parameters to its factory status;

7.5 Auto Focus Control Panel on the right side of the Video Window



Auto Focus	With Auto Focus button checked, the system will start autofocus according to status of the specimen till it stays in focus;
Manual Focus	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;
One Push AF	Click One Push AF button can carry out autofocus operation for just once;
Conjugate Correction	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).

7.6 Focus Region in the Video Window

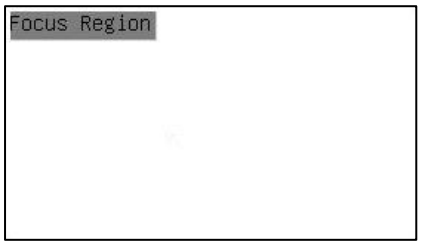


Figure 25 Focus Region

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 video window to reset the focus region for Auto Focus operation.

8 Sample Photos Captured with XFCAMTOP4K8MPA Camera

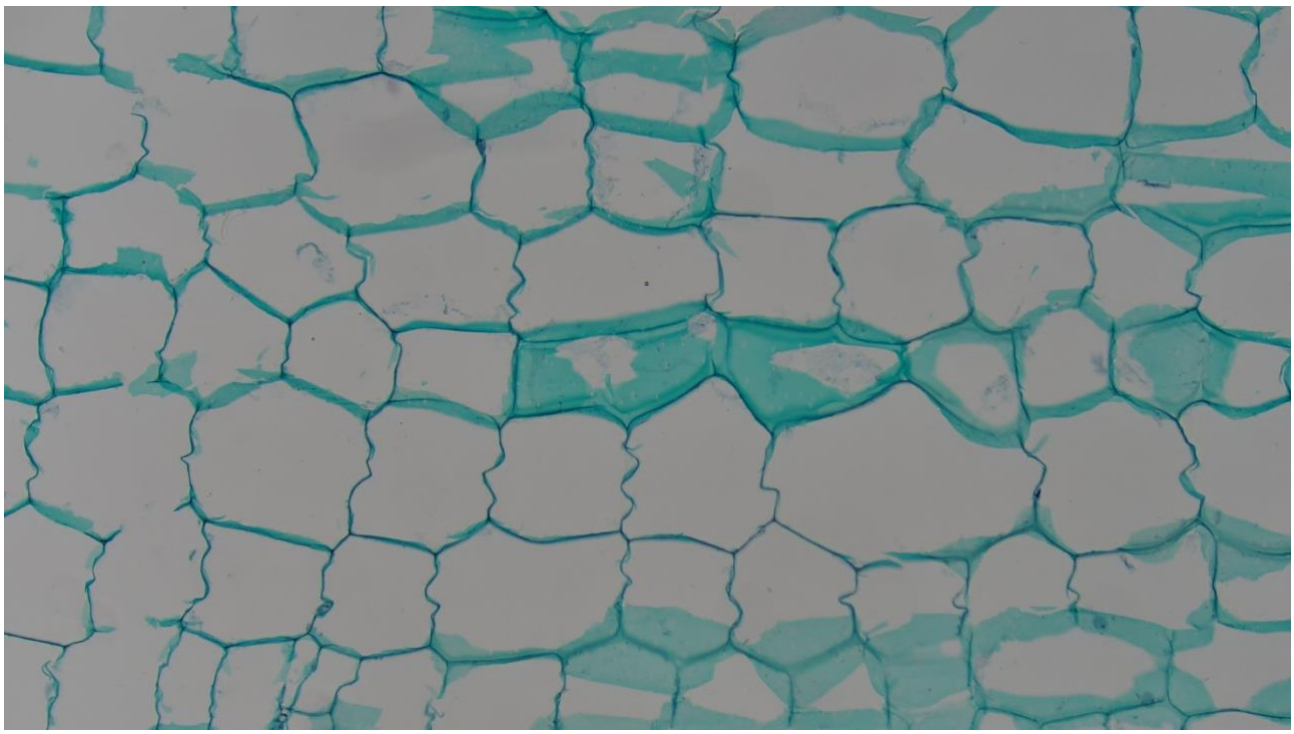


Figure 26 Cucurbit Stem.L.S. Captured with XFCAMTOP4K8MPA

