ToupTek Intelligent Imaging Multi-Interface Camera Catalog

27. 10, 2025

Product Catalog

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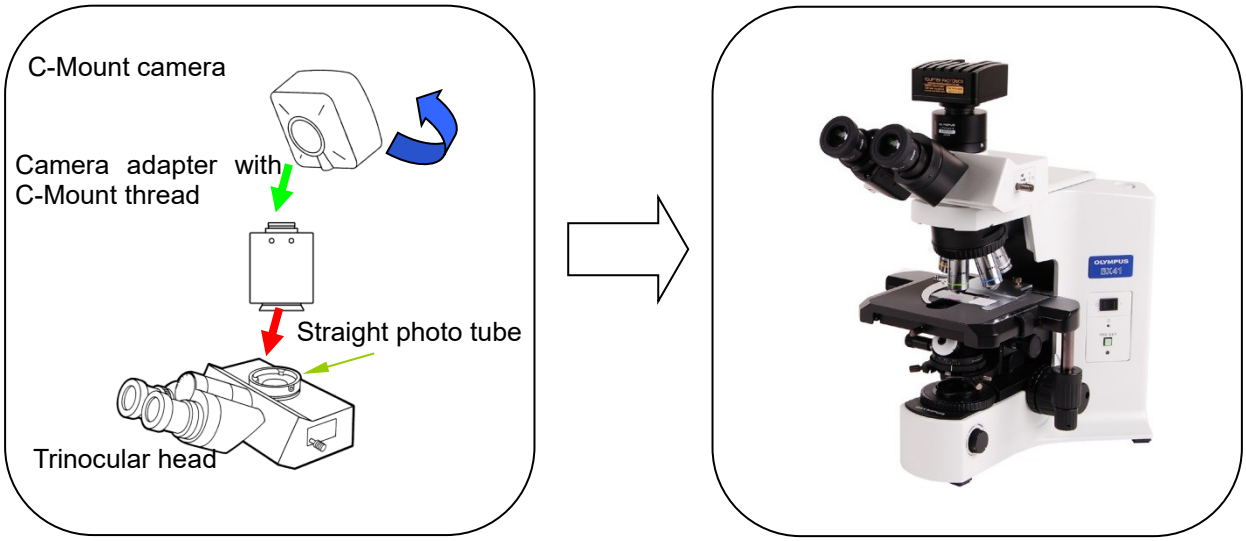
1 ToupCam® Camera & Microscope Configuration

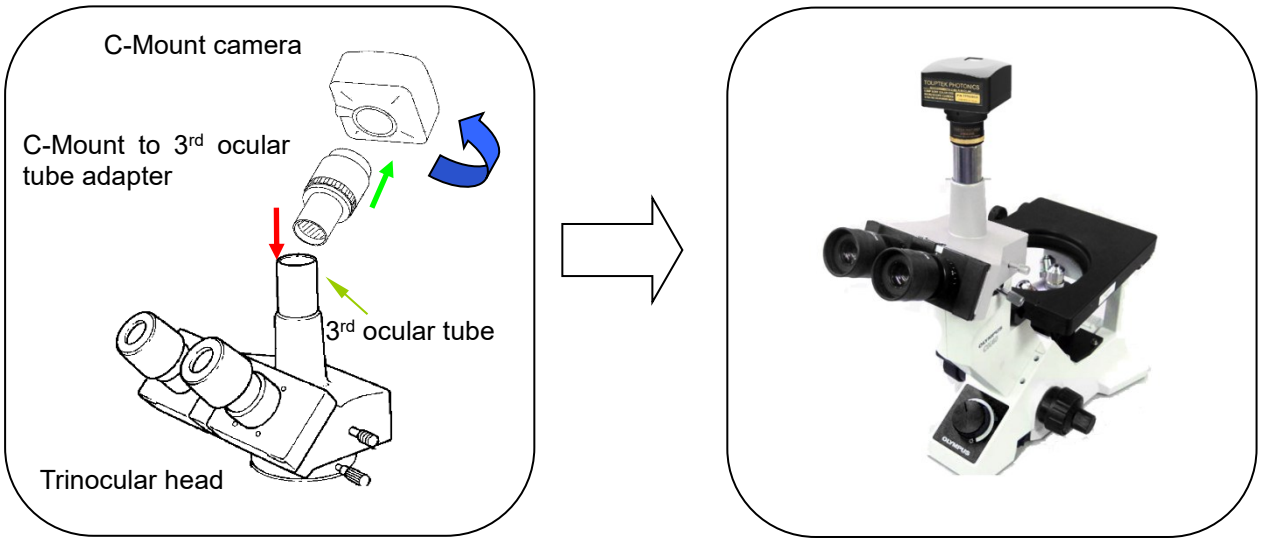
1.1 Trinocular Digital Microscope (1/2)

Attach the C-mount camera and Adapter to the straight photo tube



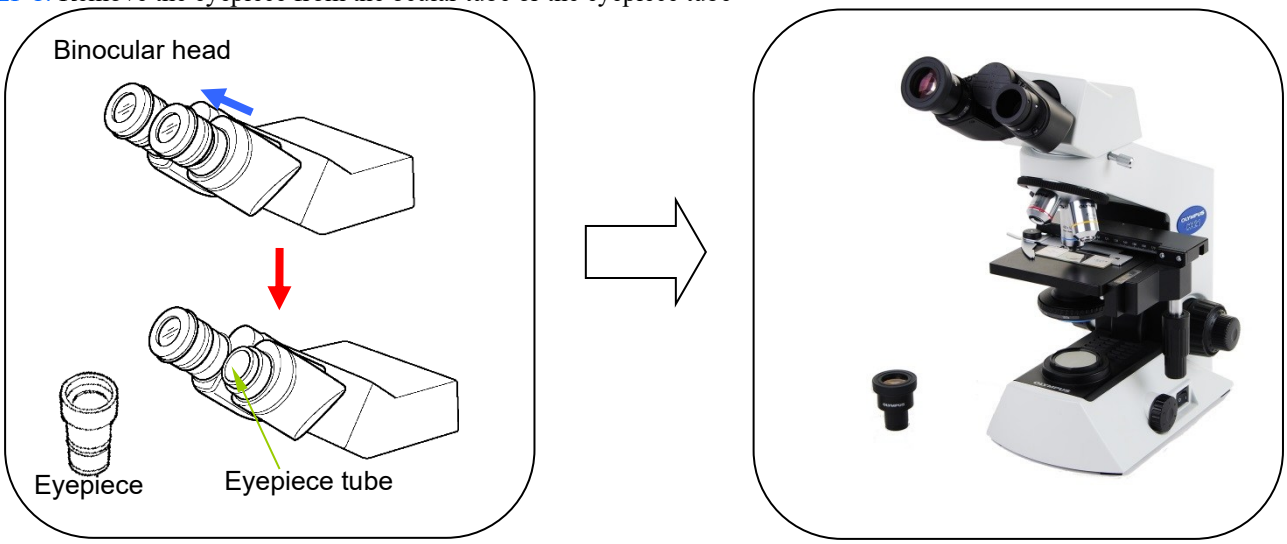
1.2 Trinocular Digital Microscope (2/2)

Attach the C-Mount camera and adapter to the 3rd ocular tube or the other 2 eyepiece tubes

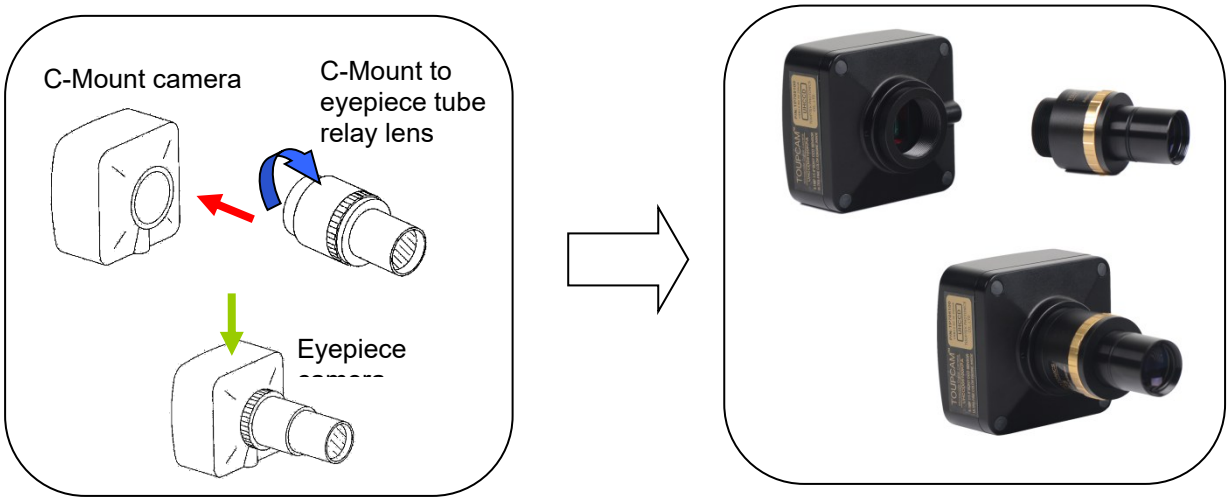


1.3 Binocular Digital Microscope

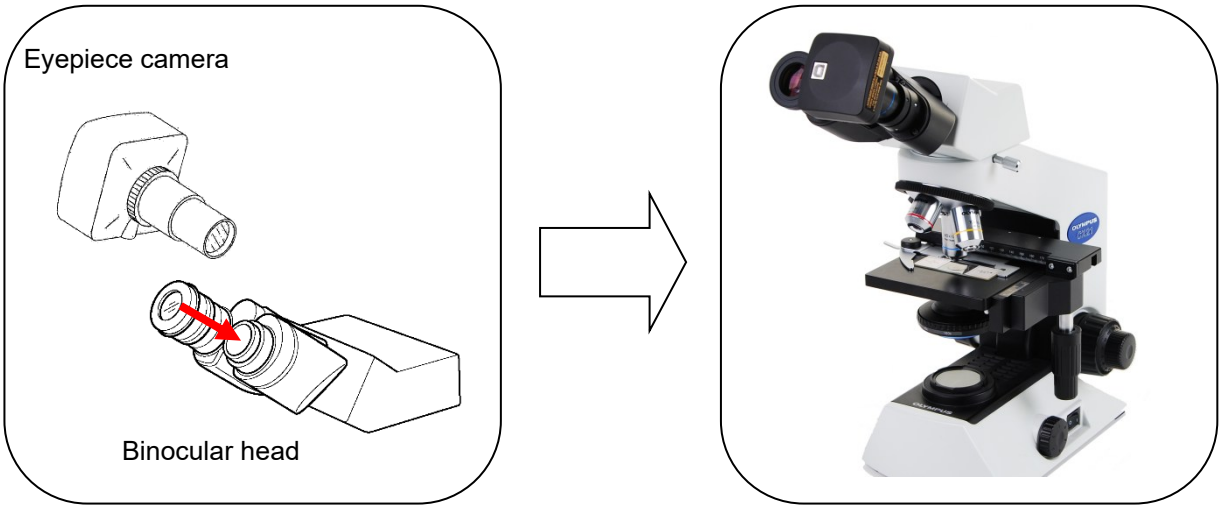
STEP 1: Remove the eyepiece from the ocular tube or the eyepiece tube



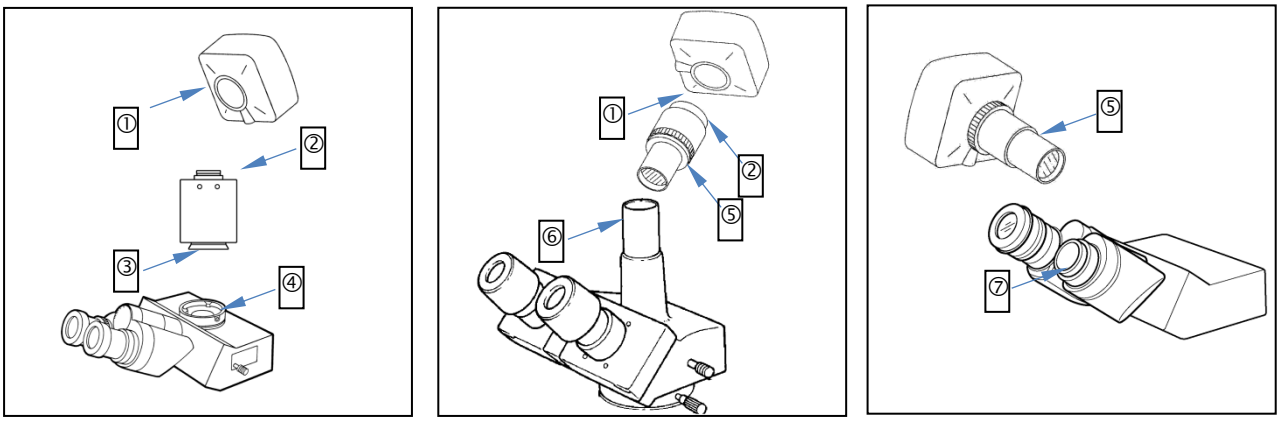
STEP 2: Attach (Screw) the camera Adapter to the C-mount camera



STEP 3: Attach (Insert) the eyepiece camera into the ocular tube or eyepiece tube



1.4 Size Description of the Connection Parts



① Standard C-Mount: Dia.1 inch (25.4mm) female thread
② Standard C-Mount: Dia.1 inch (25.4mm) male thread
③ Camera Adapter connector: size varies between microscope brands
④ Straight photo tube: size varies between microscope brands
⑤ Relay lens: standard eyepiece connector size, Dia.23.2mm (male)
⑥ 3rd ocular tube: standard eyepiece connector size, Dia.23.2mm (female)
⑦ Ocular tube: standard eyepiece connector size, Dia.23.2mm (female)

2 Introduction and Features of ToupCam Multi-Interface Camera

ToupTek Multi-Interface cameras are designed specifically for microscopes (biological/metallurgic/continuous zoom monoculars, etc.) users without a computer, directly outputting the microscopic video to the HDMI display;

Multi-Interface cameras have built-in ultra-high-performance multi-core microprocessor and run LinuxOS-based XCAMView software. When plugging in the mouse, you can easily perform image processing and operation on the HDMI display;

Multi-Interface cameras also have multiple output functions, which can transfer the video image data of the microscope camera to a computer or mobile devices by USB interface/RJ45 Ethernet interface/WiFi adapter;

Multi-Interface cameras can be inserted with SD card or USB flash drive to quickly save images or videos for subsequent analysis and research;

Multi-Interface cameras have high color reproduction ability, what you see is what you get, and the uncompressed raw data or lossless compression technology ensures the authenticity of scientific images; the built-in algorithm can automatically analyze and adjust the image information, regardless of whether the brightfield biological image, polarized light and crystal imaging in dark field, almost no need to manually adjust the parameters, you can get the desired effect.

Multi-Interface cameras break through the concept of traditional microscope cameras, and improve the quality and technological level of industrial and biological microscopic imaging, making it easier and faster for users to control and use.

There are many types of Multi-Interface cameras. In order to facilitate the user to choose, the functions of each model are described as follows:

- X8CAM4K, support HDMI2.0, USB3.0, WiFi, LAN output
- X7CAM4K, support HDMI2.0, USB3.0, WiFi, LAN output
- X5CAM4K, support HDMI2.0, USB3.0, WiFi, LAN output
- XCAMTOP4K, support HDMI1.4, USB2.0, WiFi, LAN output
- XCAMTOP4K_MINI, support HDMI1.4, USB2.0, WiFi, output
- SCAM4K, support HDMI1.4, USB3.0, WiFi output
- XCAMLITE4K, support HDMI1.4, USB2.0 output
- TXCAMLITE4K, support HDMI1.4, USB2.0 output, support touch or mouse control
- XCAMLITE4K_MINI, support HDMI1.4, USB2.0 output
- XCAM1080PX, support HDMI1.4, USB2.0 output
- XCAM1080PHX, support HDMI1.4, WiFi output, some model support USB to LAN output
- O5CAM, only supports HDMI2.0
- OCAM, only supports HDMI1.4
- XCAMLITE1080P, a simplified version of XCAM1080PX, only supports HDMI1.4 output
- OCAM, only supports HDMI1.4
- XCAM720P, only supports HDMI 720P output
- WUCAM, support WiFi, USB2.0 output
- WECAM, support WiFi, LAN output
- WEUCAM, support WiFi, LAN, USB output
- X5CAM4K_MR, support HDMI2.0, USB3.0, WiFi, LAN output
- CXCAM, support Type-C, USB2.0, WiFi, output

3 HDMI Multi-Interface Camera

3.1 X8CAM4K Series HDMI/NETWORK /USB3.0 Multi-outputs CMOS Camera

3.1.1 X8CAM4K Series Camera's Basic Characteristic

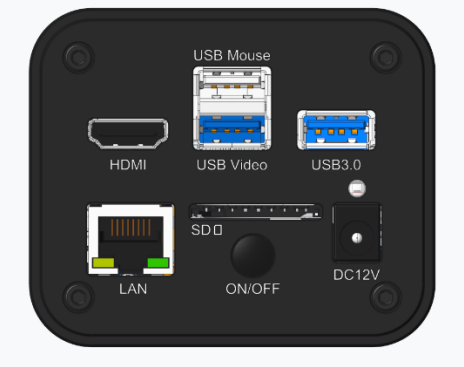
The X8CAM4K series cameras have high resolution, high frame rate, and excellent image quality, making them suitable for professional applications that require extremely high levels of detail capture and colour reproduction. The basic characteristic is listed as below:

- Sony back-illuminated large target surface CMOS sensor
- With 10-bit ISP processing, it offers better color reproduction, remarkable sharpening and 3D noise reduction effects, and more accurate ROI white balance
- 4K HDMI/ NETWORK/ USB multiple video synchronous 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
- Support the capture and display of RAW format images
- Support Image Auto Upload to the server over the network
- Supports USB voice control module, enabling real-time control of the camera through voice commands for taking photos, recording videos, freezing, and other operations
- Provide real-time video EDF function and real-time video WDR output function
- Provide real-time Stitch function to obtain higher quality images through real-time processing
- Provide two sets of default ISP parameters for biological microscope and stereo microscope
- New UI interface, the browsing interface provids rich file operation functions, image to image comparison, image to real-time video comparison, multi-image EDF function, multi-image Stitch function
- Embedded XCamView for the control of the camera and image processing, supporting automatic edge finding and measurement functions
- The text input box supports the input of both Chinese and English languages
- ToupView/ToupLite software for PC
- iOS/Android applications for smart phones or tablets

3.1.2 X8CAM4K Series Camera's Datasheet and Functions (2)

Order Code	Sensor & Size(mm)	Mount	Pixel(μm)	G Sensitivity Dark Signal	Sensor Output (FPS/Resolution)	Binning	Exposure(us)
X8CAM4K22MPA	IMX571(C) 1.7"(23.46x13.21)	M42*0.75	3.76x3.76	485mv with 1/30s 0.07mv with 1/30s	37@6240*3512	1x1	7~10^6
X8CAM4K16MPA	IMX383(C) 1/1.1"(13.06x7.34)	C	2.4x2.4	470mv with 1/30s 0.21mv with 1/30s	60@5440*3060	1x1	41~10^6

Camera Model	Video Saving(FPS/Resolution)	Picture	HDMI2.0(FPS/Resolution)	USB3.0(FPS/Resolution)	NETWORK(FPS/Resolution)
X8CAM4K22MPA	37@3840*2160	6240*3512	37@3840*2160 37@1920*1080	15@6240*3512 37@2688*1512 37@1920*1080	30@3840*2160 37@1920*1080 37@1280*720
X8CAM4K16MPA	60@3840*2160	5440*3060	60@3840*2160 60@1920*1080	25@5440*3060 45@2688*1512 60@1920*1080	30@3840*2160 60@1920*1080 60@1280*720



Interface or Button	Function Description
USB Mouse	Connect USB mouse for easy operation with embedded XCamView software Connect USB voice control for enable real-time control of camera snap, recording, freezing, and other operations
USB3.0	Connect USB flash drive to save pictures and videos Connect 5G WiFi module to transfer video wirelessly in real time Connect USB microphone to record audio and video Connect USB voice control for enable real-time control of camera snap, recording, freezing, and other operations
USB Video	Connect PC or other host device to realize video image transmission
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
LAN	LAN port to connect router and switch to transfer video
SD	SD card slot, comply with SDIO3.0 standard and SD card could be inserted for video and images saving
ON/OFF	Power switch
LED	LED status indicator
DC12V	Power adapter connection (12V/1A)
Video Output Interface	**Function Description**
HDMI Interface	Comply with HDMI2.0 standard; 37fps@4K or 37fps@1080P (X8CAM4K22MPA) 60fps@4K or 60fps@1080P(X8CAM4K16MPA)
LAN Interface	Support real time resolution switching(4K/1080P/720P) H264 encoded video DHCP configuration or manual configuration Unicast/multicast configuration
WiFi Interface	Connecting 5G WiFi adapter (USB3.0 slot) in AP/STA mode
USB Video Interface	Connecting USB Video port of PC for video transfer MJPEG format video
Other Function	**Function Description**
Video Saving	Video format：8M (3840*2160) H264 encoded MP4 file Video saving frame rate:37fps(X8CAM4K22MPA); 60fps(X8CAM4K16MPA);
Image Capture	22M (6240*3512, X8CAM4K22MPA) JPEG/TIFF/RAW image in SD card or USB flash drive 16M (5440*3060, X8CAM4K16MPA) JPEG/TIFF/RAW image in SD card or USB flash drive (Default SD card priority, priority can be modified in settings)
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, Gamma Adjustment, Contrast Adjustment, Brightness Adjustment, Hue Adjustment, Color to Gray, 50HZ/60HZ Anti-flicker, Dark Enhance, DRC Function
Image Operation	Zoom In/Zoom Out (Up to 10X), Mirror/Flip, Freeze, EDF, Stitch, Grids, Overlay, PIP, Browser (including Picture Browsing, Video Playback, Video Compare , Picture Compare , EDF , Stitch , Image Processing), 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 / Spanish / Japanese / Italian / Russian / Dutch / Portuguese

Software Environment under Network/USB Video Output	
White Balance	Auto White Balance
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 / 11(32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher

	Memory: 4GB or More
	USB interface: USB 2.0 interface or higher
	Ethernet Port: RJ45 Ethernet Port
	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
Power Supply	DC 12V/1A or above Adapter

3.1.3 Dimension of X8CAM4K Series Camera

Figure 3-1 Dimension of X8CAM4K22MPA

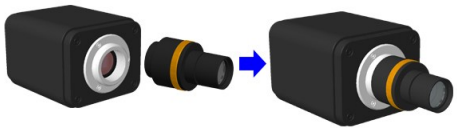
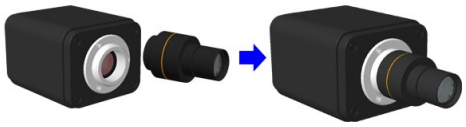
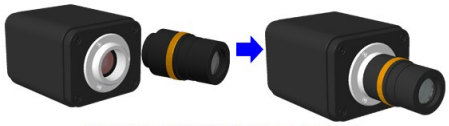
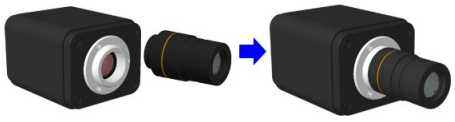
Figure 3-2 Dimension of X8CAM4K16MPA

3.1.4 Packing Information of X8CAM4K Series Camera

Figure 3-3 X8CAM4K Series Camera Packing Information

	Standard Packing List
A	Gift box : L:25.5cm W:17.0cm H:9.0cm (1pcs, 1.7Kg/ box)
B	X8CAM4K 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	HDMI2.0 Cable
F	USB3.0 A male to A male gold-plated connectors cable /1.5m
	Optional Accessory
G	Voice Control Module
H	SD Card(16G or above; Speed: class 10)
I	USB flash drive(USB3.0)
J	Ethernet cable
K	USB WiFi adapter (Shape will vary with different models)
L	ToupTek 1.2/1.5X Microscope Adapter (For **X8CAM4K22MPA**), ToupTek engineer will help you to determine the right microscope adapter for your application

3.1.5 Extension of X8CAM4K Series Camera with Microscope or Telescope Adapter

Extension	Picture	
C-mount Camera (X8CAM4K16MPA)		Scientific research, digital teaching (teaching, demonstration and academic discussing); Digital laboratory, medical research; Machine vision (PCB detection, IC quality control); Medical treatment (pathological observation); Food (microbial colony observation and counting); Aviation and military;
Microscope Camera	 4K HDMI+AMAXXX(23.2mm Adapter)  4K HDMI+FMAXXX(23.2mm Adapter)  4K HDMI+ATAXXX(31.75mm Adapter)  4K HDMI+FTAXXX(31.75mm Adapter)	

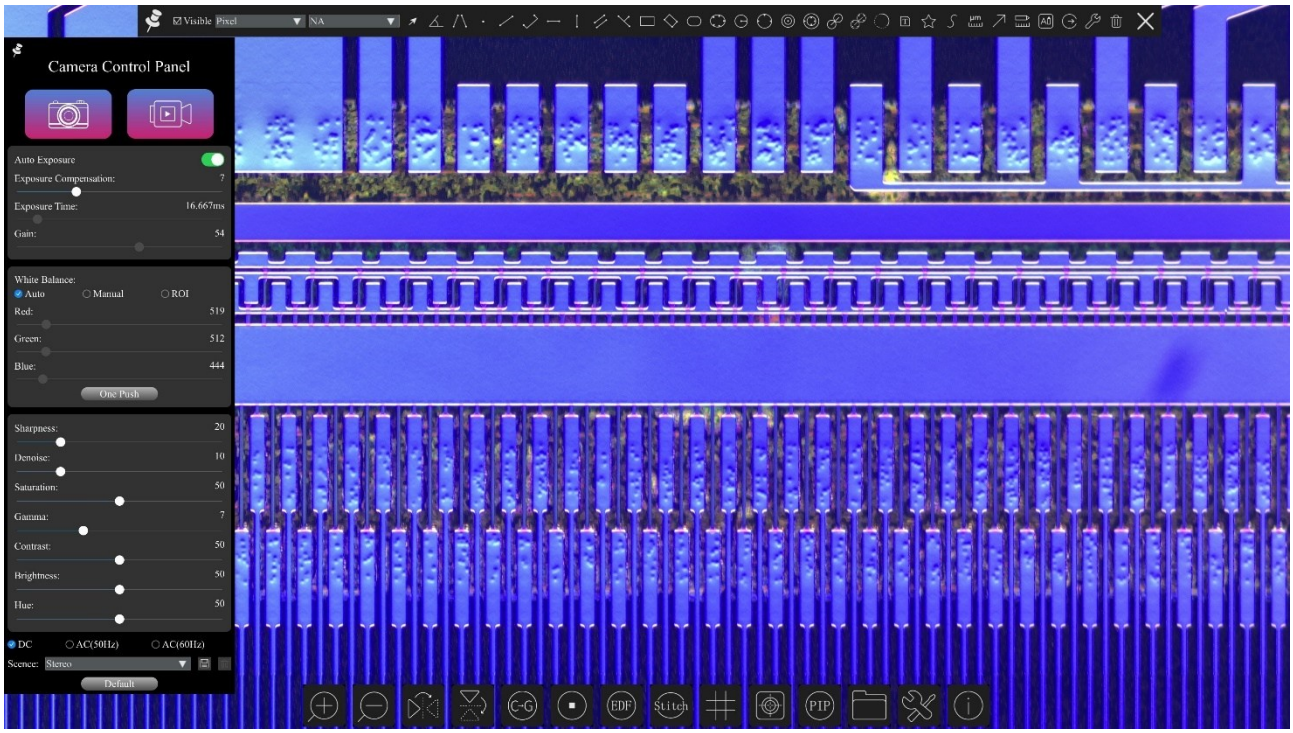


Figure 3-4 XCamView and X8CAM4K Series Camera in HDMI Mode

Figure 3-5 Biomicroscope + M42 Micro Adaptor +X8CAM4K22MPA

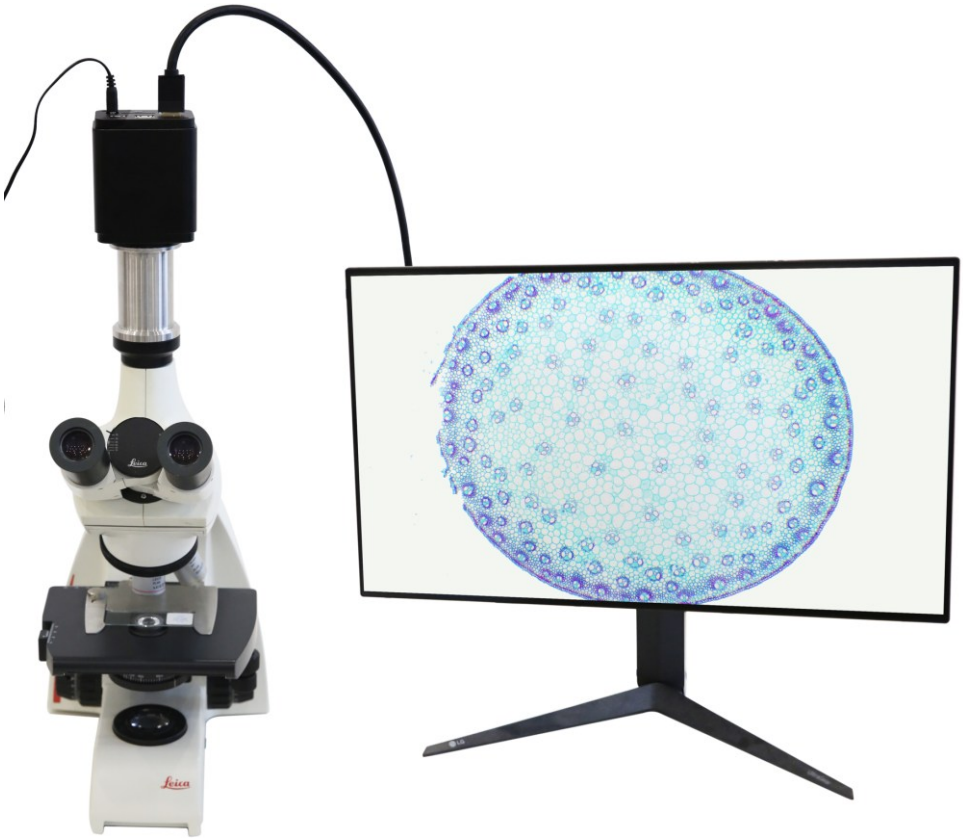


Figure 3-6 X8CAM4K22MPA Camera for Use with Biomicroscope Via M42 Microscope Adapter