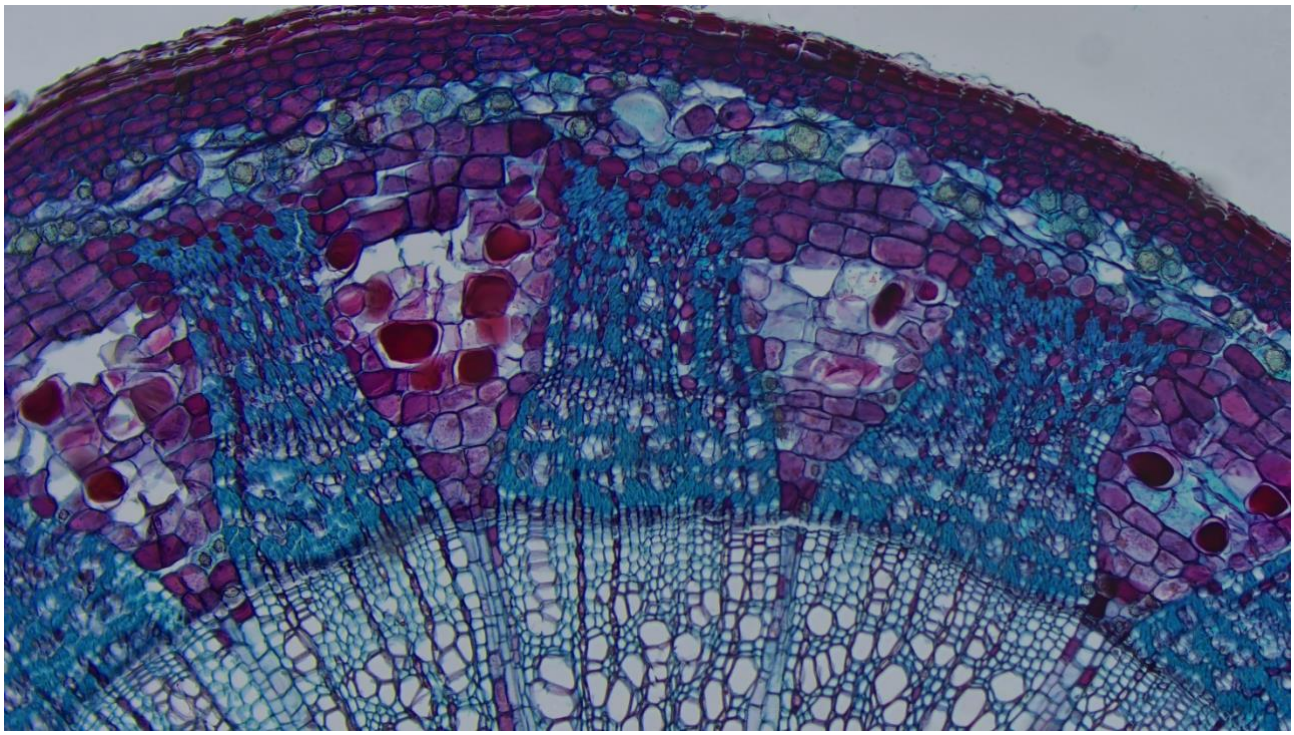


Figure 27 Two Year Tilia Stem.C.S. Captured with XFCAMTOP4K8MPA

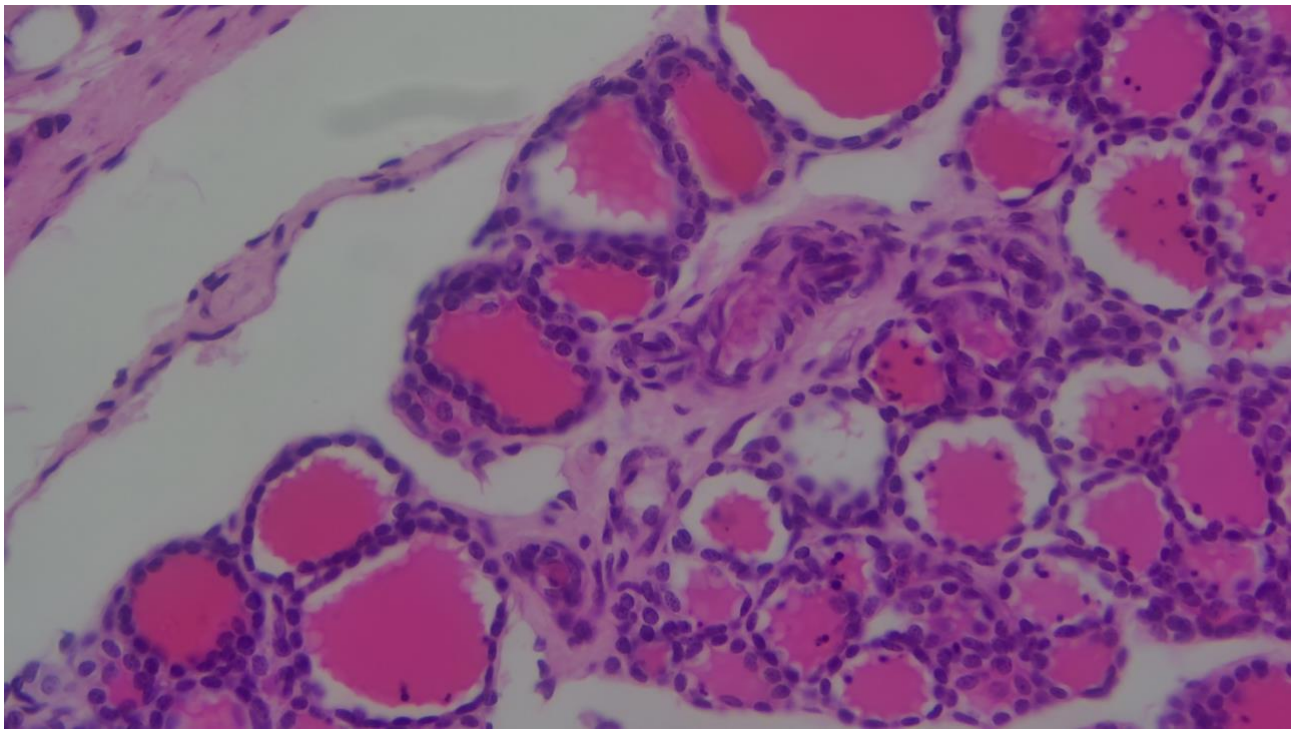


Figure 28 Simple Cuboidal Epithelium.Sec. Captured with XFCAMTOP4K8MPA

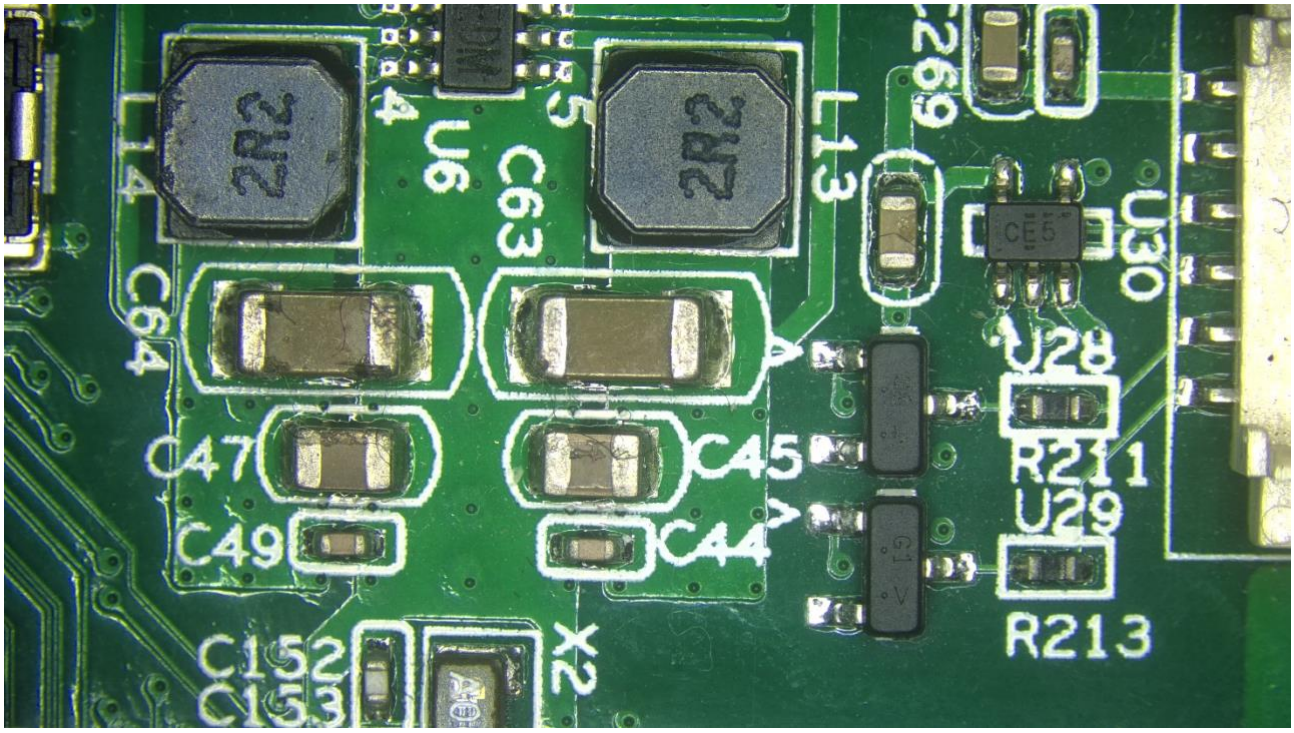


Figure 29 Circuit Board Captured with XFCAMTOP4K8MPA

9 Contacting Customer Service

Please contact your local distributor if you have any questions about the product.