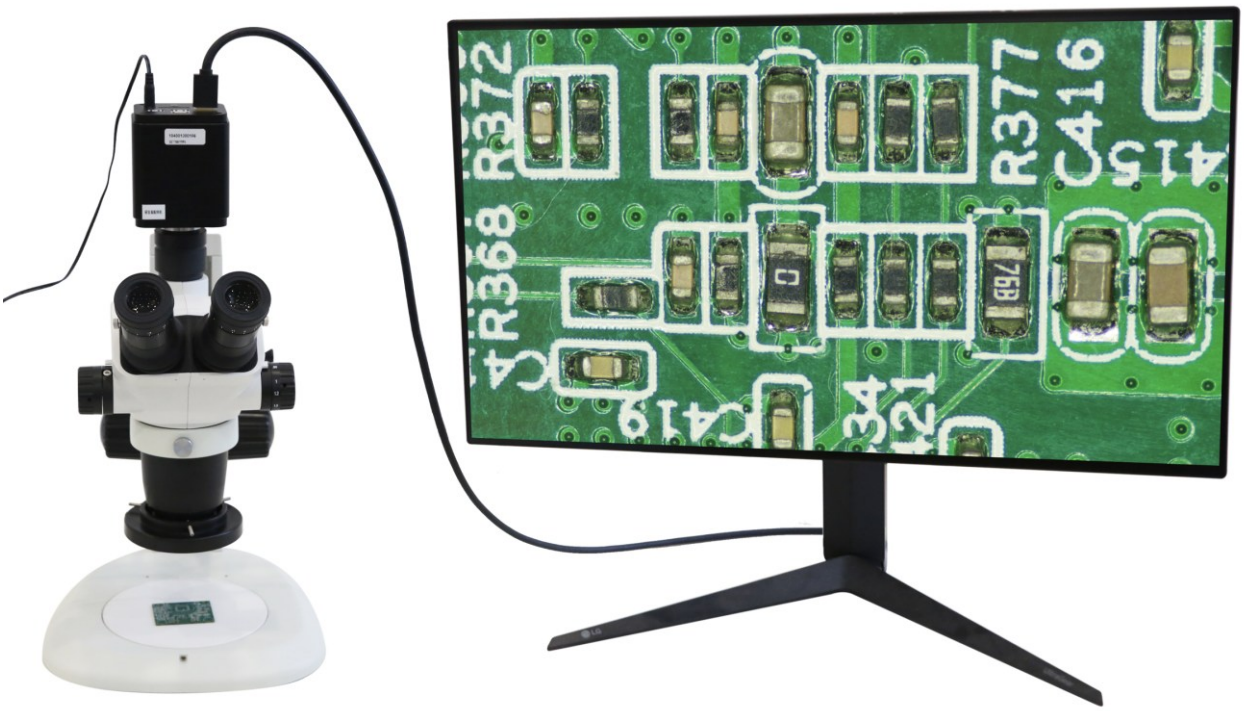


Figure 3-7 X8CAM4K16MPA Camera with Trinocular Stereo Microscope

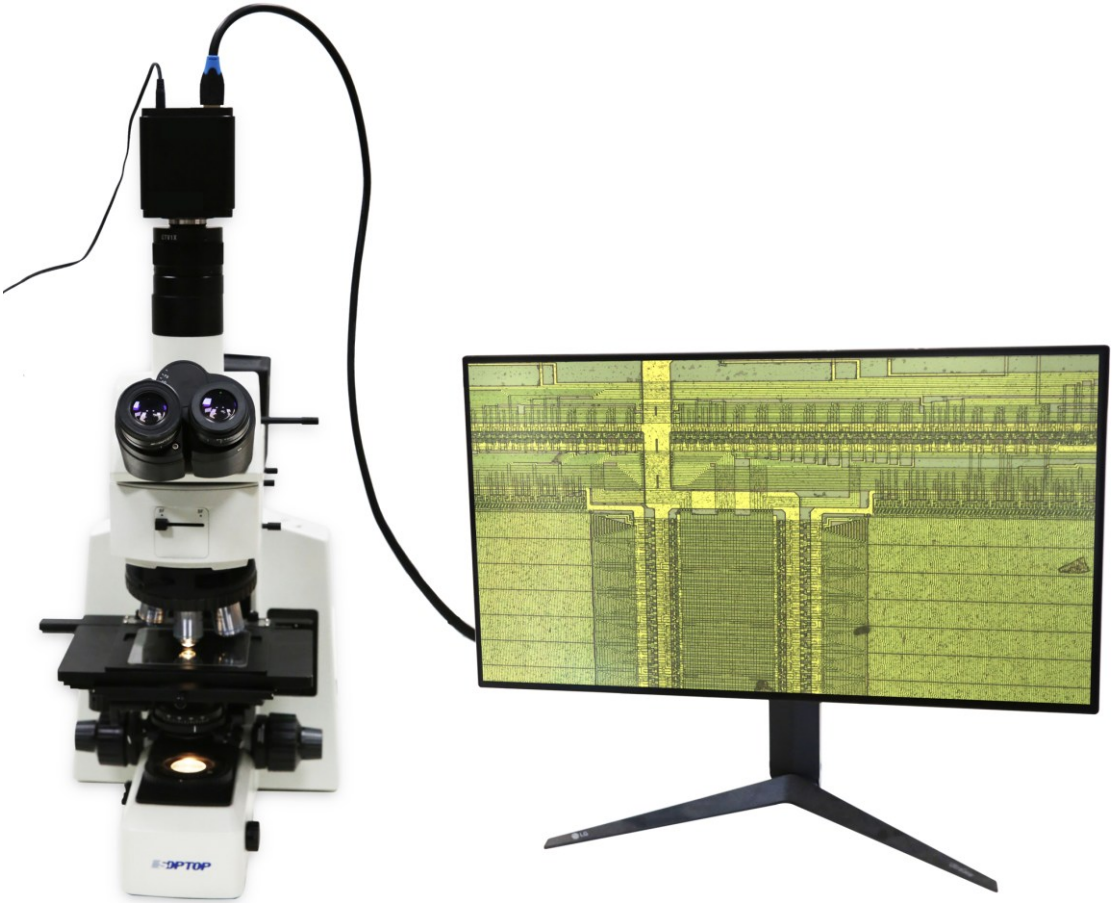


Figure 3-8 X8CAM4K16MPA Camera with Metallographic Microscope

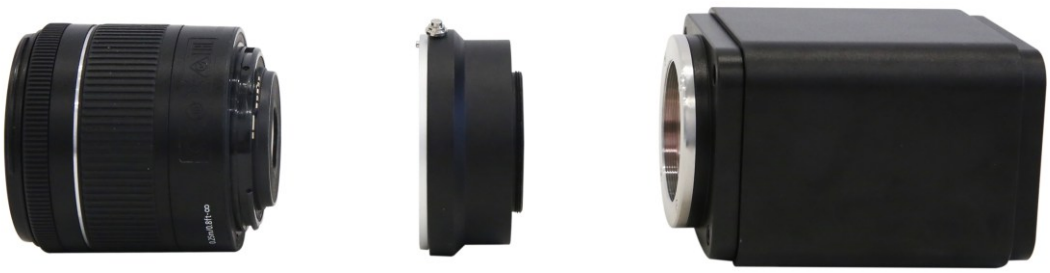


Figure 3-9 X8CAM4K22MPA with Canon lenses via M42 to EF mount adapter

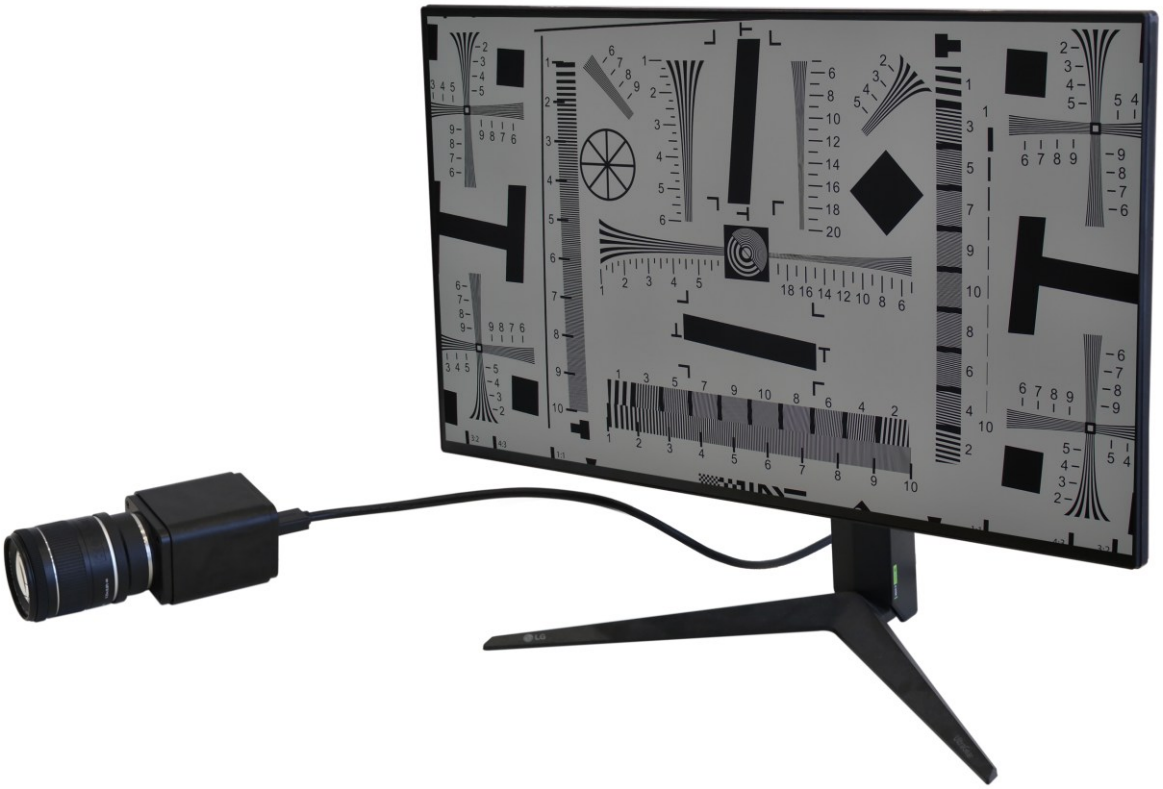


Figure 3-10 X8CAM4K22MPA with Canon Lenses Via M42 to EF Mount Adapter

3.1.6 Images Captured by X8CAM4K Series Camera

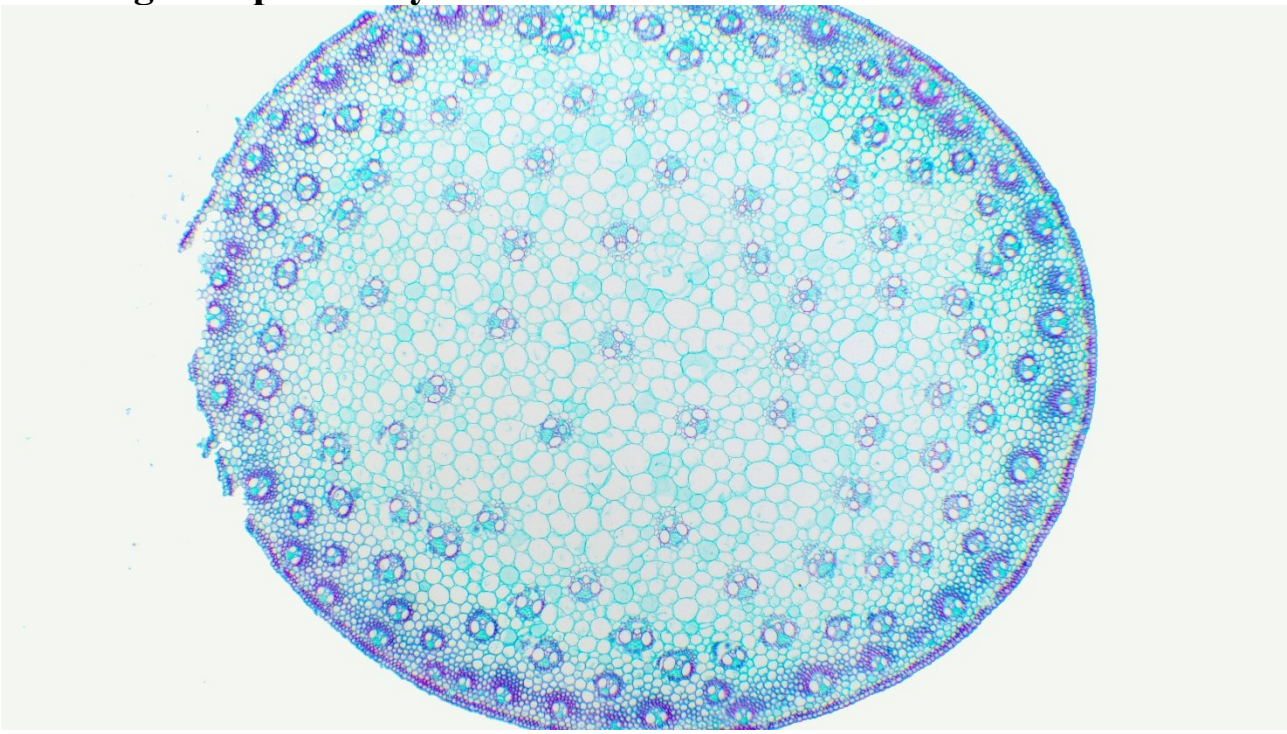


Figure 3-11 Corn Stem.C.S Captured with X8CAM4K22MPA

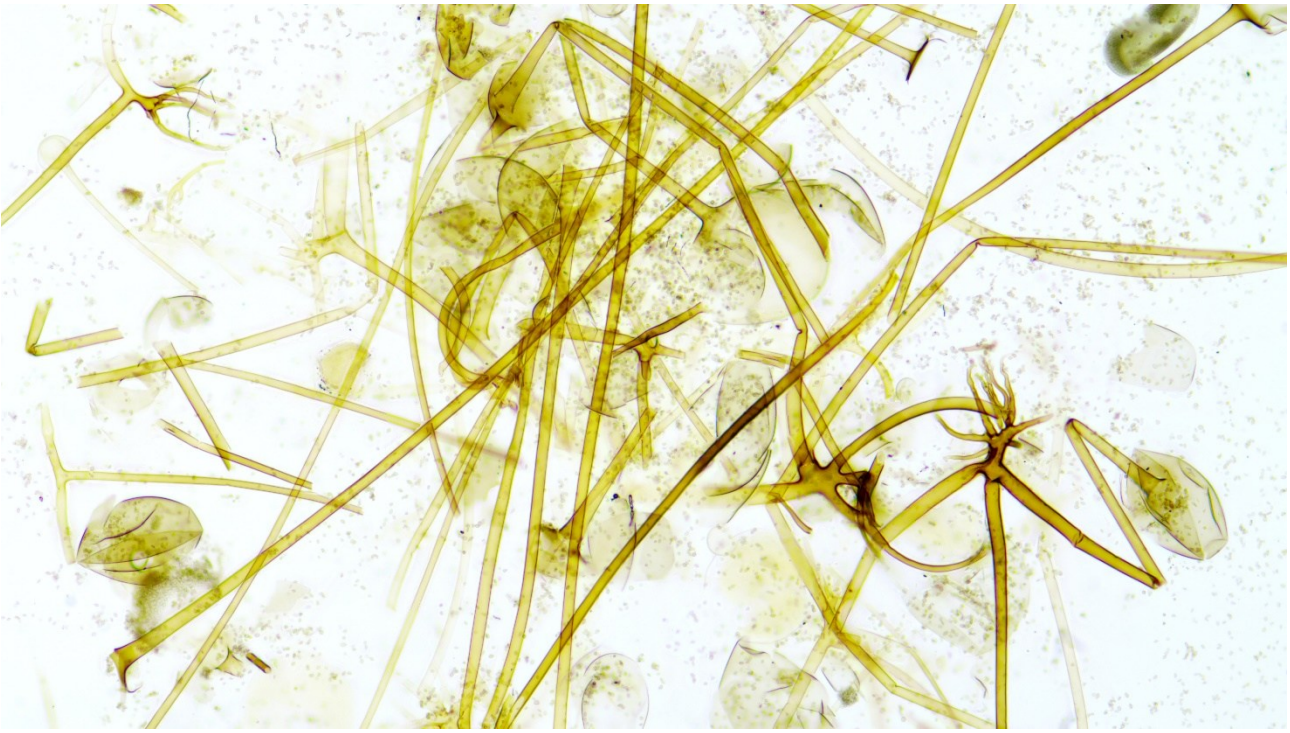


Figure 3-12 Rhizopus.W.M Captured with X8CAM4K22MPA

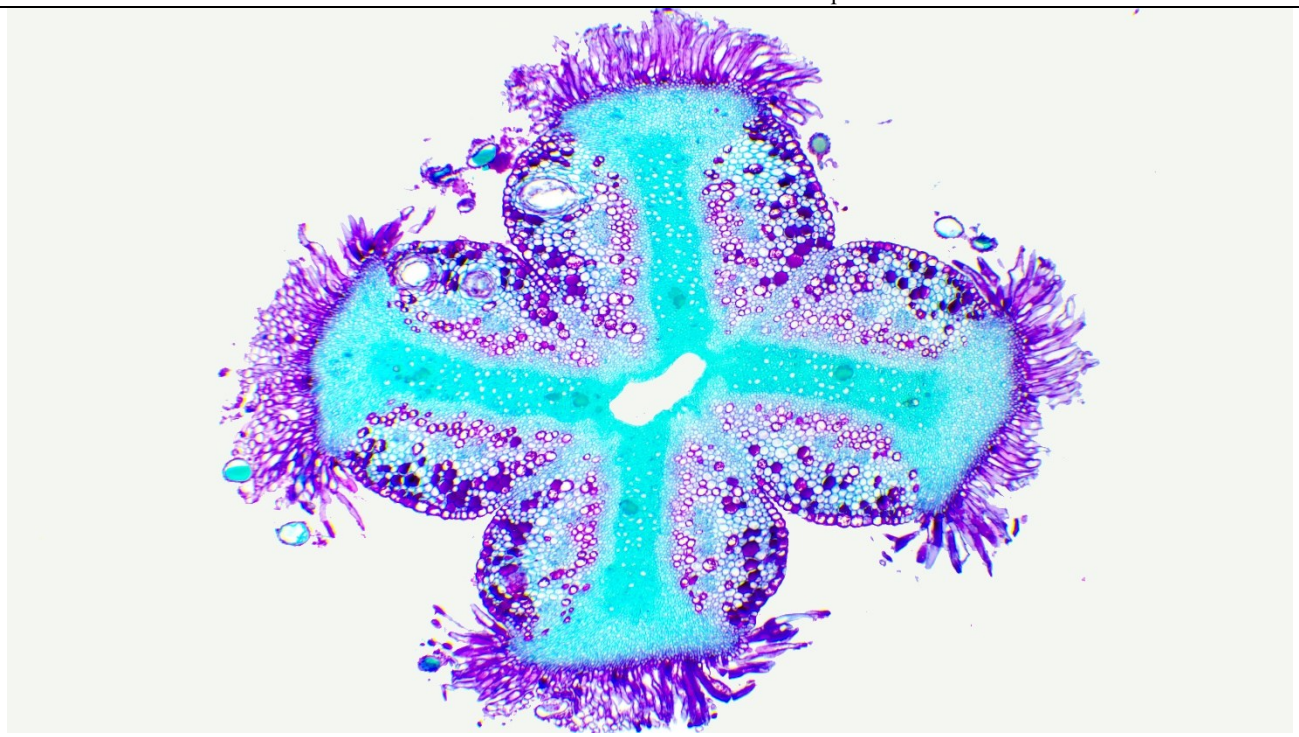


Figure 3-13 Cross Section of Cotton Stigma Captured with X8CAM4K22MPA

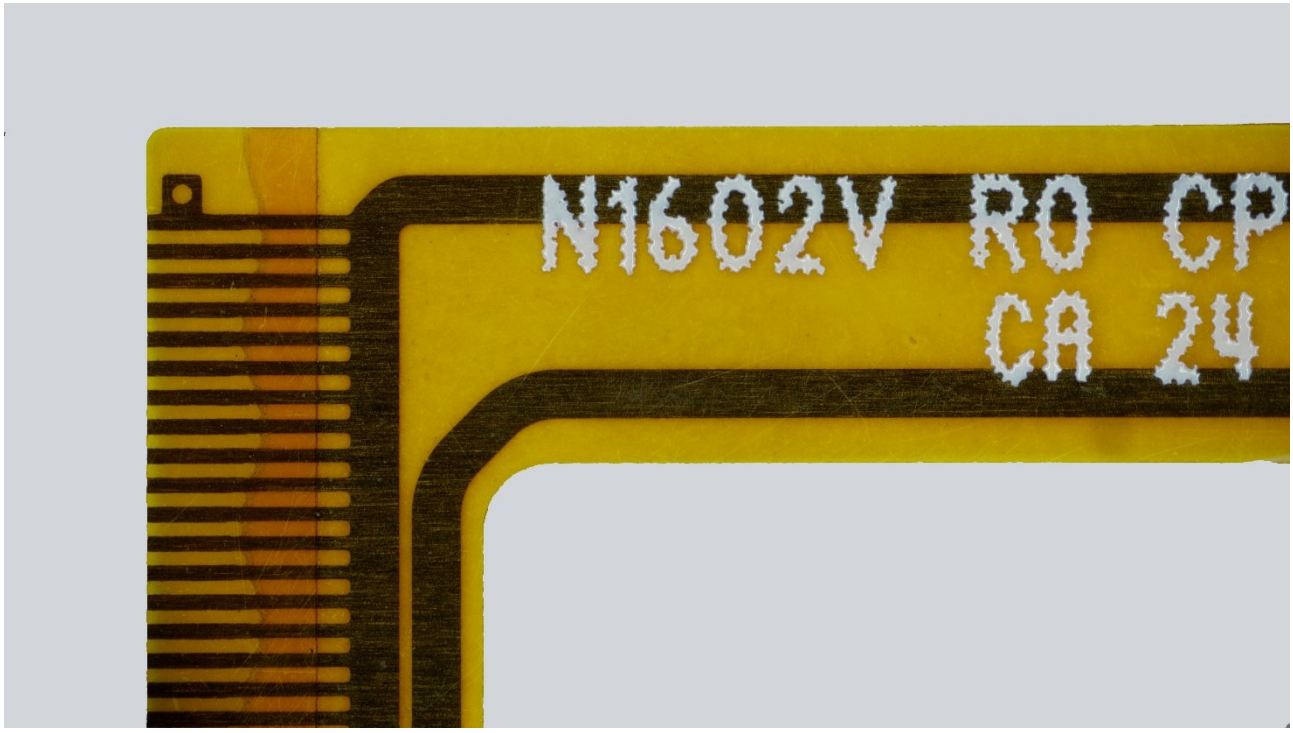


Figure 3-14 FPC Captured with X8CAM4K16MPA

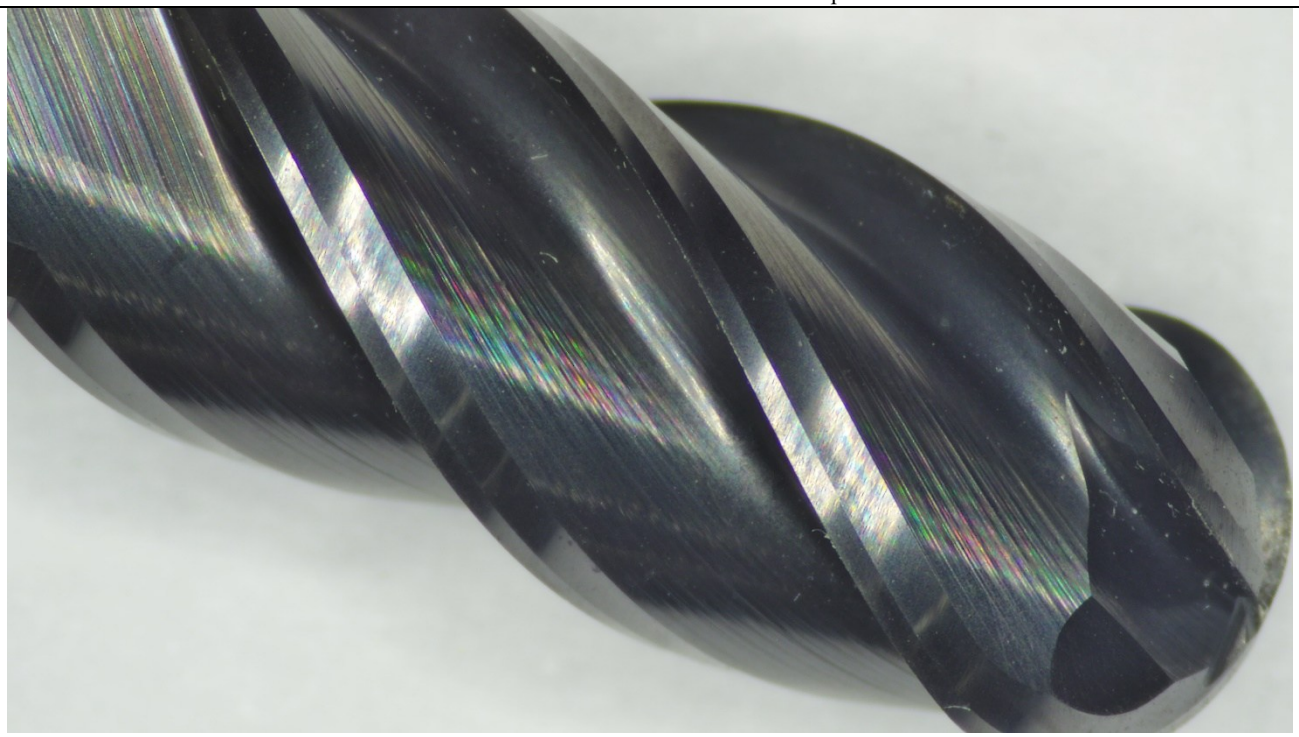


Figure 3-15 Carbide Tip Captured with X8CAM4K16MPA

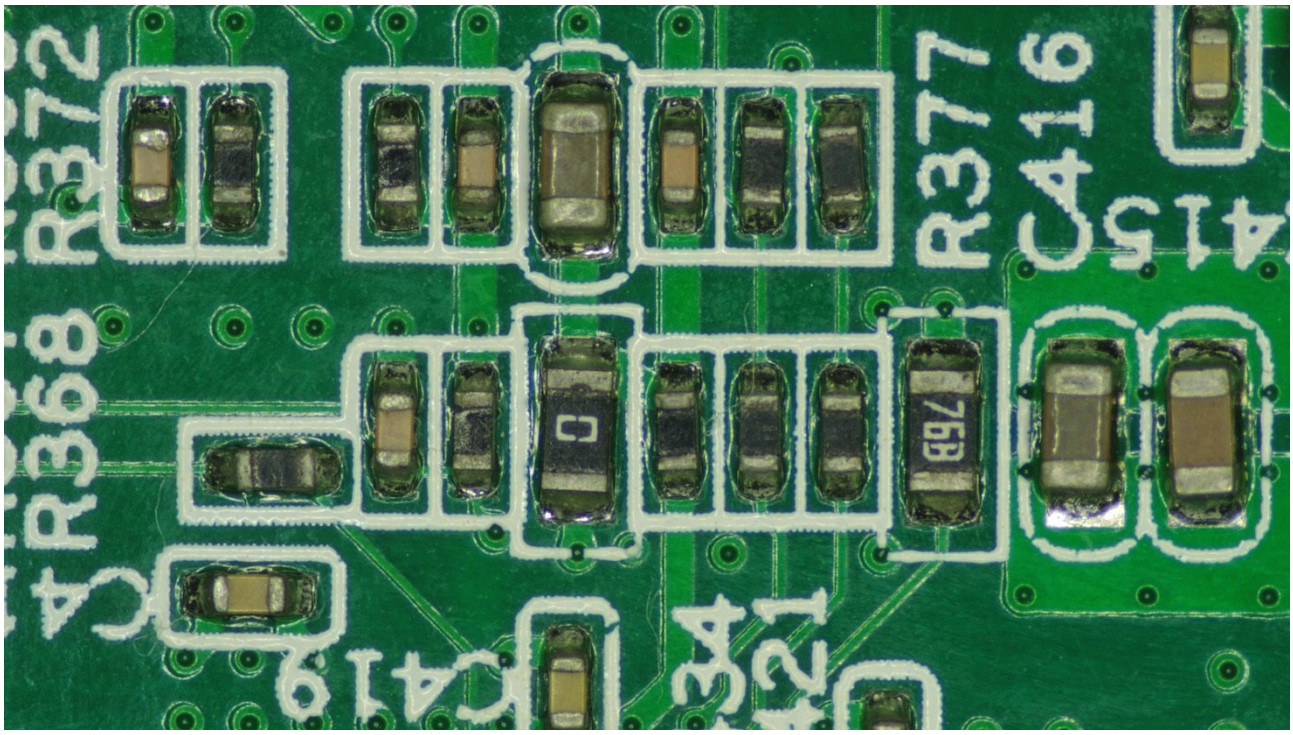


Figure 3-16 Circuit Board Captured with X8CAM4K16MPA

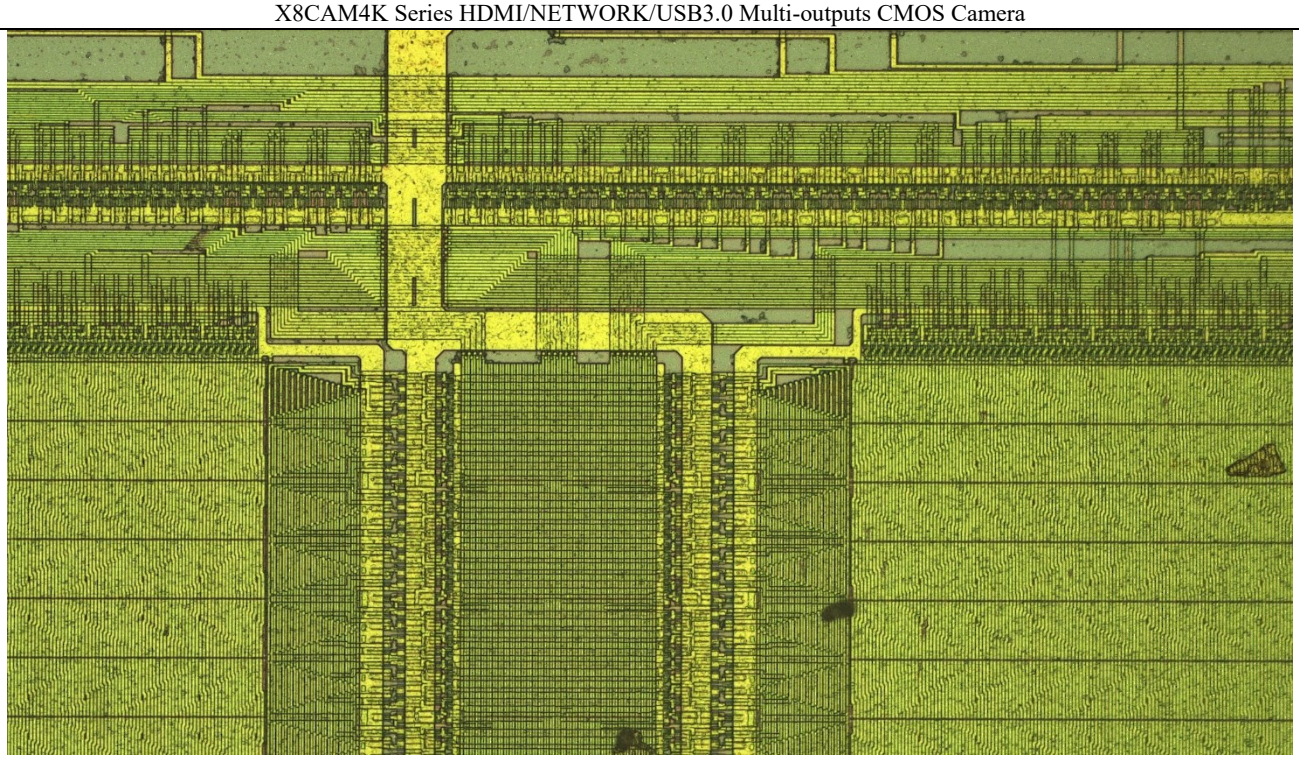


Figure 3-17 Samples Photographed by the SOPTOP RX50M Metallographic Microscopy System Captured with X8CAM4K16MPA

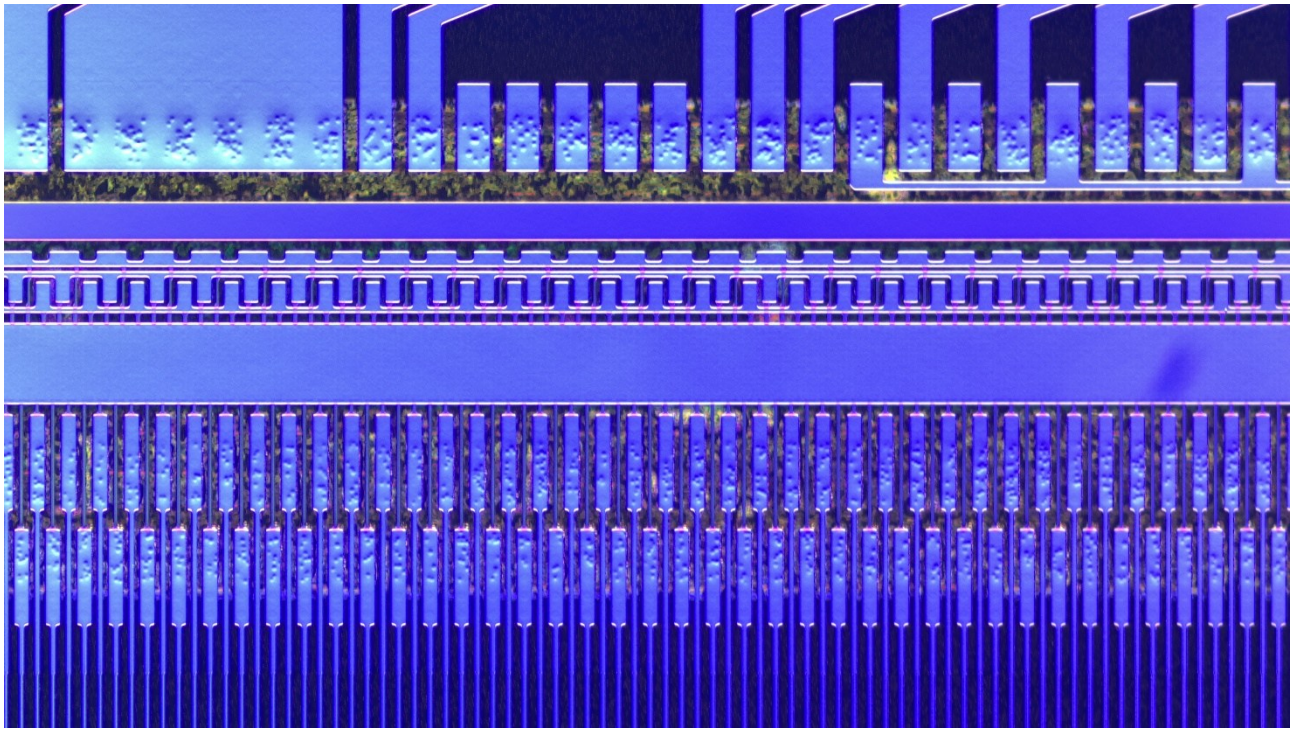


Figure 3-18 Conductive Particles of the Liquid Crystal Screen Photographed by the DIC-100WVA Differential Interference Contrast (DIC) Microscopy System Captured with X8CAM4K16MPA

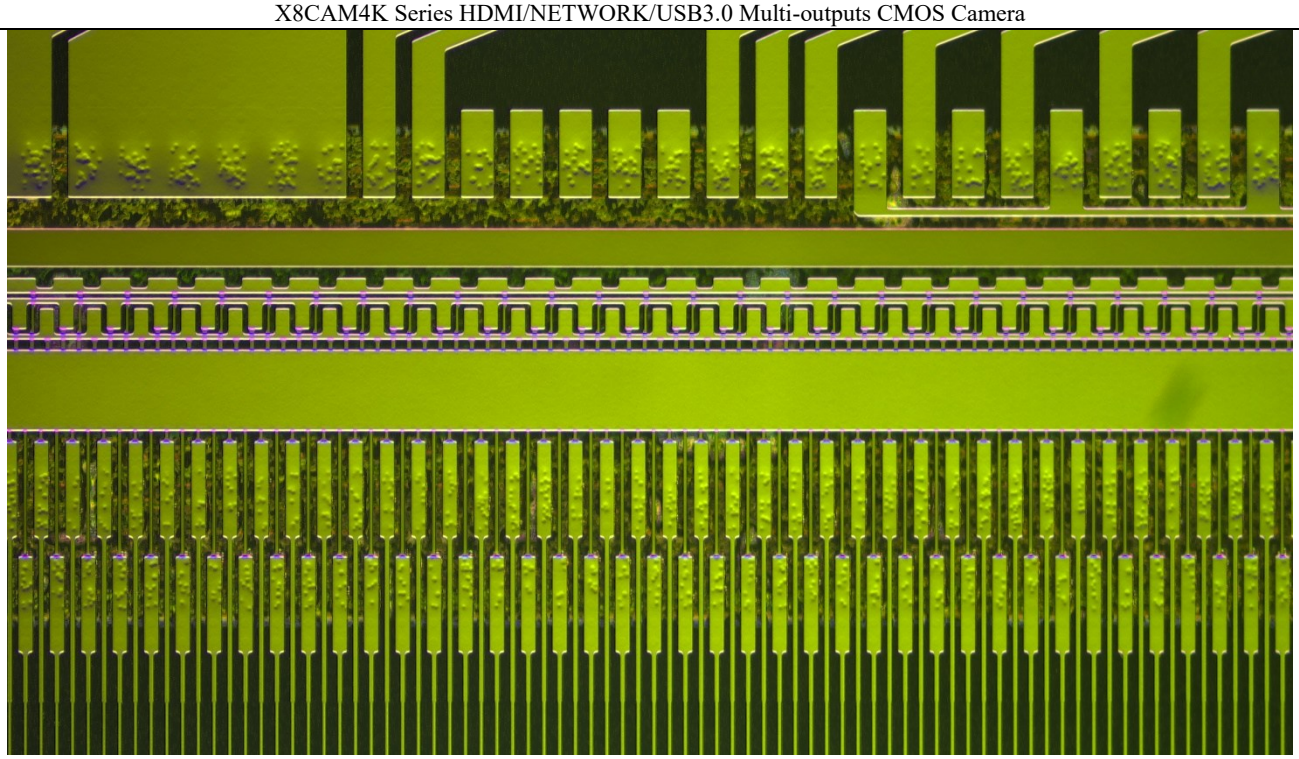


Figure 3-19 Conductive Particles of the Liquid Crystal Screen Photographed by the DIC-100WVA Differential Interference Contrast (DIC) Microscopy System Captured with X8CAM4K16MPA

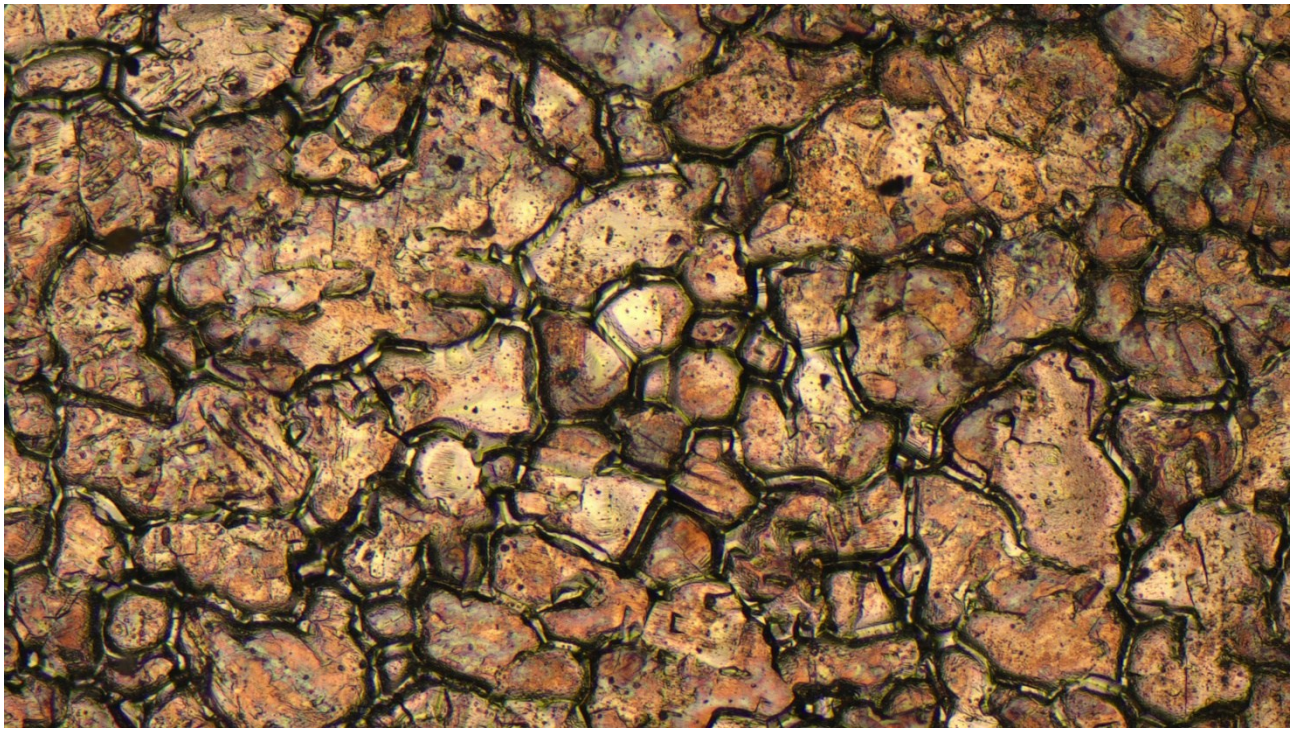


Figure 3-20 Metal Samples Photographed by the OUMIT CX43M Metallographic Microscopy System Captured with X8CAM4K16MPA

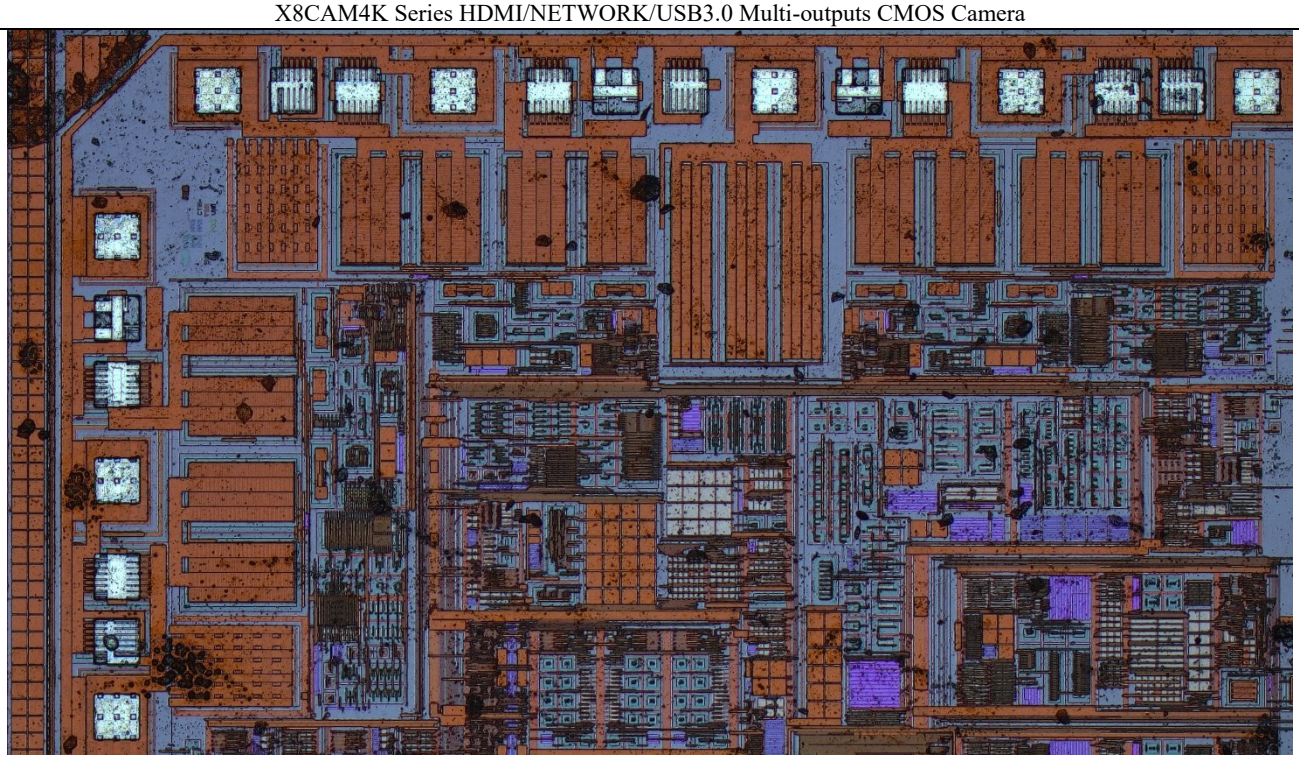


Figure 3-21 Semiconductor Samples Photographed by the OUMIT CX43M Metallographic Microscopy System Captured with X8CAM4K16MPA

3.2 X7CAM4K Series HDMI/NETWORK /USB3.0 Multi-outputs C-mount CMOS Camera

3.2.1 X7CAM4K Series Camera's Basic Characteristic

The X7CAM4K series camera is intended for acquisition of digital images from stereo microscopes, biological microscopes, or online interactive teaching. The basic characteristic is listed as below:

- Sony STARVIS 2 back-illuminated CMOS sensor
- 4K HDMI/ NETWORK/ USB multiple video synchronous outputs
- 4K/1080P auto switching according to monitor resolution
- High frame rate output, supporting up to 4K 75fps
- Support 4K 60fps low delay HDMI output mode, with an average delay of 40ms
- SD card/USB flash drive for captured image and video storage, customizable storage location and support local preview and playback
- Support external keyboard, input in both Chinese and English
- Support the capture and display of JEPG, TIFF, PNG and RAW format images
- Supports external USB 3.0 interface solid-state drive, and supports automatic saving of recorded videos in case of sudden power failure
- Support the editing function of recorded videos and the optional time watermark in recorded videos or images
- Support Image Auto Upload to the server over the network
- Supports USB voice control module, enabling real-time control of the camera through voice commands for taking photos, recording videos, freezing, and other operations
- New browsing function, providing rich file operation functions, image to image comparison, image to real-time video comparison, multi-image EDF function, multi-image Stitch function
- Excellent ISP with local tone mapping and 3D denoising
- Provide real-time video EDF function and real-time video WDR output function
- Provide real-time Stitch function to obtain higher quality images through real-time processing
- Provide two sets of default ISP parameters for biological microscope and stereo microscope
- Embedded XCamView for the control of the camera and image processing, supporting automatic edge finding and measurement functions
- ToupView/ToupLite software for PC
- iOS/Android applications for smart phones or tablets

3.2.2 X7CAM4K Series Camera's Datasheet and Functions (3)

The main parameters of X7CAM4K series cameras with different sensors are shown in the table below:

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity/Dark Signal	FPS/Resolution	Binning	Exposure(ms)
X7CAM4K8MPA	Sony IMX678(C) 1/1.8"(7.68x4.32)	2.0x2.0	3541mv with 1/30s 0.15mv with 1/30s	72@3840*2160	1x1	0.019~1000
X7CAM4K8MPB	Sony IMX585(C) 1/1.2"(11.14x6.26)	2.9x2.9	5970mv with 1/30s 0.13mv with 1/30s	75@3840*2160	1x1	0.048~1000
X7CAM4K16MPA	Sony IMX283(C) 1/1.1"(13.06x7.34)	2.4x2.4	1847mv with 1/30s 0.84mv with 1/30s	30@5440*3060	1x1	0.104~1000

The output parameters of different interfaces of X7CAM4K series cameras are shown in the following table:

Camera Model	Video Saving (FPS/Resolution)	HDMI2.0(FPS/Resolution)	USB3.0(FPS/Resolution)	NETWORK(FPS/Resolution)
X7CAM4K8MPA	72@3840*2160 72@1920*1080 72@1280*720	60@3840*2160 60@1920*1080	30@3840*2160 45@2688*1512 60@1920*1080	30@3840*2160 60@1920*1080 72@1280*720
X7CAM4K8MPB	75@3840*2160 75@1920*1080 75@1280*720	60@3840*2160 60@1920*1080	30@3840*2160 45@2688*1512 60@1920*1080	30@3840*2160 60@1920*1080 75@1280*720
X7CAM4K16MPA	30@3840*2160 30@1920*1080 30@1280*720	30@3840*2160 30@1920*1080	20@5440*3060 30@2688*1512 30@1920*1080	30@3840*2160 30@1920*1080 30@1280*720

Interface or Button	Function Description
USB Mouse	Connect USB mouse for easy operation with embedded XCamView software (Flat shape without labelling) Connect USB voice control for enable real-time control of camera snap, recording, freezing, and other operations
USB3.0	Connect USB flash drive to save pictures and videos Connect 5G WiFi module to transfer video wirelessly in real time Connect USB microphone to record audio and video Connect USB voice control for enable real-time control of camera snap, recording, freezing, and other operations
USB Video	Connect PC or other host device to realize video image transmission
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
LAN	LAN port to connect router and switch to transfer video
SD	SD card slot, comply with SDIO3.0 standard and SD card could be inserted for video and images saving
ON/OFF	Power switch
LED	LED status indicator
DC12V	Power adapter connection (12V/1A)
Video Output Interface	**Function Description**
HDMI Interface	Comply with HDMI2.0 standard;60fps@4K or 60fps@1080P (X7CAM4K8MPA, X7CAM4K8MPB) 30fps@4K or 30fps@1080P(X7CAM4K16MPA)
LAN Interface	Support real time resolution switching(4K/1080P/720P) H264 encoded video DHCP configuration or manual configuration Unicast/multicast configuration
WiFi Interface	Connecting 5G WiFi adapter (USB3.0 slot) in AP/STA mode
USB Video Interface	Connecting USB Video port of PC for video transfer H264/MJPEG format video
Other Function	**Function Description**
Video Saving	Video format：8M (3840*2160) H264/H265 encoded MP4 file Video saving frame rate:72fps(X7CAM4K8MPA); 75fps(X7CAM4K8MPB); 60fps in Low Delay Mode(X7CAM4K8MPA, X7CAM4K8MPB); 30fps in WDR Mode(X7CAM4K8MPA, X7CAM4K8MPB); 30fps(X7CAM4K16MPA)
Image Capture	8M (3840*2160, X7CAM4K8MPA, X7CAM4K8MPB) JPEG/TIFF/PNG/RAW image in SD card or USB flash drive 16M (5440*3060, X7CAM4K16MPA) JPEG/TIFF/PNG/RAW image in SD card or USB flash drive (Default SD card priority, priority can be modified in settings)
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, Hue Adjustment, Color to Gray, 50HZ/60HZ Anti-flicker Function
Image Operation	Zoom In/Zoom Out(Up to 10X), Mirror/Flip, Freeze, EDF, Cross Line, Overlay , PIP , Browser (including Picture Browsing , Video Playback , Video Compare , Picture Compare , EDF , Image Processing), 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 / Spanish / Japanese / Italian / Russian / Dutch / Portuguese
Software Environment under Network/USB Video Output	
White Balance	Auto White Balance
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 / 11(32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory: 4GB or More
	Ethernet Port: RJ45 Ethernet Port
	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
Power Supply	DC 12V/1A or above Adapter

3.2.3 Dimension of X7CAM4K Series Camera

Figure 3-22 Dimension of X7CAM4K Series (Cubic and Flat Shape)

3.2.4 Packing Information of X7CAM4K Series Camera

Figure 3-23 X7CAM4K Series Camera Packing Information (Cubic and Flat Shape)

Standard Packing List	
A	Gift box : L:25.5cm W:17.0cm H:9.0cm (1pcs, 1.7Kg/ box)
B	X7CAM4K Camera (One of the two different shapes)
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	USB3.0 A male to A male gold-plated connectors cable /1.5m		
	Optional Accessory		
G	Voice Control Module		
H	SD Card (16G or above; Speed: class 10)		
I	USB flash drive		
J	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
K	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 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;		
L	108015(Dia.23.2mm to 30.0mm Ring)/Adapter rings for 30mm eyepiece tube		
M	108016(Dia.23.2mm to 30.5mm Ring)/ Adapter rings for 30.5mm eyepiece tube		
N	USB WiFi adapter		
O	Ethernet cable		

3.2.5 Extension of X7CAM4K Series Camera with Microscope or Telescope Adapter

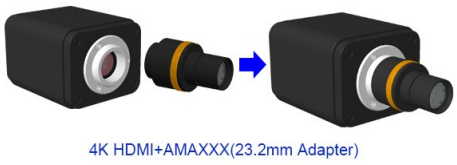
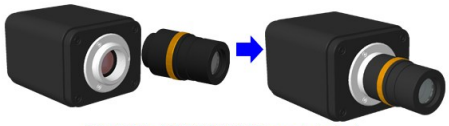
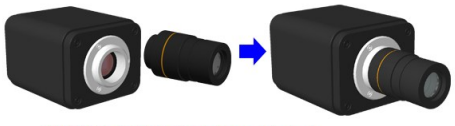
Extension	Picture	
C-mount Camera		Scientific research, digital teaching (teaching, demonstration and academic discussing); Digital laboratory, medical research; Machine vision (PCB detection, IC quality control); Medical treatment (pathological observation); Food (microbial colony observation and counting); Aviation and military;
Microscope Camera	 4K HDMI+AMAXXX(23.2mm Adapter)  4K HDMI+FMAXXX(23.2mm Adapter)  4K HDMI+ATAXXX(31.75mm Adapter)  4K HDMI+FTAXXX(31.75mm Adapter)	

Figure 3-24 X7CAM4K Series Camera and HDMI Displayer

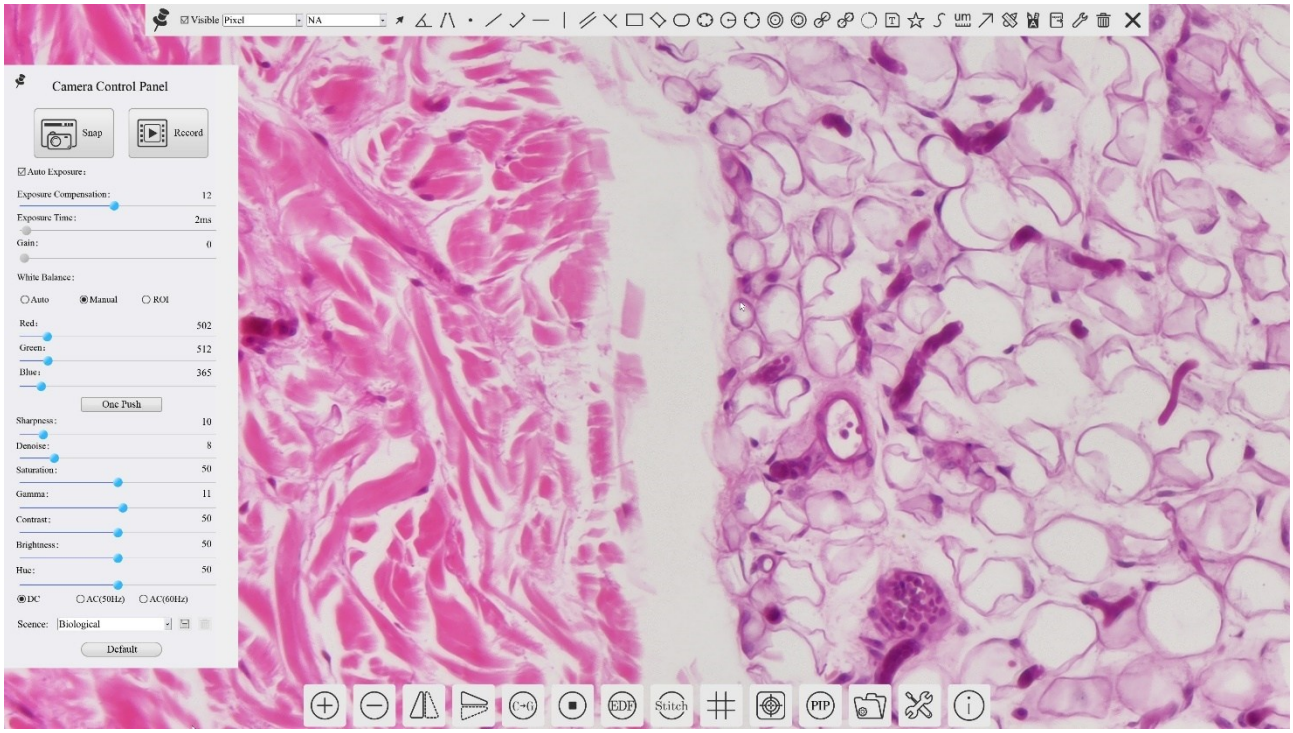


Figure 3-25 The X7CAM4K Series Camera's Control GUI

Figure 3-26 X7CAM4K Series Camera and Leica Microscope

Figure 3-27 X7CAM4K Series Camera and Zeiss Microscope

3.2.6 Images Captured by X7CAM4K Series Camera

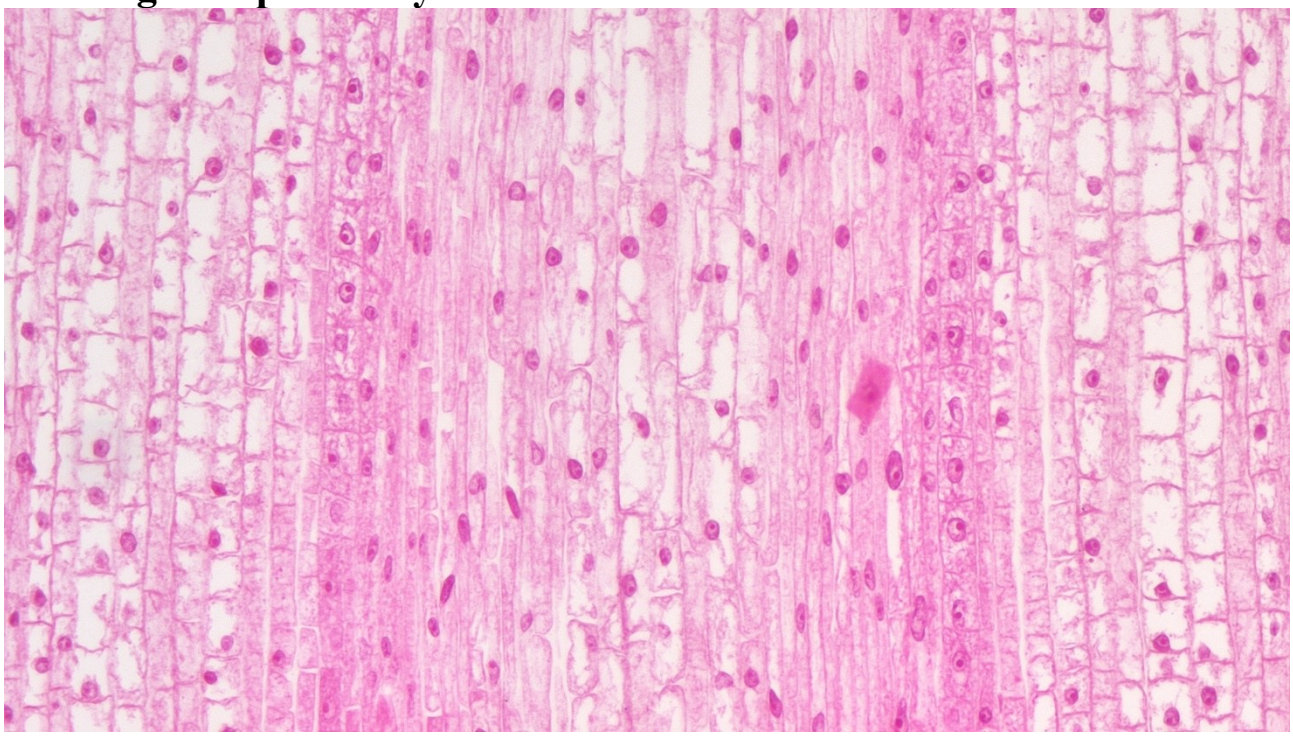


Figure 3-28 Corn Root Tip.L.S Captured with X7CAM4K8MPA

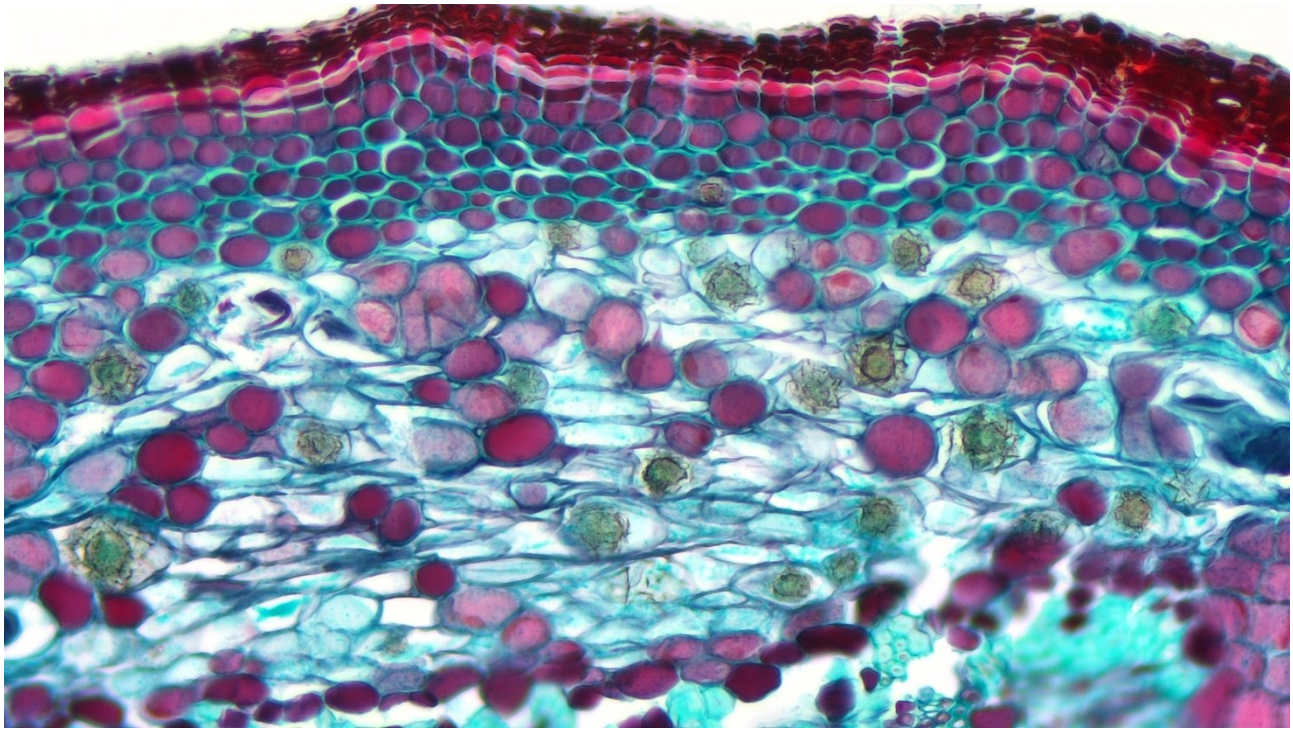


Figure 3-29 Three Year Tilia Stem.C.S Captured with X7CAM4K8MPA

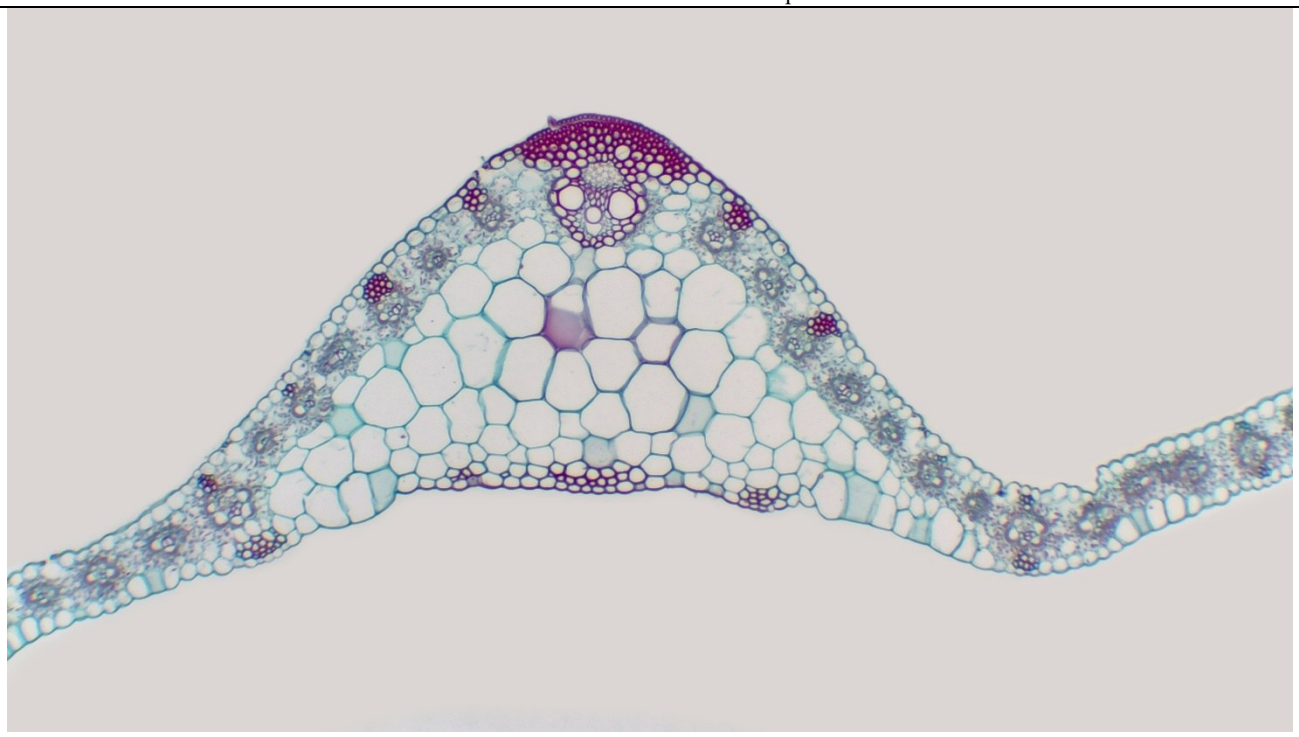


Figure 3-30 Corn Leaf Captured with X7CAM4K8MPA

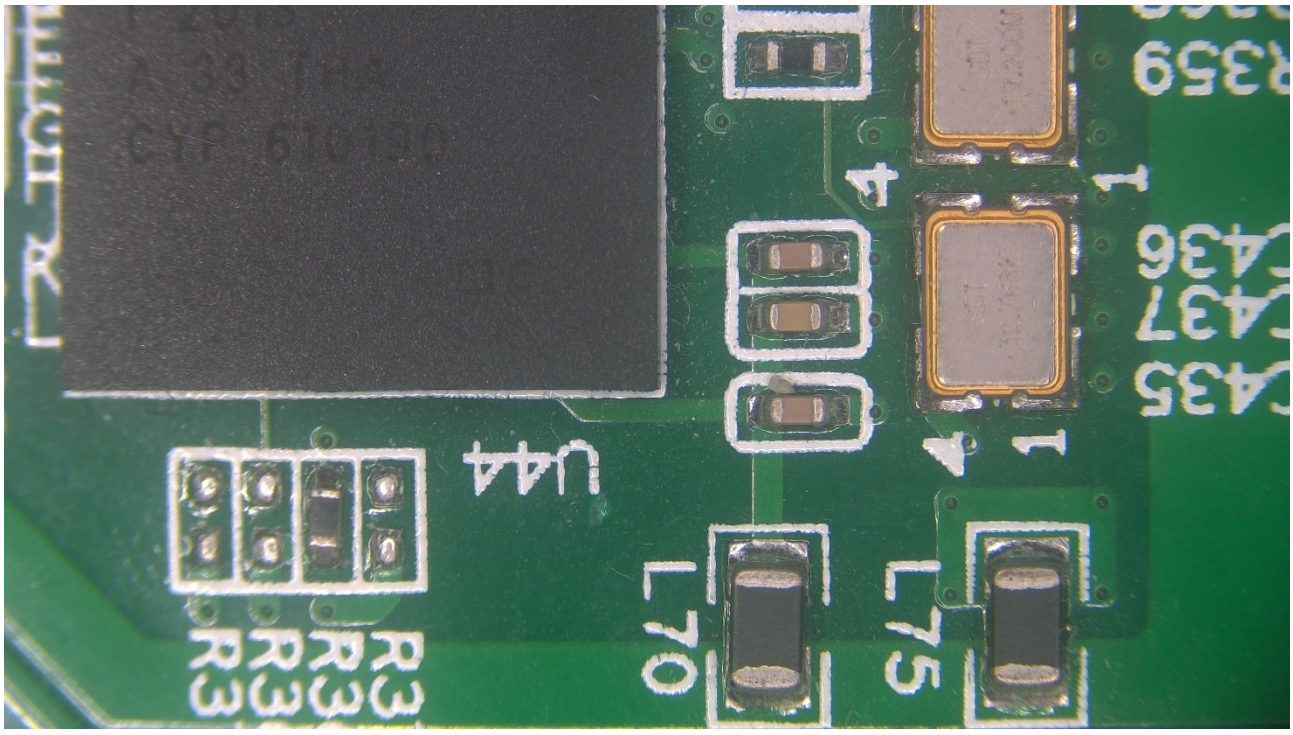


Figure 3-31 Circuit Board Captured with X7CAM4K8MPA

3.3 X5CAM4K Series HDMI/NETWORK /USB3.0 Multi-outputs C-mount CMOS Camera

3.3.1 X5CAM4K Series Camera's Basic Characteristic

The X5CAM4K series camera is intended for acquisition of digital images from stereo microscopes, biological microscopes, or online interactive teaching. The basic characteristic is listed as below:

- Sony STARVIS 2 back-illuminated CMOS sensor
- 4K HDMI/ NETWORK/ USB multiple video synchronous outputs
- 4K/1080P auto switching according to monitor resolution
- Support 4K 60fps low delay HDMI output mode, with an average delay of 40ms
- SD card/USB flash drive for captured image and video storage, customizable storage location and support local preview and playback
- Support external keyboard, input in both Chinese and English
- Support the capture and display of JEPG, TIFF, PNG and RAW format images
- Supports external USB 3.0 interface solid-state drive, and supports automatic saving of recorded videos in case of sudden power failure
- Support the editing function of recorded videos and the optional time watermark in recorded videos or images
- Support Image Auto Upload to the server over the network
- Support USB voice control module, enabling real-time control of the camera through voice commands for taking photos, recording videos, freezing, and other operations
- New browsing function, providing rich file operation functions, image to image comparison, image to real-time video comparison, multi-image EDF function, multi-image Stitch function
- Excellent ISP with local tone mapping and 3D denoising
- Provide real-time video EDF function and real-time video WDR output function
- Provide real-time Stitch function to obtain higher quality images through real-time processing
- Provide two sets of default ISP parameters for biological microscope and stereo microscope
- Embedded XCamView for the control of the camera and image processing, supporting automatic edge finding and measurement functions
- ToupView/ToupLite software for PC
- iOS/Android applications for smart phones or tablets

3.3.2 X5CAM4K Series Camera's Datasheet and Functions (2)

The main parameters of X5CAM4K series cameras with different sensors are shown in the table below:

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity/Dark Signal	FPS/Resolution	Binning	Exposure(ms)
X5CAM4K8MPA	Sony IMX678(C) 1/1.8"(7.68x4.32)	2.0x2.0	3541mv with 1/30s 0.15mv with 1/30s	60@3840*2160	1x1	0.019~1000
X5CAM4K8MPB	Sony IMX585(C) 1/1.2"(11.14x6.26)	2.9x2.9	5970mv with 1/30s 0.13mv with 1/30s	60@3840*2160	1x1	0.048~1000

The output parameters of different interfaces of X5CAM4K series cameras are shown in the following table:

Camera Model	Video Saving(FPS/Resolution)	HDMI2.0(FPS/Resolution)	USB3.0(FPS/Resolution)	NETWORK(FPS/Resolution)
X5CAM4K8MPA	60@3840*2160 60@1920*1080 60@1280*720	60@3840*2160 60@1920*1080	30@3840*2160 45@2688*1512 60@1920*1080	30@3840*2160 60@1920*1080 60@1280*720
X5CAM4K8MPB	60@3840*2160 60@1920*1080 60@1280*720	60@3840*2160 60@1920*1080	30@3840*2160 45@2688*1512 60@1920*1080	30@3840*2160 60@1920*1080 60@1280*720

Interface or Button	Function Description
USB Mouse	Connect USB mouse for easy operation with embedded XCamView software (Flat shape without labelling)
USB3.0	Connect USB flash drive to save pictures and videos Connect 5G WiFi module to transfer video wirelessly in real time Connect USB microphone for audio and video recording
USB Video	Connect PC or other host device to realize video image transmission
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
LAN	LAN port to connect router and switch to transfer video
SD	SD card slot, comply with SDIO3.0 standard and SD card could be inserted for video and images saving
ON/OFF	Power switch
LED	LED status indicator
DC12V	Power adapter connection (12V/1A)
Video Output Interface	**Function Description**
HDMI Interface	Comply with HDMI2.0 standard;60fps@4K or 60fps@1080P
LAN Interface	Support real time resolution switching(4K/1080P/720P) H264 encoded video DHCP configuration or manual configuration Unicast/multicast configuration
WiFi Interface	Connecting 5G WiFi adapter (USB3.0 slot) in AP/STA mode
USB Video Interface	Connecting USB Video port of PC for video transfer H264/MJPEG format video
Other Function	**Function Description**
Video Saving	Video format：8M (3840*2160) H264 encoded MP4 file Video saving frame rate：60fps in Low Delay Mode 30fps in WDR Mode
Image Capture	8M (3840*2160) JPEG/TIFF/PNG/RAW image in SD card or USB flash drive (Default SD card priority, priority can be modified in settings)
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，Gamma Adjustment， Contrast Adjustment， Brightness Adjustment，Hue Adjustment, Color to Gray， 50HZ/60HZ Anti-flicker Function
Image Operation	Zoom In/Zoom Out(Up to 10X), Mirror/Flip, Freeze, EDF, Cross Line, Overlay, PIP , Browser(including Picture Browsing , Video Playback , Video Compare , Picture Compare , EDF , Image Processing), 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 / Spanish / Japanese / Italian / Russian / Dutch / Portuguese

Software Environment under NETWORK/USB Video Output	
White Balance	Auto White Balance
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 / 11(32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory: 4GB or More

	Ethernet Port: RJ45 Ethernet Port
	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
Power Supply	DC 12V/1A or above Adapter

3.3.3 Dimension of X5CAM4K Series Camera

Figure 3-32 Dimension of X5CAM4K Series(Cubic and Flat Shape)

3.3.4 Packing Information of X5CAM4K Series Camera

Figure 3-33 X5CAM4K Series Camera Packing Information (Cubic and Flat Shape)

	Standard Packing List
A	Gift box: L:25.5cm W:17.0cm H:9.0cm (1pcs, 1.7Kg/ box)
B	X5CAM4K Camera (One of the two different shapes)
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	USB3.0 A male to A male gold-plated connectors cable /1.5m		
	Optional Accessory		
G	Voice Control Module		
H	SD Card (16G or above; Speed: class 10)		
I	USB flash drive		
J	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
K	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 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;		
L	108015(Dia.23.2mm to 30.0mm Ring)/Adapter rings for 30mm eyepiece tube		
M	108016(Dia.23.2mm to 30.5mm Ring)/ Adapter rings for 30.5mm eyepiece tube		
N	USB WiFi adapter		
O	Ethernet cable		

3.3.5 Extension of X5CAM4K Series Camera with Microscope or Telescope Adapter

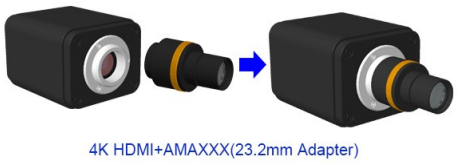
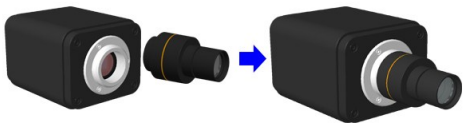
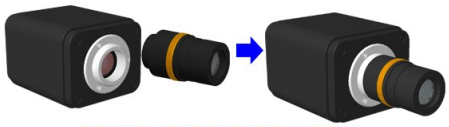
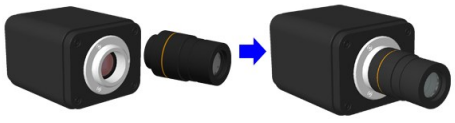
Extension	Picture	
C-mount Camera		Scientific research, digital teaching (teaching, demonstration and academic discussing); Digital laboratory, medical research; Machine vision (PCB detection, IC quality control); Medical treatment (pathological observation); Food (microbial colony observation and counting); Aviation and military;
Microscope Camera	 4K HDMI+AMAXXX(23.2mm Adapter)  4K HDMI+FMAXXX(23.2mm Adapter)  4K HDMI+ATAXXX(31.75mm Adapter)  4K HDMI+FTAXXX(31.75mm Adapter)	

Figure 3-34 X5CAM4K Series Camera and HDMI Displayer

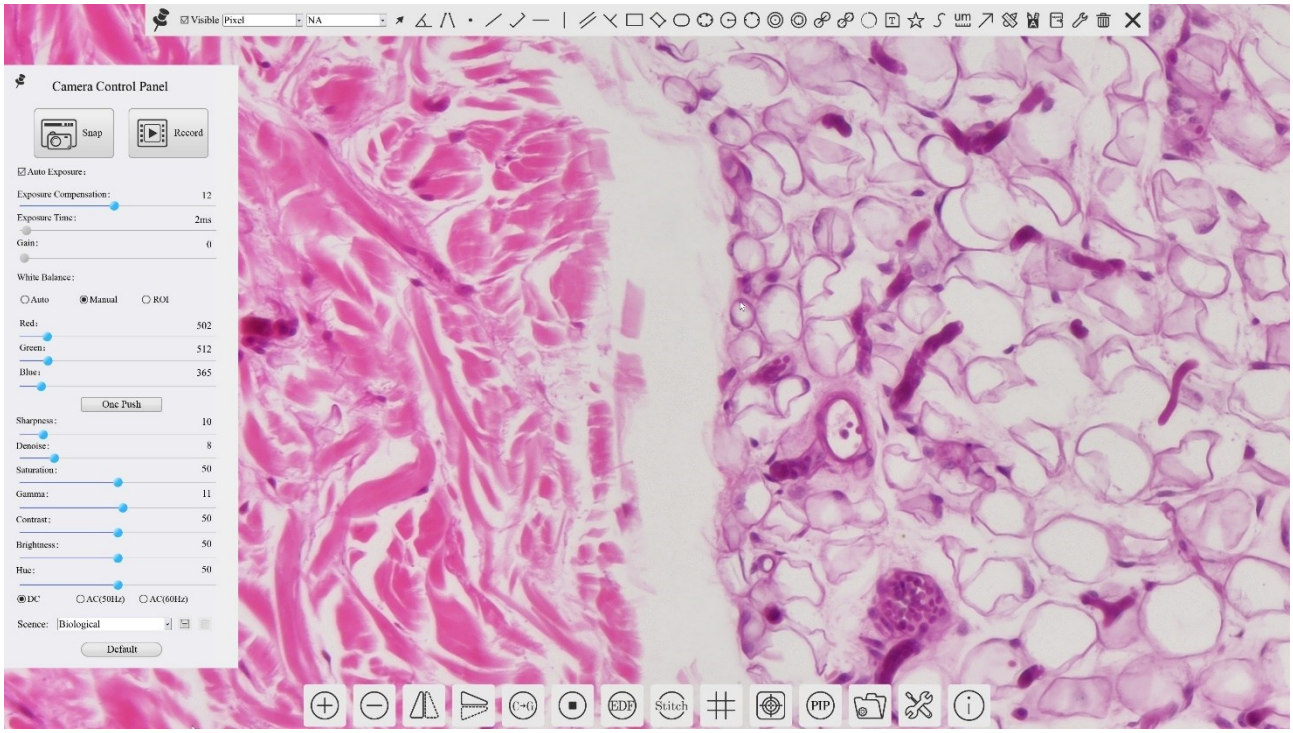


Figure 3-35 The X5CAM4K Series Camera's Control GUI

Figure 3-36 X5CAM4K Series Camera and Leica Microscope

Figure 3-37 X5CAM4K Series Camera and Zeiss Microscope

3.3.6 Images Captured by X5CAM4K Series Camera

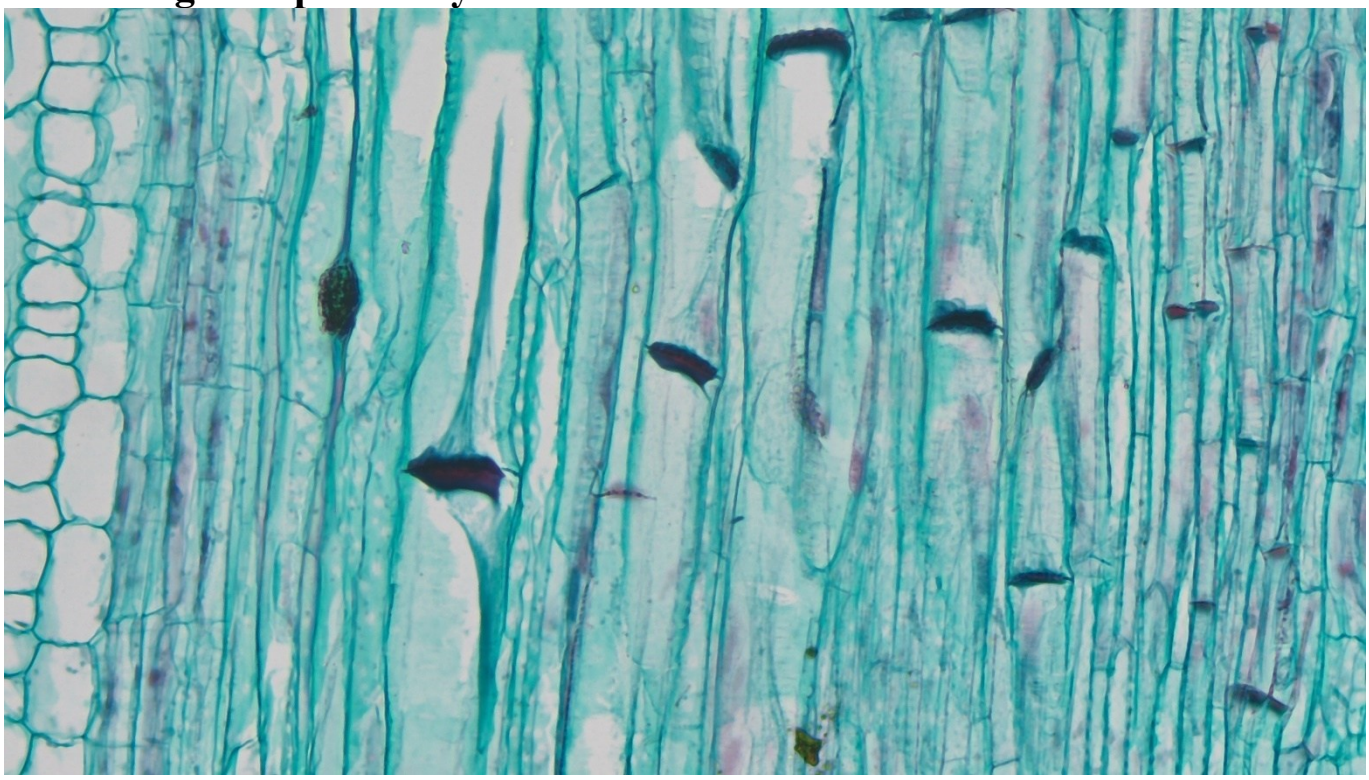


Figure 3-38 Cucurbit Stem.L.S Captured with X5CAM4K8MPA

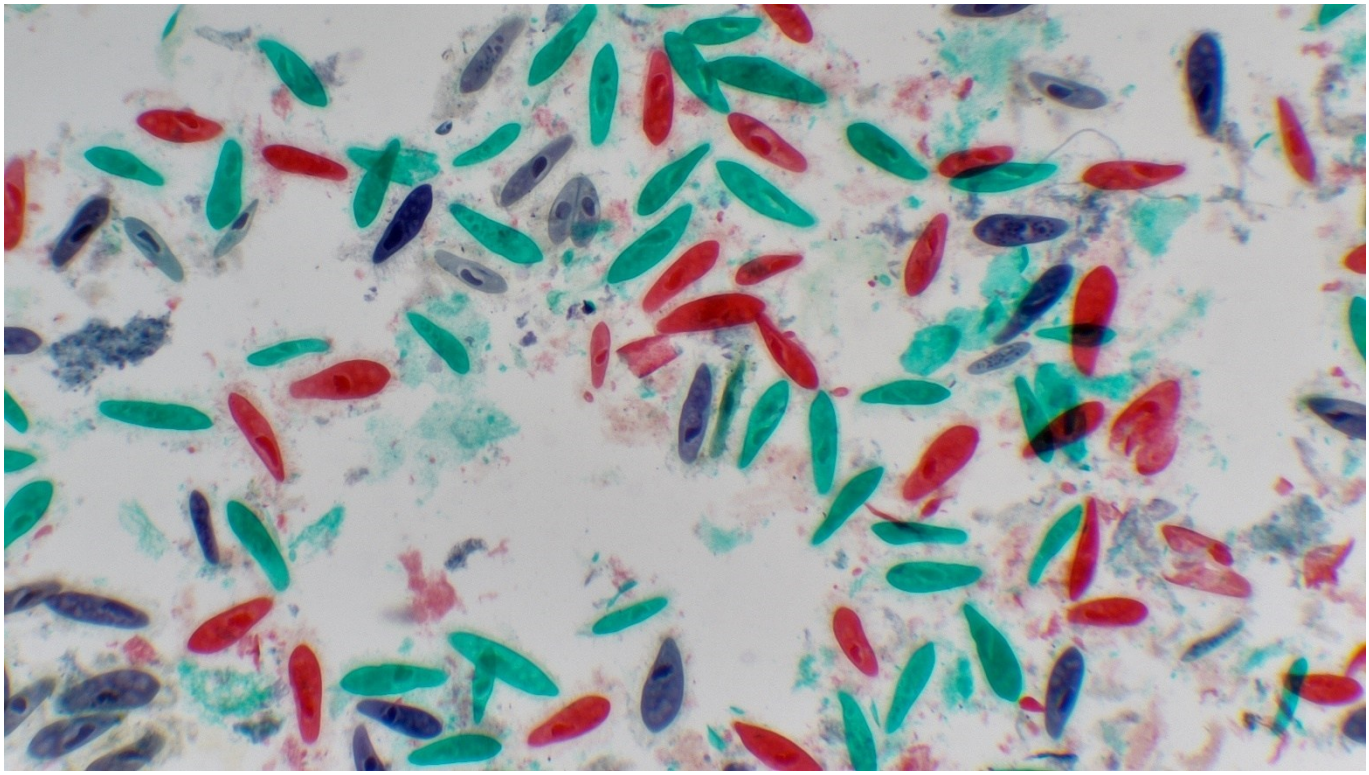


Figure 3-39 Paramecium.W.M Captured with X5CAM4K8MPA

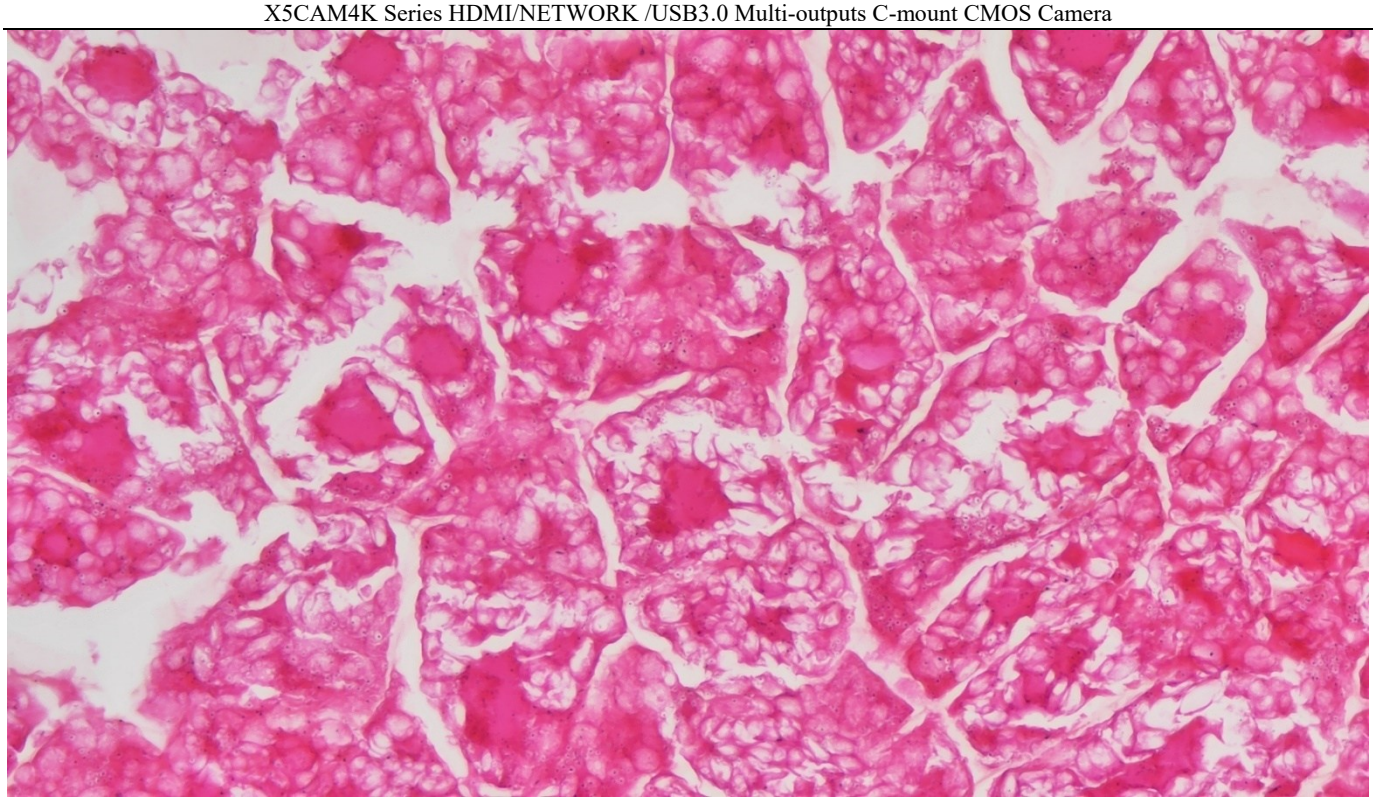


Figure 3-40 Fluorescent Sectioning of WheatSeeds Captured with X5CAM4K8MPA

3.4 XCAMTOP4K Series HDMI/NETWORK/USB2.0 Multi-outputs C-mount CMOS Camera

3.4.1 XCAMTOP4K Series Camera's Basic Characteristic

The XCAMTOP4K series camera is intended to be used for the acquisition of digital images from the stereo microscope, biological microscope or online interactive teaching. The basic characteristics are listed as below:

- Sony Exmor/STARVIS back-illuminated CMOS sensor
- 4K HDMI/ NETWORK/ USB 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
- Supports USB Voice Control module, enabling real-time control of the camera through voice commands for snap, recording, freeze, and other operations
- Embedded XCamView for the control of the camera and image processing, supporting automatic edge finding and measurement functions
- Excellent ISP with local tone mapping and 3D denoising
- ToupView/ToupLite software for PC
- iOS/Android applications for smart phones or tablets

3.4.2 XCAMTOP4K Series Camera's Datasheet and Functions (3)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity Dark Signal	FPS/Resolution	Binning	Exposure(ms)
XCAMTOP4K8MPA	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(NETWORK) 30@3840*2160(USB)	1x1	0.04~1000
XCAMTOP4K8MPC	Sony IMX678(C) 1/1.8"(7.68x4.32)	2.0x2.0	1364mv with 1/30s 0.15mv with 1/30s	30@3840*2160(HDMI) 30@3840*2160(NETWORK) 30@3840*2160(USB)	1x1	0.04~1000
XCAMTOP4K8MPD	Sony IMX585(C) 1/1.2"(11.14x6.26)	2.9x2.9	5970mv with 1/30s 0.13mv with 1/30s	30@3840*2160(HDMI) 30@3840*2160(NETWORK) 30@3840*2160(USB)	1x1	0.04~1000

C: Color; M: Monochrome;

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 WiFi module to transfer video wirelessly in real time Connect USB microphone to record audio and video Connect the USB Voice Control module to enable real-time control of camera snap, recording, freeze, and other operations through voice commands
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
LAN	LAN port to connect router and switch to transfer video
SD	Comply with SDIO3.0 standard and SD card could be inserted for video and images saving
ON/OFF	Power switch
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
LAN Interface	support real time resolution switching(4K/1080P/720P) H264 encoded video DHCP configuration or manual configuration Unicast/multicast configuration
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 MJPEG format video
Other Function	**Function Description**
Video Saving	Video format：8M(3840*2160) H264 encoded MP4 file Video saving frame rate：30fps
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
Image Operation	Zoom In/Zoom Out(Up to 10X), Mirror/Flip, Freeze, Cross Line, Compare(Comparison between real time video and images in SD card or 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 ToupView/ToupLite Environment under LAN/WLAN/USB Video Output	
White Balance	Auto White Balance
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
	Ethernet Port: RJ45 Ethernet Port
	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
Power Supply	DC 12V/1A Adapter

3.4.3 Dimension of XCAMTOP4K Series Camera

Figure 3-41 Dimension of XCAMTOP4K Series Camera

3.4.4 Packing Information of XCAMTOP4K Series Camera

Figure 3-42 Packing Information of XCAMTOP4K Series Camera

	Standard Packing List		
A	Gift box : L:25.5cm W:17.0cm H:9.0cm (1pcs, 1.57Kg/ box)		
B	XCAMTOP4K 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		
P	Ethernet cable		

3.4.5 Extension of XCAMTOP4K Series Camera with Microscope or Telescope Adapter

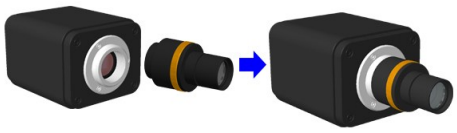
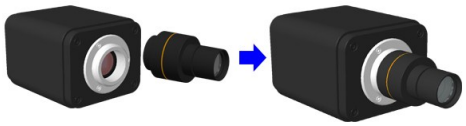
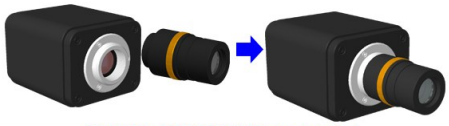
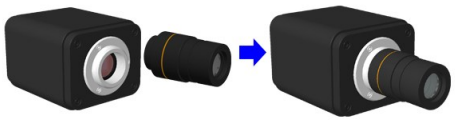
Extension	Picture	
C-mount Camera		Scientific research, digital teaching (teaching, demonstration and academic discussing); Digital laboratory, medical research; Machine vision (PCB detection, IC quality control); Medical treatment (pathological observation); Food (microbial colony observation and counting); Aviation and military;
Microscope Camera	 4K HDMI+AMAXXX(23.2mm Adapter)  4K HDMI+FMAXXX(23.2mm Adapter)	
Telescope Camera	 4K HDMI+ATAXXX(31.75mm Adapter)  4K HDMI+FTAXXX(31.75mm Adapter)	

Figure 3-43 XCAMTOP4K Series Camera and HDMI Displayer

Figure 3-44 The XCAMTOP4K Series Camera's Control GUI

Figure 3-45 XCAMTOP4K Series Camera and Leica Microscope

Figure 3-46 XCAMTOP4K Series Camera and Zeiss Microscope

3.4.6 Images Captured by XCAMTOP4K Series Camera

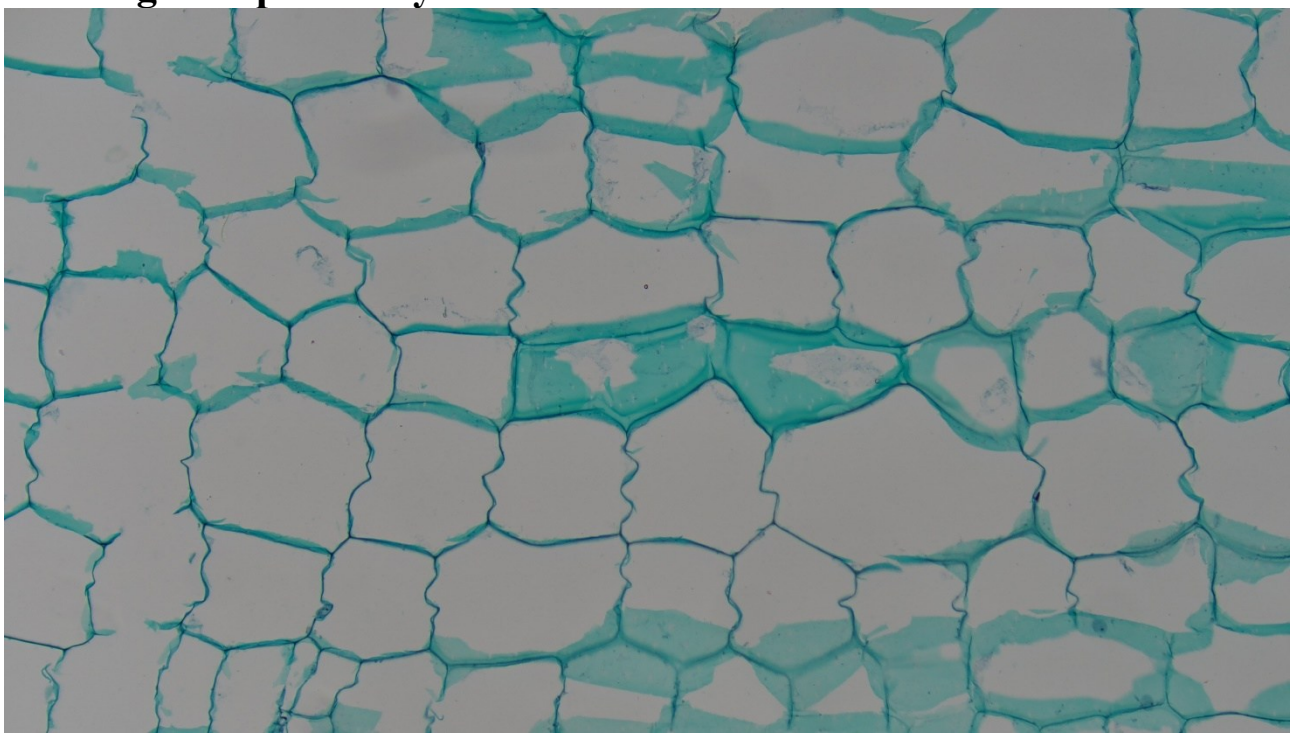


Figure 3-47 Cucurbit Stem.L.S. Captured with XCAMTOP4K8MPA

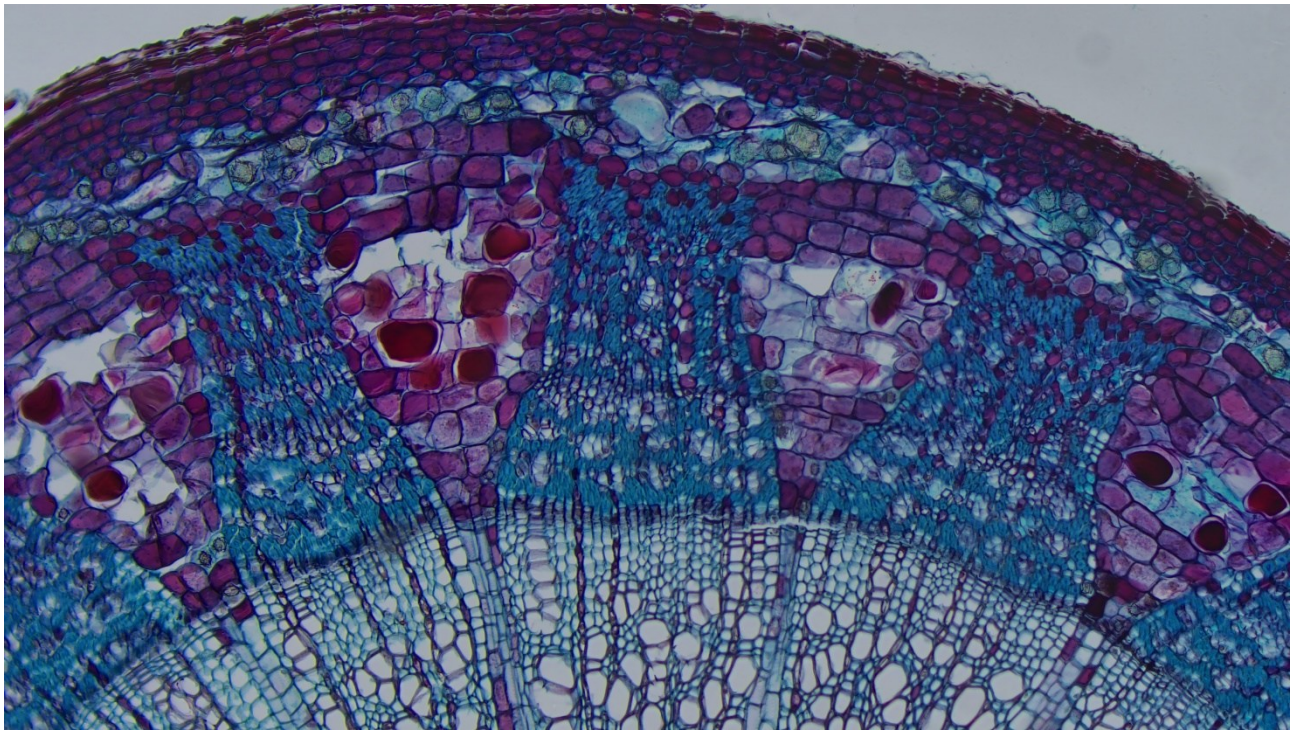


Figure 3-48 Two Year Tilia Stem.C.S. Captured with XCAMTOP4K8MPA

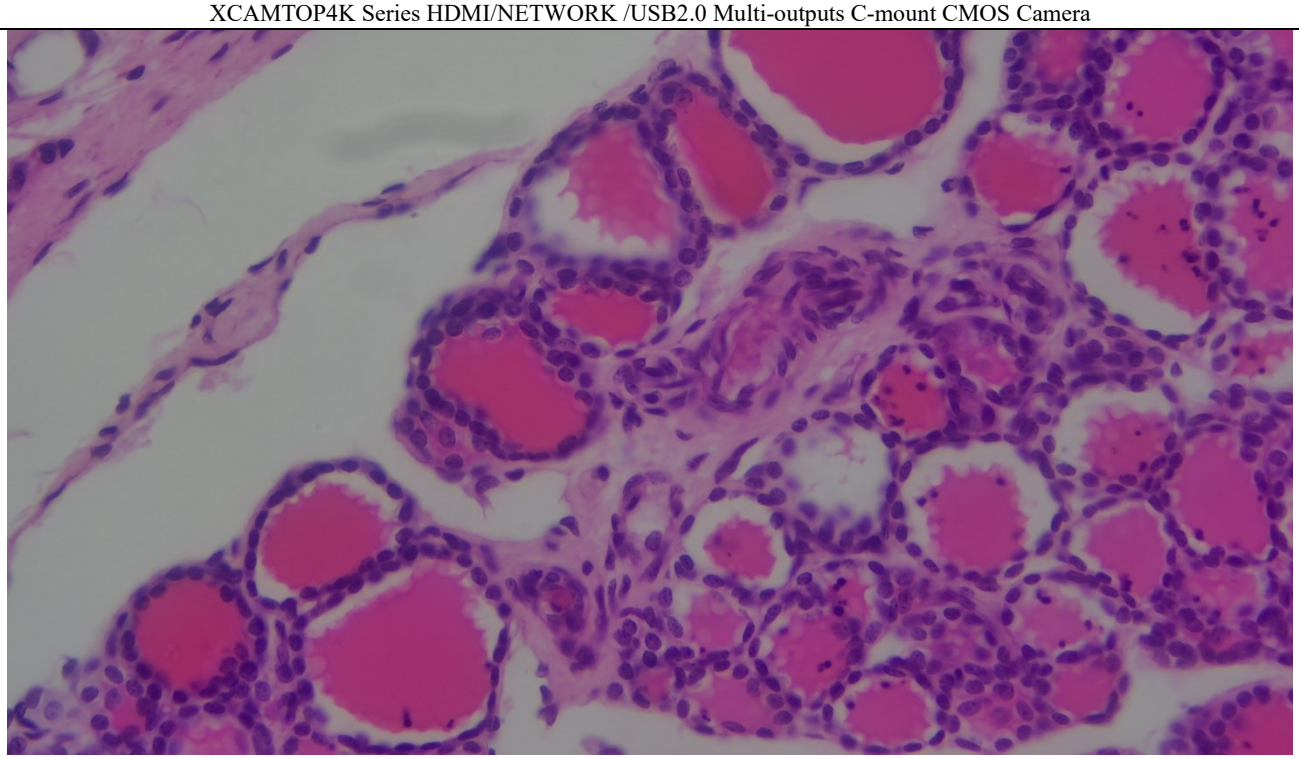


Figure 3-49 Simple Cuboidal Epithelium.Sec. Captured with XCAMTOP4K8MPA

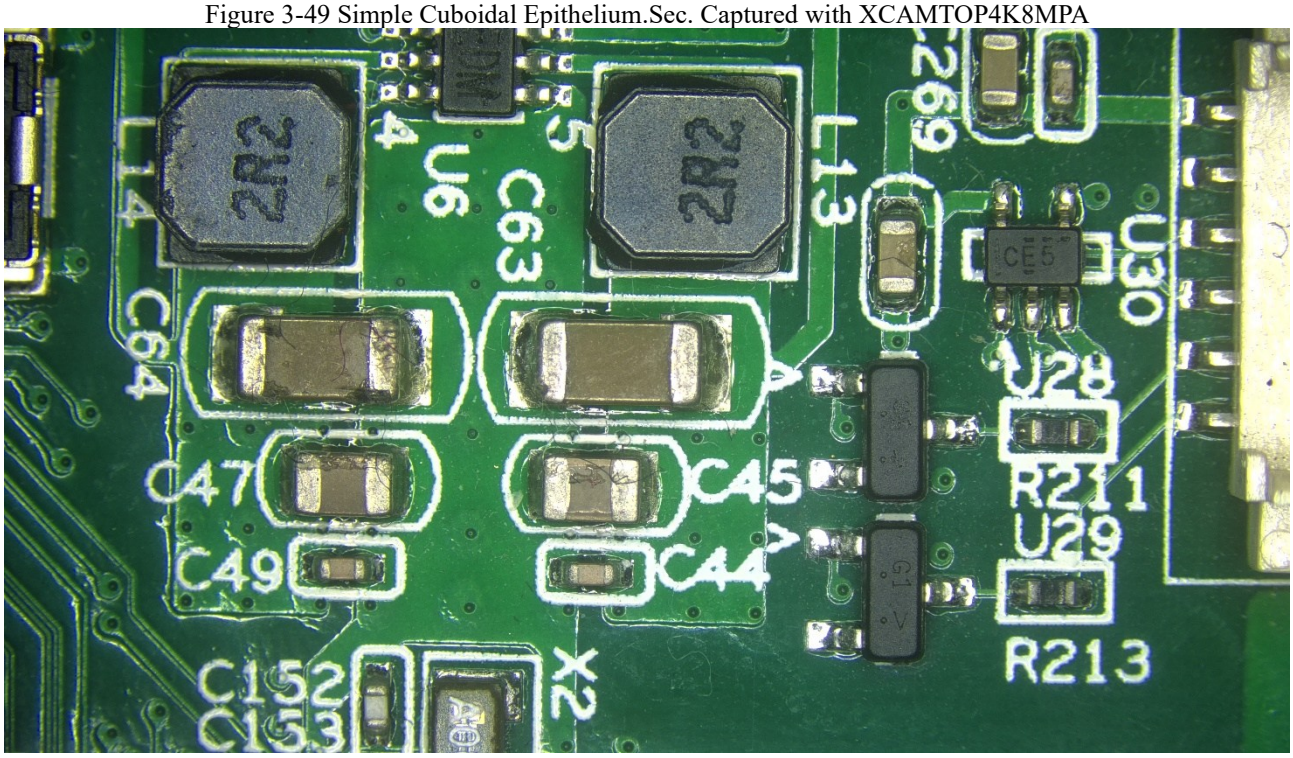


Figure 3-50 Circuit Board Captured with XCAMTOP4K8MPA

3.5 XCAMTOP4K_MINI Series HDMI/NETWORK/USB2.0 Multi-outputs C-mount CMOS Camera

3.5.1 XCAMTOP4K_MINI Series Camera's Basic Characteristic

The XCAMTOP4K_MINI series camera is intended to be used for the acquisition of digital images from the stereo microscope, biological microscope or online interactive teaching. The basic characteristics are listed as below:

- Compact size, easy to integrate
- Sony STARVIS2 back-illuminated CMOS sensor
- 4K HDMI/ WiFi/ USB multiple video outputs
- 4K/1080P auto switching according to monitor resolution
- USB flash drive for captured image and video storage, support local preview and playback
- Supports USB Voice Control module, enabling real-time control of the camera through voice commands for snap, recording, freeze, and other operations
- Embedded XCamView for the control of the camera and image processing, supporting automatic edge finding and measurement functions
- Excellent ISP with local tone mapping and 3D denoising
- ToupView/ToupLite software for PC
- iOS/Android applications for smart phones or tablets

3.5.2 XCAMTOP4K_MINI Series Camera's Datasheet and Functions (3)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity Dark Signal	FPS/Resolution	Binning	Exposure(ms)
XCAMTOP4K8MPC_MINI	IMX678(C) 1/1.8"(7.68x4.32)	2.0x2.0	1364mv with 1/30s 0.15mv with 1/30s	30@3840*2160	1x1	0.04~1000
XCAMTOP4K8MPD_MINI	IMX585(C) 1/1.2"(11.14x6.26)	2.9x2.9	5970mv with 1/30s 0.13mv with 1/30s	30@3840*2160	1x1	0.04~1000
XCAMTOP4K8MPE_MINI	IMX715(C) 1/2.8"(5.57x3.13)	1.45x1.45	348mv with 1/30s 0.13mv with 1/30s	30@3840*2160	1x1	0.04~1000

Camera Model	Video Saving (FPS/Resolution)	HDMI1.4 (FPS/Resolution)	USB (FPS/Resolution)	WiFi (FPS/Resolution)
XCAMTOP4K8MPC_MINI	30@3840*2160	30@3840*2160	30@3840*2160 30@2688*1512 30@1920*1080	30@3840*2160 30@1920*1080 30@1280*720
XCAMTOP4K8MPD_MINI	30@3840*2160	30@3840*2160	30@3840*2160 30@2688*1512 30@1920*1080	30@3840*2160 30@1920*1080 30@1280*720
XCAMTOP4K8MPE_MINI	30@3840*2160	30@3840*2160	30@3840*2160 30@2688*1512 30@1920*1080	30@3840*2160 30@1920*1080 30@1280*720

C: Color; M: Monochrome;

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 WiFi module to transfer video wirelessly in real time Connect USB microphone to record audio and video Connect the USB Voice Control module to enable real-time control of camera snap, recording, freeze, and other operations through voice commands
USB Video	Connect a Micro USB cable to a computer terminal to achieve 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
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
WiFi Interface	Connecting 5G WiFi adapter (USB2.0 slot) in AP/STA mode
USB Video Interface	Connecting USB Video port of PC for video transfer MJPEG format video
Other Function	**Function Description**
Video Saving	Video format：8M (3840*2160) H264 encoded MP4 file Video saving frame rate：30fps
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
Image Operation	Zoom In/Zoom Out(Up to 10X), Mirror/Flip, Freeze, Cross Line, Compare(Comparison between real time video and images in SD card or 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 ToupView/ToupLite Environment under LAN/WiFi/USB Video Output	
USB Video Interface	Connecting Micro USB port of PC for video transfer MJPEG format video
Video Saving	Static images or videos
White Balance	Auto White Balance
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
	Ethernet Port: RJ45 Ethernet Port
	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
Power Supply	DC 12V/1A Adapter

3.5.3 Dimension of XCAMTOP4K_MINI Series Camera

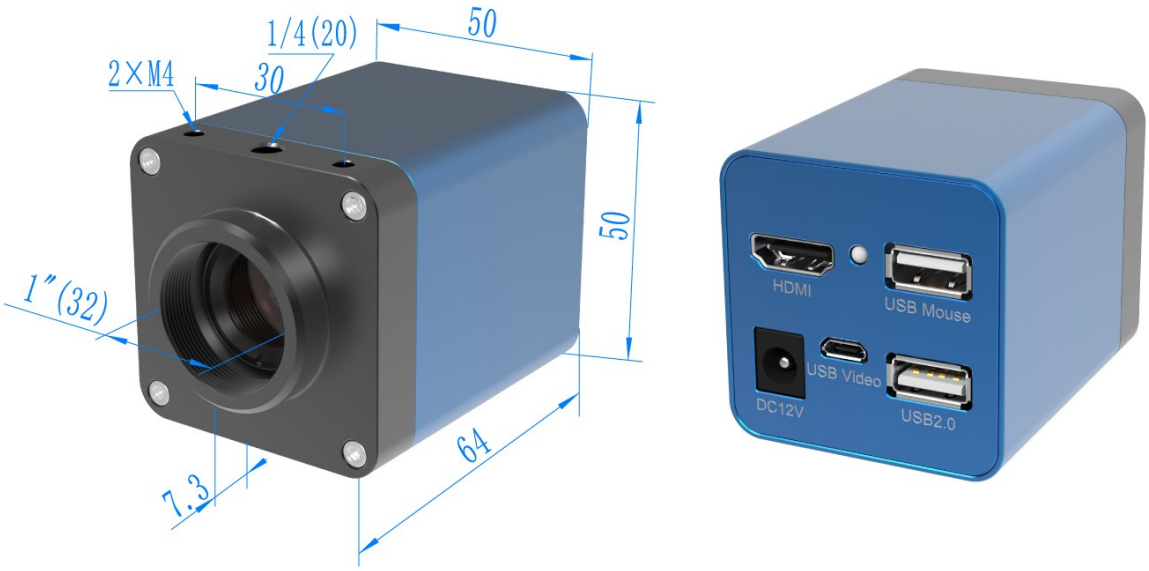


Figure 3-51 Dimension of XCAMTOP4K_MINI Series Camera

3.5.4 Packing Information of XCAMTOP4K_MINI Series Camera

Figure 3-52 Packing Information of XCAMTOP4K_MINI Series Camera

Standard Packing List			
A	Gift box: L:25.5cm W:17.0cm H:9.0cm (1pcs, 1.57Kg/ box)		
B	XCAMTOP4K_MINI 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	Micro USB cable		
Optional Accessory			
G	Voice Control Module		
H	USB flash drive		
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 L 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	USB WiFi adapter		

3.5.5 Extension of XCAMTOP4K_MINI Series Camera with Microscope or Telescope Adapter

Extension	Picture	
C-mount Camera		Machine vision; Medical imaging; Semiconductor equipment; Test instruments; Document scanners; 2D barcode readers; Web camera and security video; Microscope imaging;
Microscope Camera	 XCAMTOP4K_MINI+AMAXXX(23.2mm Adapter)  XCAMTOP4K_MINI+FMAXXX(23.2mm Adapter)	

Figure 3-53 XCAMTOP4K_MINI Series Camera and HDMI Displayer

Figure 3-54 The XCAMTOP4K_MINI Series Camera's Control GUI

3.5.6 Images Captured by XCAMTOP4K Series Camera

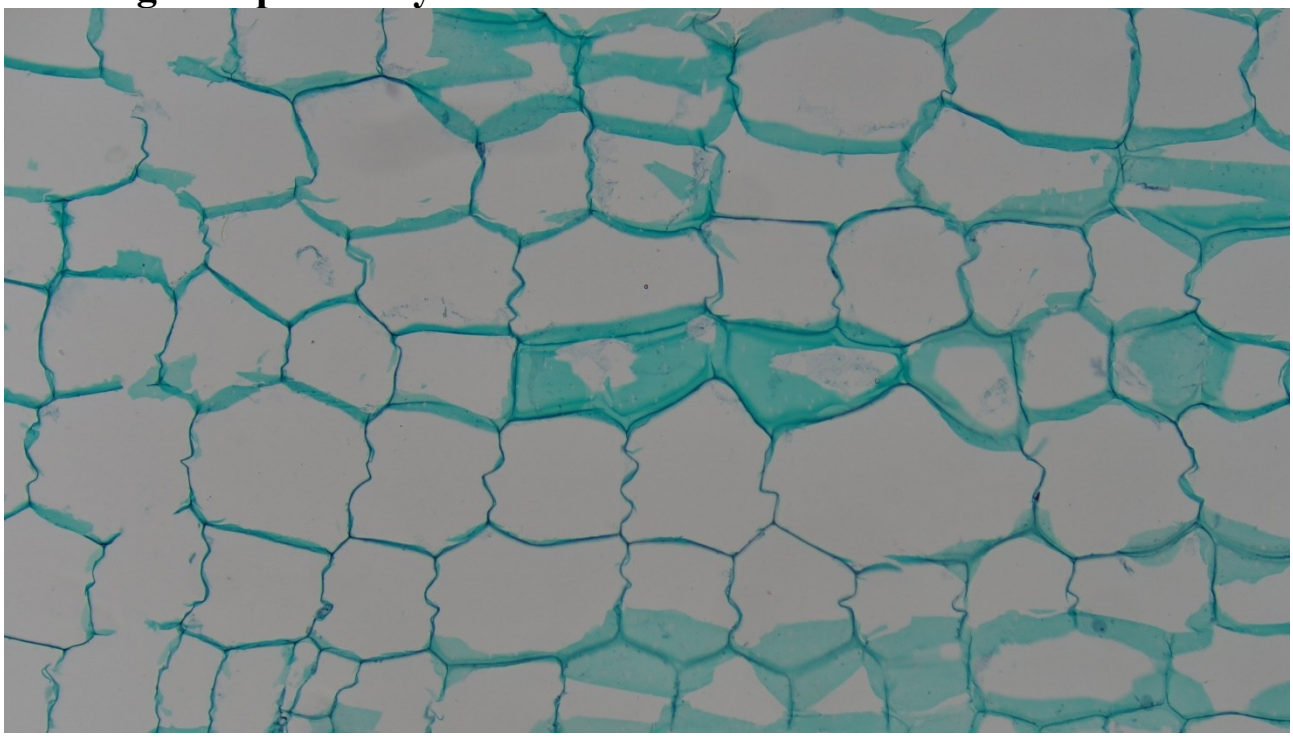


Figure 3-55 Cucurbit Stem.L.S. Captured with XCAMTOP4K8MPC_MINI

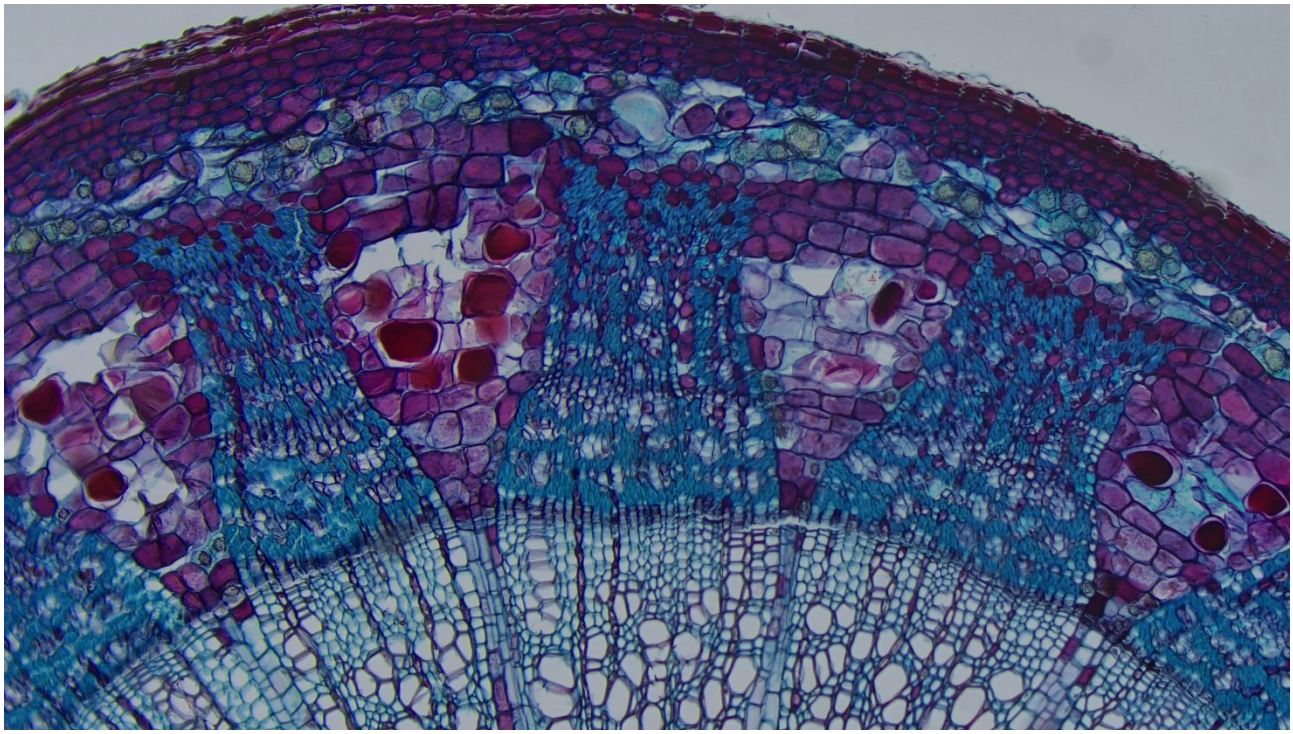


Figure 3-56 Two Year Tilia Stem.C.S. Captured with XCAMTOP4K8MPC_MINI

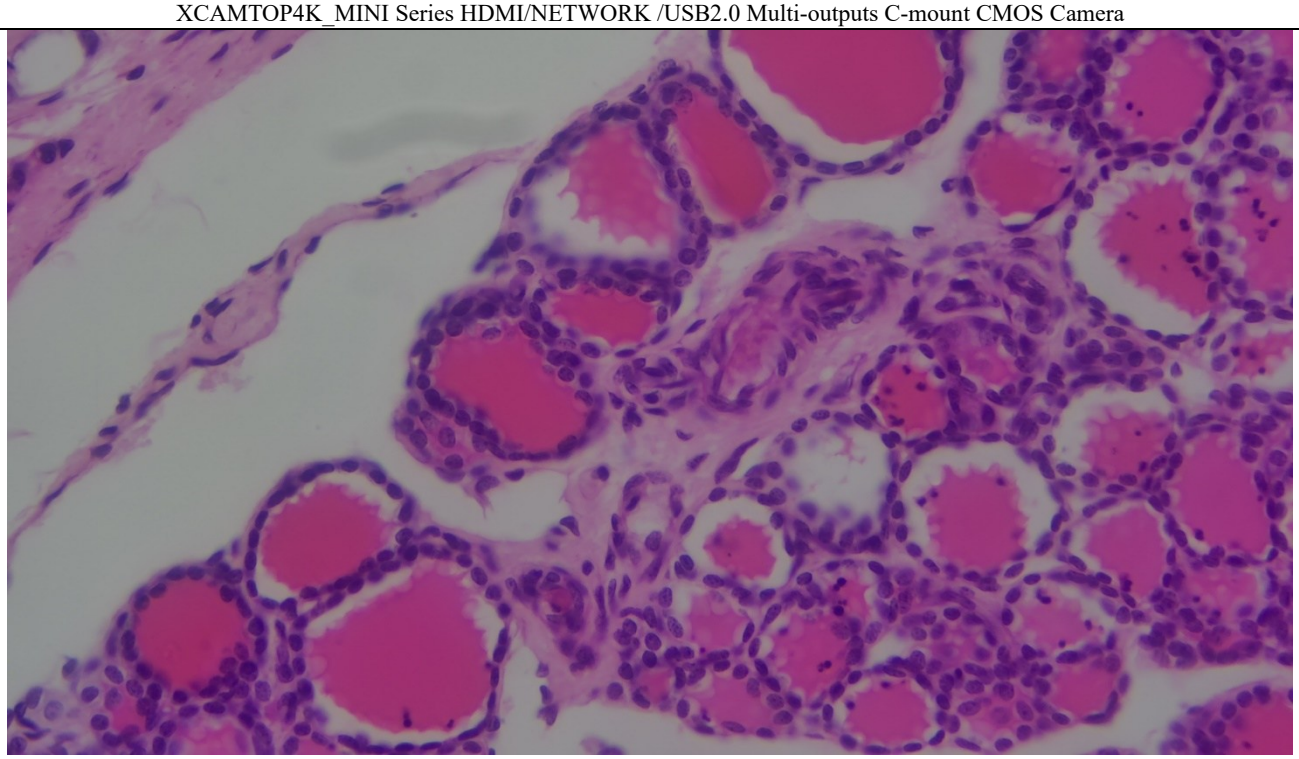


Figure 3-57 Simple Cuboidal Epithelium.Sec. Captured with XCAMTOP4K8MPC_MINI

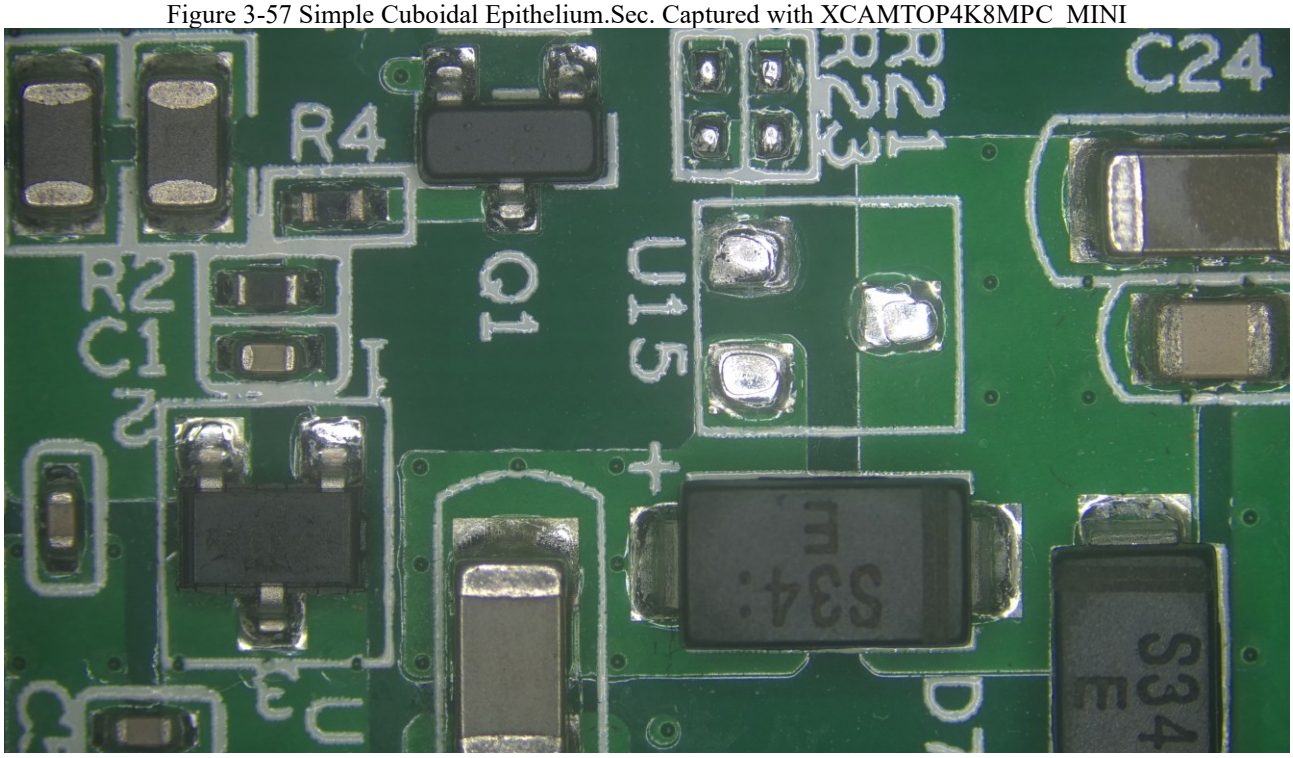


Figure 3-58 Circuit Board Captured with XCAMTOP4K8MPC_MINI

3.6 SCAM4K Series HDMI/WiFi /USB3.0 Multi-outputs C-mount CMOS Camera

3.6.1 SCAM4K Series Camera's Basic Characteristic

The SCAM4K series camera is intended for acquisition of digital images from stereo microscopes, biological microscopes, or online interactive teaching. The basic characteristic is listed as below:

- Sony Exmor/STARVIS back-illuminated CMOS sensor
- 4K HDMI/ WiFi/ USB3.0 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

3.6.2 SCAM4K Series Camera Datasheet and Functions（2）

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity/Dark Signal	FPS/Resolution	Binning	Exposure(ms)
SCAM4K8MPA	Sony IMX678(C) 1/1.8"(7.68x4.32)	2.0x2.0	1364mv with 1/30s 0.15mv with 1/30s	30@3840*2160(HDMI) 30@1920*1080(WiFi) 30@3840*2160(USB3.0)	1x1	0.045~1000
SCAM4K8MPB	Sony IMX585(C) 1/1.2"(11.14x6.26)	2.9x2.9	1028mv with 1/30s 0.13mv with 1/30s	30@3840*2160(HDMI) 30@1920*1080(WiFi) 30@3840*2160(USB3.0)	1x1	0.014~1000

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 WiFi 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
SD	Comply with SDIO3.0 standard and SD card could be inserted for video and images saving
ON/OFF	Power switch
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
WiFi Interface	Connecting 5G WiFi adapter (USB2.0 slot) in AP/STA mode 1080P H264 format video, 8M (3840*2160) image
USB Video Interface	Connecting USB3.0 Video port of PC for video transfer H264/NV12/MJPEG format video
Other Function	**Function Description**
Video Saving	Video format：8M(3840*2160) H264 encoded MP4 file Video saving frame rate：30fps
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
Image Operation	Zoom In/Zoom Out(Up to 10X), Mirror/Flip, Freeze, Cross Line, Compare(Comparison between real time video and images in SD card or 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 WiFi/USB Video Output	
White Balance	Auto White Balance
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
Power Supply	DC 12V/1A Adapter

3.6.3 Dimension of SCAM4K Series Camera

Figure 3-59 Dimension of SCAM4K Series Camera

3.6.4 SCAM4K Series Camera Packing Information

Figure 3-60 SCAM4K Series Camera Packing Information

	Standard Packing List
A	Gift box : L:25.5cm W:17.0cm H:9.0cm (1pcs, 1.57Kg/ box)
B	SCAM4K Camera (One of the two different shapes)
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	USB3.0 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 **K** and **L** 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 WiFi adapter		

3.6.5 Sample Photos Captured with SCAM4K Series Camera

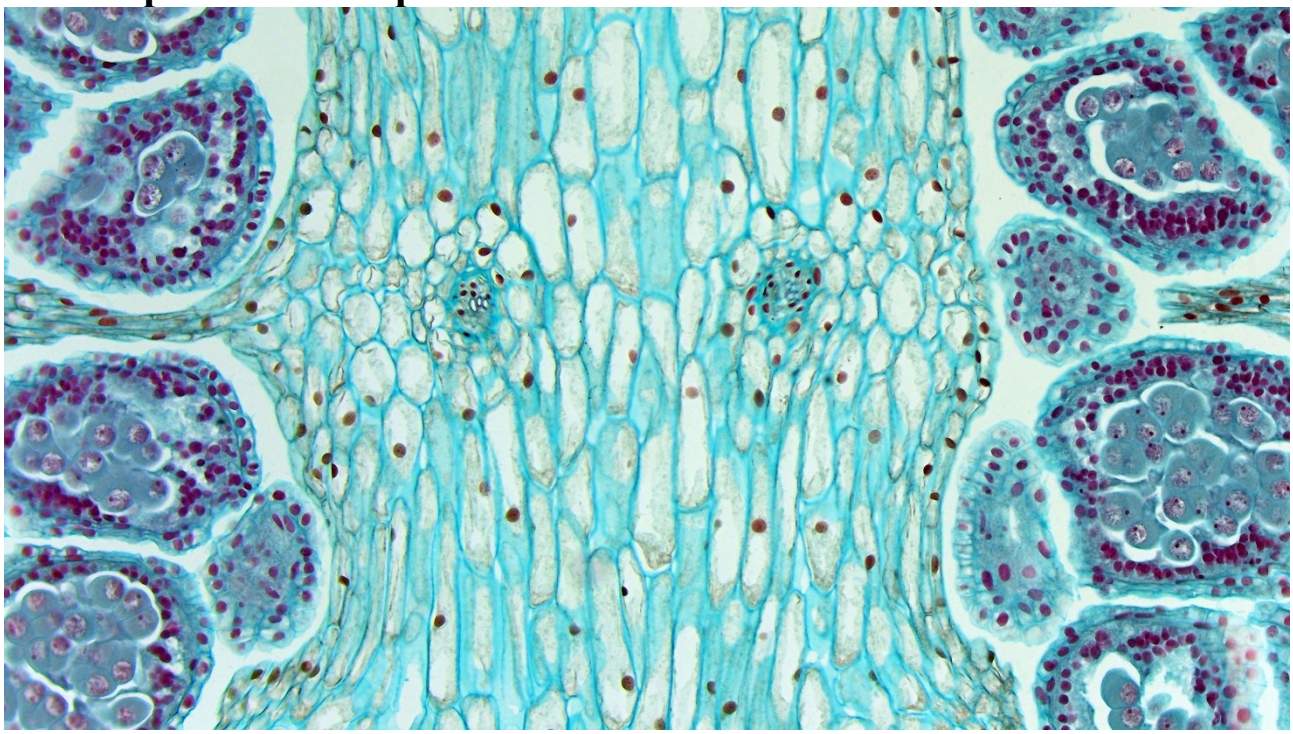


Figure 3-61 Longitudinal Section of Equisetum Sporophyll Captured with SCAM4K8MPA

Figure 3-62 Lime Wood Stem CS Captured with SCAM4K8MPA

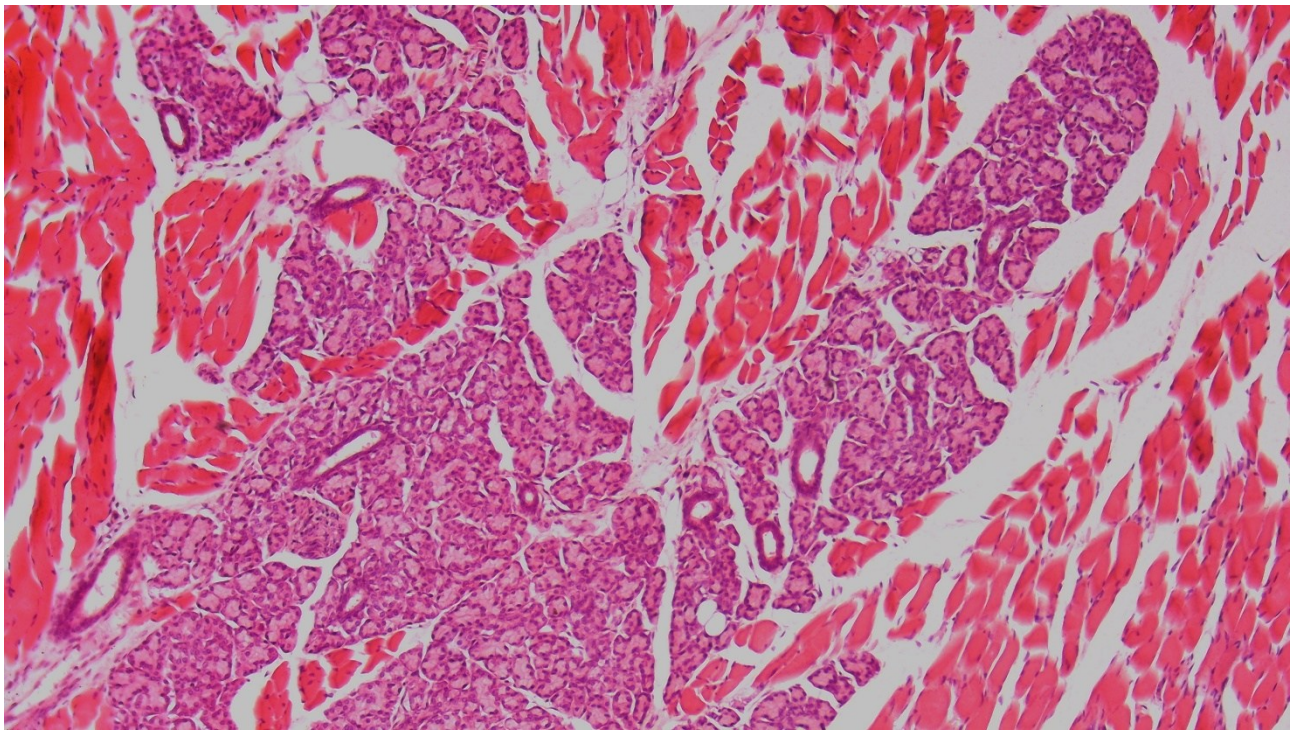


Figure 3-63 Taste Bud.Sec. Captured with SCAM4K8MPA

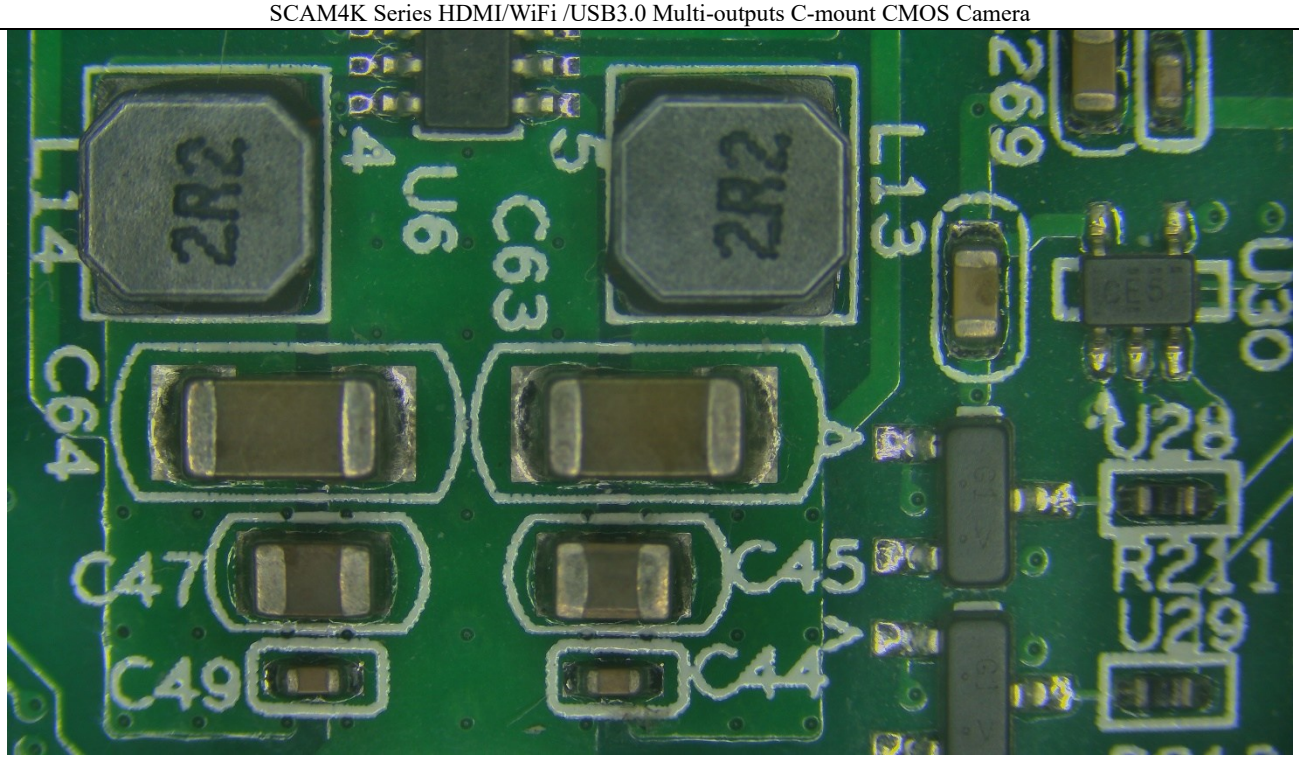


Figure 3-64 Circuit Board Captured with SCAM4K8MPA

3.7 XCAMLITE4K Series HDMI/USB2.0 Multi-outputs C-mount CMOS Camera

3.7.1 XCAMLITE4K Series Camera's Basic Characteristic

For details of the camera operations, please check XCAMLITE4K_en.docx or XCAMLITE4K_en.pdf file.

The XCAMLITE4K series camera is the lite version live-view imaging-system with 4K resolution at 30 FPS.

The XCAMLITE4K series camera comes with Sony Exmor CMOS sensor with high sensitivity, low dark current and no smear achieved through the adoption of R, G and B primary color mosaic filters.

The camera uses a standard C-mount interface for maximum compatibility with various microscopy-systems. It can be used as a stand-alone recorder when used with an HDMI displayer or television, or live-streamed to a PC via USB for image-capture and video-recording.

Hardware 3D denoising, sharpness and local tone mapping control functions greatly improve the image and video quality.

The included Windows software ToupView offers image-development and measurement tools, as well as advanced compositing features such as image-stitching and extended-depth-of-focus. With the ability to calibrate scales at multiple magnifications, the software can be used for multi-level inspection.

For Mac and Linux, there is a lite version of the software ToupLite which can capture video and still images, and includes limited processing features.

The XCAMLITE4K series camera is intended to be used for the acquisition of digital images from the stereo microscope, biological microscope or online interactive teaching. The basic characteristics are listed as below:

- Sony Exmor/Starvis back-illuminated CMOS sensor
- 4K HDMI/USB multiple video outputs
- 4K/1080P auto switching according to the displayer resolution
- SD card for the captured image and video storage
- Embedded XCamView for the control of the camera
- With strong ISP and other related processing functions
- ToupView/ToupLite software for PC
- ToupLite software for MAC

3.7.2 XCAMLITE4K Series Camera's Datasheet and Functions (3)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity	FPS/Resolution	Binning	Exposure(ms)
XCAMLITE4K8MPA	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) 20@3840*2160(USB)	1x1	0.04~1000
XCAMLITE4K8MPC	Sony IMX678(C) 1/1.8"(7.68x4.32)	2.0x2.0	1364mv with 1/30s 0.15mv with 1/30s	30@3840*2160(HDMI) 20@3840*2160(USB)	1x1	0.04~1000
XCAMLITE4K8MPD	Sony IMX585(C) 1/1.2"(11.14x6.26)	2.9x2.9	1028mv with 1/30s 0.13mv with 1/30s	30@3840*2160(HDMI) 20@3840*2160(USB)	1x1	0.04~1000

C: Color; M: Monochrome;

Interface	Function Description
USB Mouse	Connect USB mouse for easy operation with embedded XCamView software;
USB Video	Connect PC or other host device to realize video image transmission;
HDMI	Comply with HDMI1.4 standard. 4K or 1080P format video output for standard displayer;
DC12V	Power adapter connection (12V/1A);
SD	Comply with SDIO3.0 standard and SD card could be inserted for video and images storage;
USB	Connect USB flash drive for capturing video and image storage
LED	LED status indicator;
ON/OFF	Power switch;
Video Output Interface	**Function Description**
HDMI Interface	Comply with HDMI1.4 standard; 30fps@4K or 30fps@1080P;
USB Video Interface	Connecting USB port of PC for video transfer; MJPEG format video;
Other Function	**Function Description**
Video Saving	Video format：8M(3840*2160) H264 encoded MP4 file; Video saving frame rate：30fps;
Image Capture	8M (3840*2160) JPEG/TIFF image in SD card;
Measurement Saving	Measurement information saved in layer mode with image content; Measurement information is saved together with image content in burn in mode.
ISP Function	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
Image Operations	Zoom In/Zoom Out, Mirror/Flip, Freeze, Cross Line, Overlay, 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 / Thai / French / German / Japanese / Italian / Russian
Software Function and Environment under USB Video Output	
White Balance	Auto White Balance
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
	Ethernet Port: RJ45 Ethernet Port
	Displayer: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
Power Supply	DC 12V/1A Adapter

3.7.3 XCAMLITE4K Series Camera's Dimension

Figure 3-65 XCAMLITE4K Series Camera's Dimension

3.7.4 XCAMLITE4K Series Camera Packing Information

Figure 3-66 XCAMLITE4K Series Camera Packing Information

Standard Packing List	
A	Gift box : L:25.5cm W:17.0cm H:9.0cm (1pcs,1.48kg/ box)
B	XCAMLITE4K series camera
C	Power Adapter: Input: AC 100~240V 50Hz/60Hz, Output: DC 12V 1A **American standard**: Model: GS12U12-P1I 12W/12V/1A: UL/CUL/BSMI/CB/FCC **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

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.)	

3.7.5 Extension of XCAMLITE4K Series Camera with Microscope Adapter

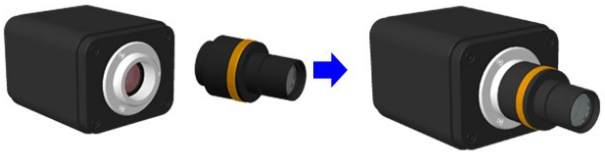
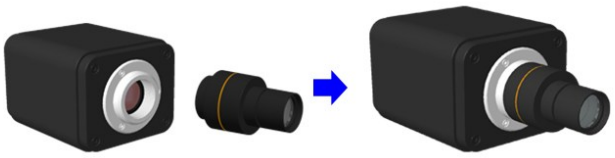
Extension	Picture	
C-mount Camera		Machine vision; Medical imaging; Semiconductor equipment; Test instruments; Document scanners; 2D barcode readers; Web camera and security video; Microscope imaging;
Microscope Camera	 XCAMLITE4K+AMAXXX(23.2mm Adapter)  XCAMLITE4K+FMAXXX(23.2mm Adapter)	

Figure 3-67 XCAMLITE4K Series Camera and HDMI Displayer

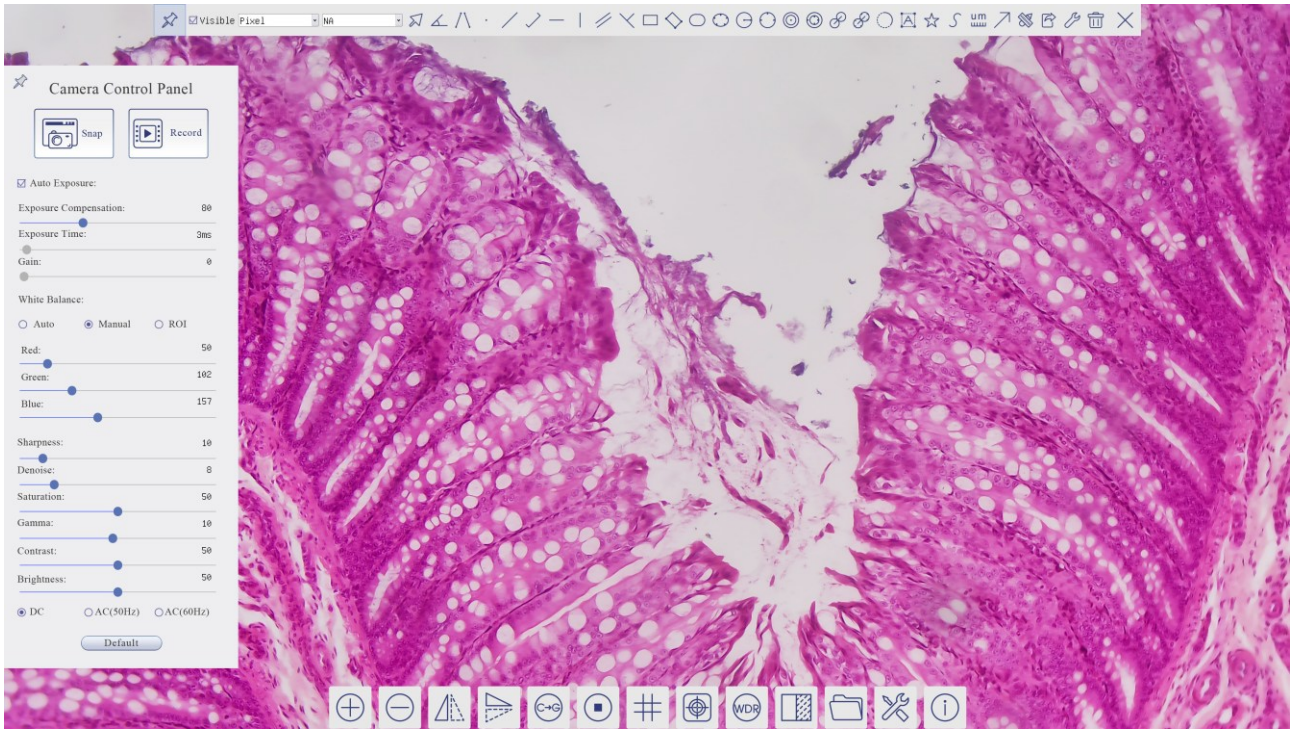


Figure 3-68 XCAMLITE4K Series Camera Control GUI

Figure 3-69 XCAMLITE4K Series Camera and Leica Microscope

Figure 3-70 XCAMLITE4K Series Camera and Zeiss Microscope

3.7.6 Sample Photos Captured with XCAMLITE4K Series Camera

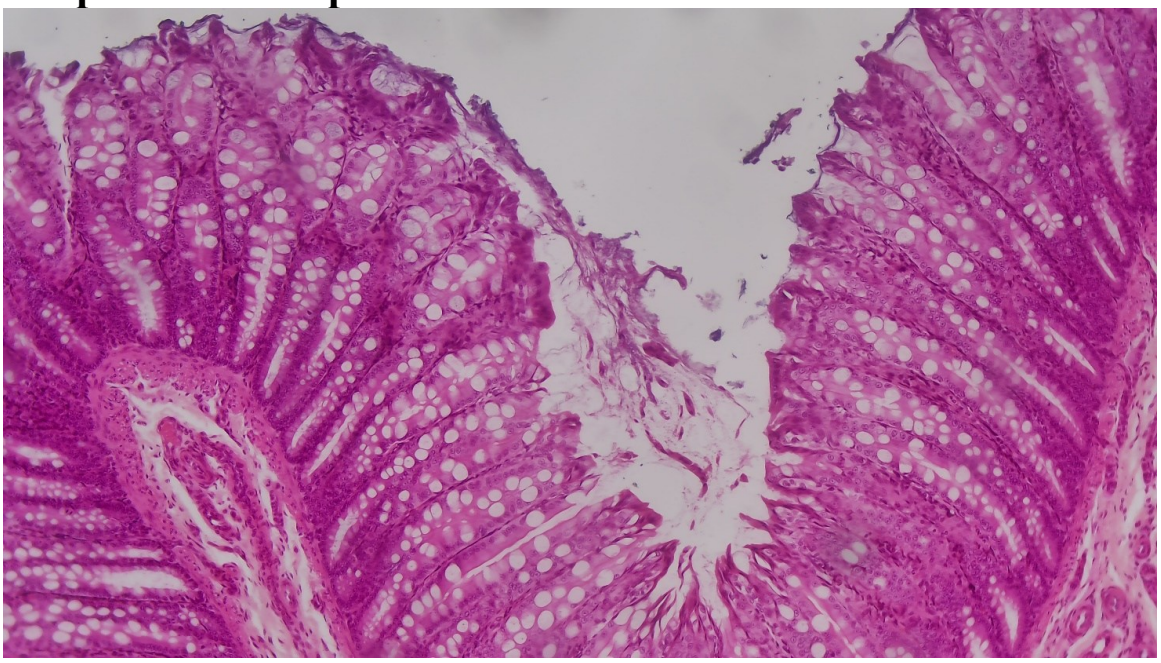


Figure 3-71 Alfalfa Stem Captured with XCAMLITE4KA8MPA

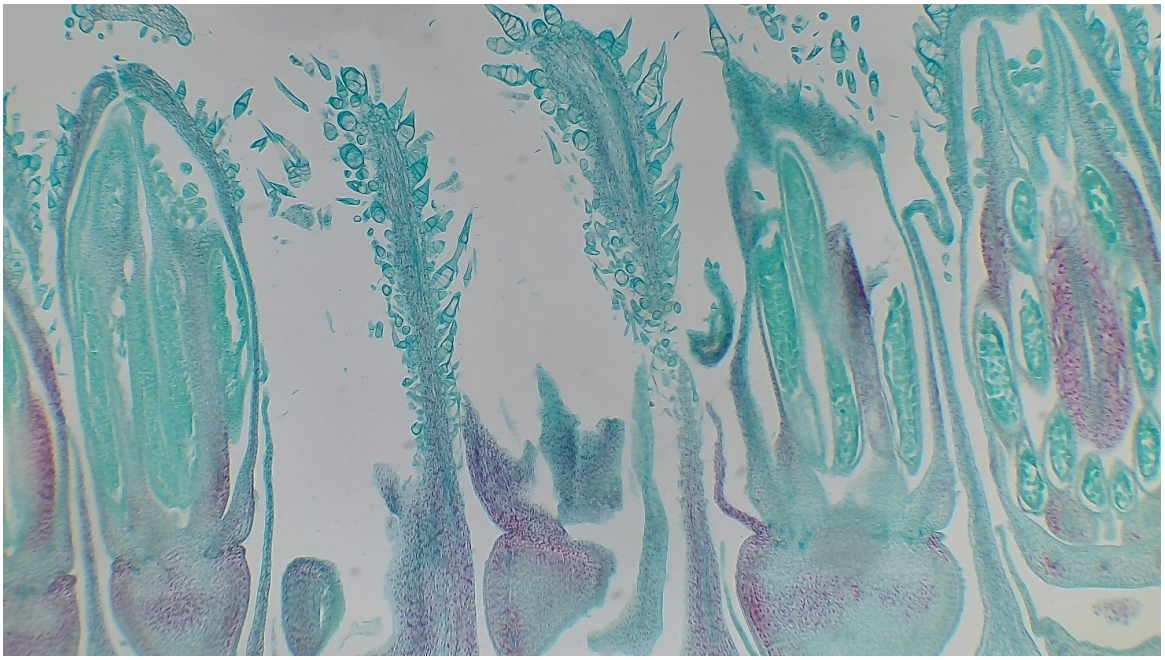


Figure 3-72 Top Bud. Captured with XCAMLITE4K8MPA

3.8 TXCAMLITE4K Series HDMI/USB2.0 Multi-outputs C-mount CMOS Camera with Touch Function

3.8.1 TXCAMLITE4K Series Camera's Basic Characteristic

For details of the camera operations, please check TXCAMLITE4K_en.docx or TXCAMLITE4K_en.pdf file.

The TXCAMLITE4K series camera is the lite version live-view imaging-system with 4K resolution at 30 FPS with touch function

The TXCAMLITE4K series camera comes with Sony Exmor CMOS sensor with high sensitivity, low dark current and no smear achieved through the adoption of R, G and B primary color mosaic filters.

The camera uses a standard C-mount interface for maximum compatibility with various microscopy-systems. It can be used as a stand-alone recorder when used with an HDMI displayer, it is embedded XCamView for the controls of the camera with touch screen or mouse. It can be also live-streamed to a PC via USB for image-capture and video-recording.

Hardware 3D denoising, sharpness and local tone mapping control functions greatly improve the image and video quality.

The included Windows software ToupView offers image-development and measurement tools, as well as advanced compositing features such as image-stitching and extended-depth-of-focus. With the ability to calibrate scales at multiple magnifications, the software can be used for multi-level inspection.

For Mac and Linux, there is a lite version of the software ToupLite which can capture video and still images, and includes limited processing features.

The TXCAMLITE4K series camera is intended to be used for the acquisition of digital images from the stereo microscope, biological microscope or online interactive teaching. The basic characteristics are listed as below:

- Sony Exmor/STARVIS back illuminated CMOS sensor
- 4K HDMI/USB multiple video outputs
- 4K/1080P auto switching according to the display resolution
- SD card/USB flash drive for the captured image and video storage, support local preview and playback
- Embedded XCamView for the controls of the camera with touch screen or mouse
- The touch or mouse control mode can be switched
- With strong ISP and other related processing functions
- ToupView/ToupLite software for PC

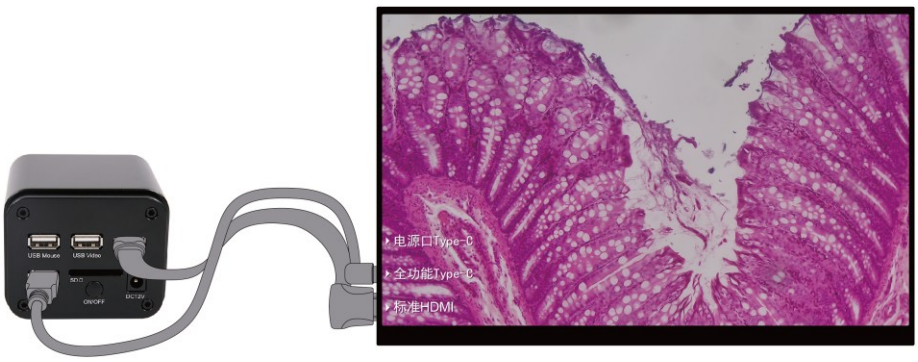


Figure 3-73 TXCAMLITE 4K Series Camera + Touchscreen

3.8.2 TXCAMLITE4K Series Camera's Datasheet and Functions (2)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity	FPS/Resolution	Binning	Exposure(ms)
TXCAMLITE4K8MPA	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) 20@3840*2160(USB)	1x1	0.04~1000
TXCAMLITE4K8MPB	Sony IMX485(C) 1/1.2"(11.14x6.26)	2.9x2.9	2188mv with 1/30s 0.39mv with 1/30s	30@3840*2160(HDMI) 20@3840*2160(USB)	1x1	0.04~1000

C: Color; M: Monochrome;

Interface	Function Description
USB Mouse	If the touch function is used, this interface does not need to be connected, and the XCamView software is directly controlled by touching; If the interface is switched to the mouse operation mode, the USB mouse interface can be connected for the control of the built-in XCamView software
USB Video	Connect PC or other host device to realize video image transmission
HDMI	Comply with HDMI1.4 standard. 4K or 1080P format video output for standard monitor
DC12V	Power adapter connection (12V/1A or 12V/2A)
SD	Comply with SDIO3.0 standard and SD card could be inserted for video and images storage
USB	In touch mode, using USB Type-A to Type-C cable to connect with touch screen ; In mouse mode, USB Flash Drive can be inserted.
LED	LED status indicator
ON/OFF	Power switch
Video Output Interface	**Function Description**
HDMI Interface	Comply with HDMI1.4 standard 30fps@4K or 30fps@1080P
USB Video Interface	Connecting USB port of PC for video transfer MJPEG format video
Other Function	**Function Description**
Video Saving	Video format：8M(3840*2160) H264 encoded MP4 file Video saving frame rate：30fps
Image Capture	8M (3840*2160) JPEG/TIFF image in SD card or USB flash drive
Measurement Saving	Measurement information saved in layer mode with image content Measurement information is saved together with image content in burn in mode
ISP Function	Exposure(Automatic / Manual Exposure) / Gain， White Balance(Manual / Automatic / ROI Mode)，Sharpening， 3D Denoise， Saturation Adjustment， Contrast Adjustment， Brightness Adjustment， Gamma Adjustment， 50HZ/60HZ Anti-flicker Function
Image Operations	Zoom In/Zoom Out, Mirror/Flip, Freeze, 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 / Thai / French / German / Japanese / Italian / Russian
Software Function and Environment under USB Video Output	
White Balance	Auto White Balance
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 /11(32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory: 4GB or More
	Ethernet Port: RJ45 Ethernet Port
	Displayer: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
Power Supply	DC 12V/1A Adapter or DC 12V/2A Adapter

3.8.3 TXCAMLITE4K Series Camera's Dimension

Figure 3-74 TXCAMLITE4K Series Camera's Dimension

3.8.4 TXCAMLITE4K Series Camera Packing Information

Figure 3-75 TXCAMLITE4K Series Camera Packing Information

Standard Packing List	
A	Gift box : L:33cm W:21.5cm H:6.8cm
B	4K or 1080P touch screen
C	TXCAMLITE4K series camera
D	**Power Adapter:** Input: AC 100~240V 50Hz/60Hz, Output: DC 12V 1A **American standard**: Model: POWER-U-12V1A(MSA-C1000IC12.0-12H-US) **European standard:** Model: POWER-E-12V1A(MSA-C10001C12.0-12H-DE) OR **Power Adapter:** Input: AC 100~240V 50Hz/60Hz, Output: DC 12V 2A **American standard**: Model: POWER-12V2A(MX24Z1-1202000) + American standard plug **European standard:** Model: POWER-12V2A(MX24Z1-1202000) + European standard plug
E	USB2.0 Type A to Type C data cable /0.5M (Adapt to the situation that the screen is relatively close to the camera)
F	USB2.0 Type A to Type C data cable/1.5M (Adapt to the situation that the screen is far away from the camera)

G	HDMI data cable/0.5M (Adapt to the situation that the screen is relatively close to the camera)		
H	HDMI data cable /1.5M (Adapt to the situation that the screen is far away from the camera)		
I	USB2.0 A male to A male data cable /2.0M		
J	USB Mouse		
K	CD (Driver & utilities software, Ø12cm)		
Optional Accessory			
L	SD card (16G or above; speed: class 10)		
M	USB 3.0 Flash Drive (32G or above)		
N	Adjustable lens adapter (Not shown)	C-Mount to Dia.23.2mm eyepiece tube (Please choose 1 of them for your microscope)	108001/AMA037 108002/AMA050 108003/AMA075
O	Fixed lens adapter (Not shown)	C-Mount to Dia.23.2mm eyepiece tube (Please choose 1 of them for your microscope)	108005/FMA037 108006/FMA050 108007/FMA075
	Note: For N and O 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;		
P	108015(Dia.23.2mm to 30.0mm ring)/Adapter rings for 30mm eyepiece tube (Not shown)		
Q	108016(Dia.23.2mm to 30.5mm ring)/ Adapter rings for 30.5mm eyepiece tube (Not shown)		
R	Calibration kit (Not shown)	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.)	

3.8.5 Extension of TXCAMLITE4K Series Camera with Microscope Adapter

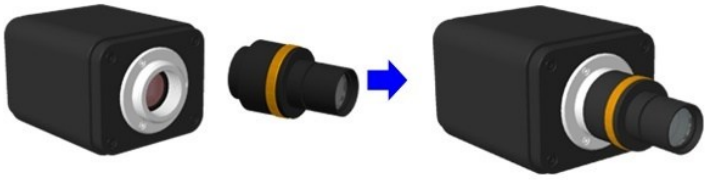
Extension	Picture	
C-mount Camera		Machine vision; Medical imaging; Semiconductor equipment; Test instruments; Document scanners; 2D barcode readers; Web camera and security video; Microscope imaging;
Microscope Camera	 TXCAMLITE4K+AMAXXX(23.2mm Adapter)  TXCAMLITE4K+FMAXXX(23.2mm Adapter)	

Figure 3-76 TPS-210A50(Stand) + TZM0480(0.4X~8X Monocular Zoom Objective) + TXCMLITE4K(HDMI/USB Output CMOS Camera with Touch Function) + Touch Screen, the Touch Screen Can Be Tilted on the Table Through Its Own Stand (Long HDMI Cable and USB Type A To Type C Data Cable Are Required To Connect the Camera and Touch Screen)

Figure 3-77 TPS-210A50(Stand)+TZM0480（0.4x-8.0x Monocular Zoom Objective）+TXCAMLITE4K Camera(HDMI/USB Output CMOS Camera with Touch Function)+Touch Screen, the Touch Screen Is Fixed on the Fixing Block at the Front of the Camera through the Mounting Hole on the Built-in Bracket (Front View, Short HDMI Cable and USB Type A to Type C Data Cable Can Be Used to Connect the Camera and Touch Screen)

Figure 3-78 TPS-210A50-G(Stand)+TZM0480（0.4x-8.0x Monocular Zoom Objective）+TXCAMLITE4K Camera(HDMI/USB Output CMOS Camera with Touch Function)+Touch Screen, the Touch Screen Is Fixed on the Cross Bar of Stand through the Mounting Hole on the Built-in Bracket (Front View, Short HDMI Cable and USB Type A to Type C Data Cable Can Be Used to Connect the Camera and Touch Screen)

Figure 3-79 The TXCAMLITE4K Series Camera’s Control GUI

3.8.6 Sample Photos Captured with TXCAMLITE4K Series Camera

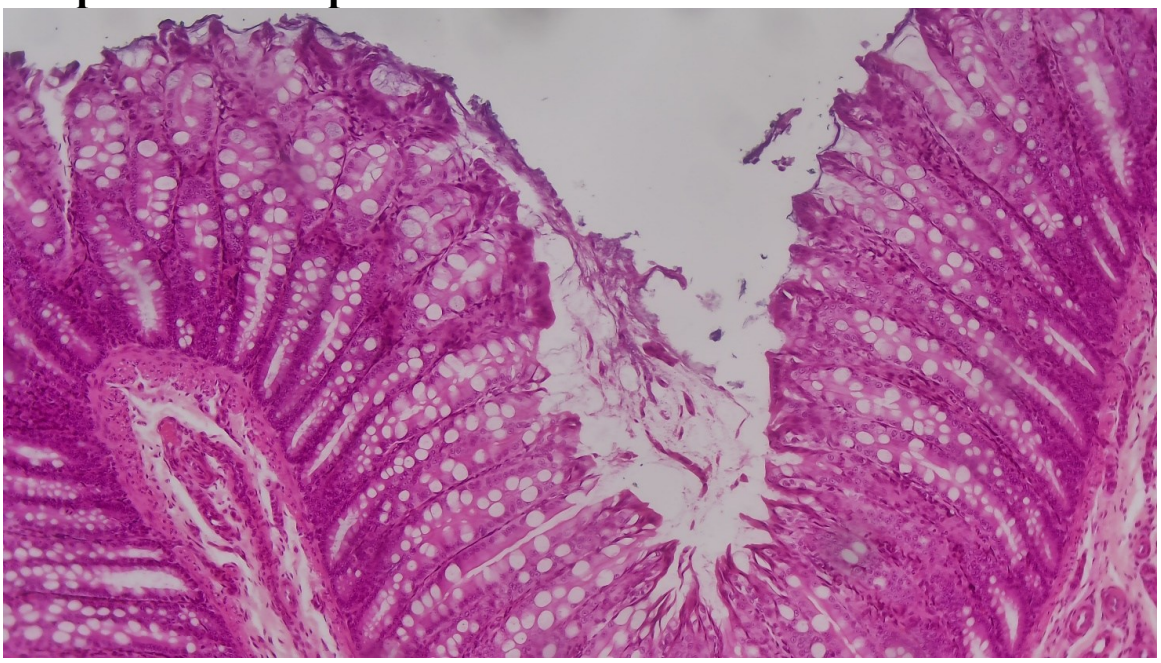


Figure 3-80 Alfalfa Stem Captured with TXCAMLITE4KA8MPA

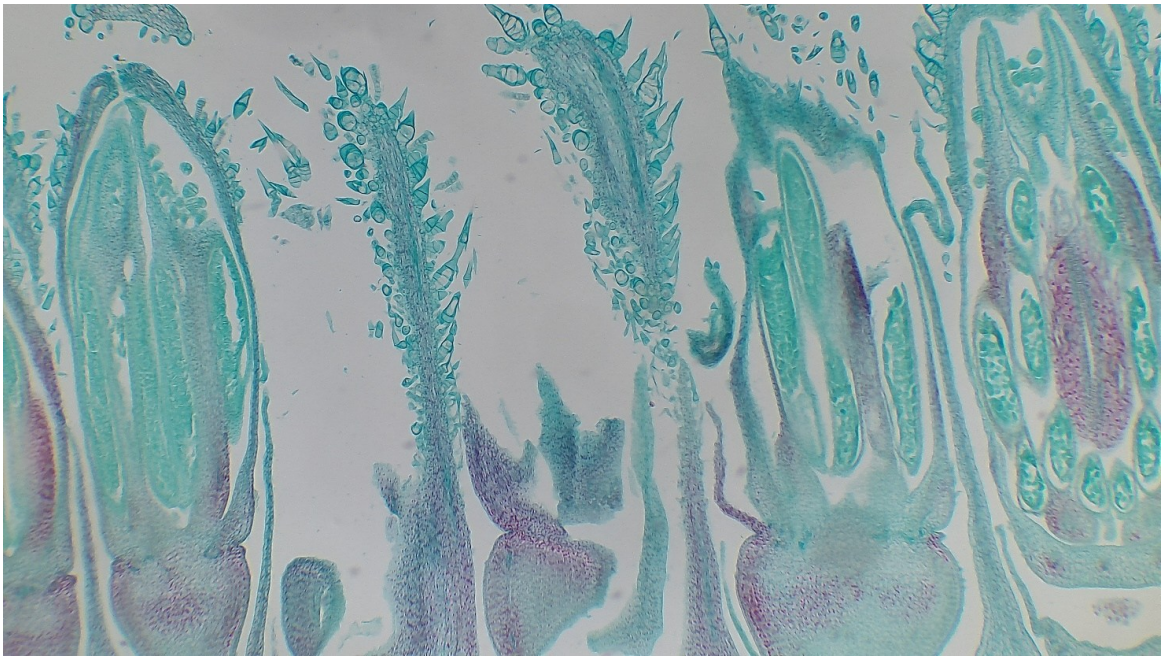


Figure 3-81 Top Bud. Captured with TXCAMLITE4K8MPA

3.9 XCAMLITE4K-MINI Series HDMI/USB2.0 Multi-outputs C-mount CMOS Camera

3.9.1 XCAMLITE4K-MINI Series Camera's Basic Characteristic

For details of the camera operations, please check XCAMLITE4K-MINI_en.docx or XCAMLITE4K-MINI_en.pdf file.

The XCAMLITE4K-MINI series camera is the lite version live-view imaging-system with 4K resolution at 30 FPS.

The XCAMLITE4K-MINI series camera comes with Sony Exmor CMOS sensor with high sensitivity, low dark current and no smear achieved through the adoption of R, G and B primary color mosaic filters.

The camera uses a standard C-mount interface for maximum compatibility with various microscopy-systems. It can be used as a stand-alone recorder when used with an HDMI displayer or television, or live-streamed to a PC via USB for image-capture and video-recording. USB flash drive is used for the captured image and video storage

Hardware 3D denoising, sharpness and local tone mapping control functions greatly improve the image and video quality.

The included Windows software ToupView offers image-development and measurement tools, as well as advanced compositing features such as image-stitching and extended-depth-of-focus. With the ability to calibrate scales at multiple magnifications, the software can be used for multi-level inspection.

For Mac and Linux, there is a lite version of the software ToupLite which can capture video and still images, and includes limited processing features.

The XCAMLITE4K-MINI series camera is intended to be used for the acquisition of digital images from the stereo microscope, biological microscope or online interactive teaching. The basic characteristics are listed as below:

- Sony Exmor/Starvis back-illuminated CMOS sensor
- 4K HDMI/USB multiple video outputs
- 4K/1080P auto switching according to the displayer resolution
- USB flash drive for the captured image and video storage
- Embedded XCamView for the control of the camera
- With strong ISP and other related processing functions
- ToupView/ToupLite software for PC
- ToupLite software for MAC

3.9.2 XCAMLITE4K-MINI Series Camera's Datasheet and Functions (2)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity	FPS/Resolution	Binning	Exposure(ms)
XCAMLITE4K8MPA-MINI	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) 20@3840*2160(USB)	1x1	0.04~1000
XCAMLITE4K8MPB-MINI	Sony IMX485(C) 1/1.2"(11.14x6.26)	2.9x2.9	2188mv with 1/30s 0.39mv with 1/30s	30@3840*2160(HDMI) 20@3840*2160(USB)	1x1	0.04~1000

C: Color; M: Monochrome;

Interface	Function Description
HDMI	Comply with HDMI1.4 standard. 4K or 1080P format video output for standard monitor
LED	LED status indicator
USB Mouse	Connect USB mouse for easy operation with embedded XCamView software
DC12V	Power adapter connection (12V/1A)
USB Video	Connect PC or other host device to realize video image transmission
USB2.0	Connect USB flash disk for capturing video and image storage
Video Output Interface	**Function Description**
HDMI Interface	Comply with HDMI1.4 standard; 30fps@4K or 30fps@1080P;
USB Video Interface	Connecting USB port of PC for video transfer; MJPEG format video;
Other Function	**Function Description**
Video Saving	Video format：8M(3840*2160) H264 encoded MP4 file; Video saving frame rate：30fps;
Image Capture	8M (3840*2160) JPEG/TIFF image in USB flash drive
Measurement Saving	Measurement information saved in layer mode with image content; Measurement information is saved together with image content in burn in mode.
ISP Function	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
Image Operations	Zoom In/Zoom Out, Mirror/Flip, Freeze, Cross Line, Overlay, 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 / Thai / French / German / Japanese / Italian / Russian
Software Function and Environment under USB Video Output	
White Balance	Auto White Balance
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
	Ethernet Port: RJ45 Ethernet Port
	Displayer: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

Power Supply	DC 12V/1A Adapter

3.9.3 XCAMLITE4K-MINI Series Camera's Dimension

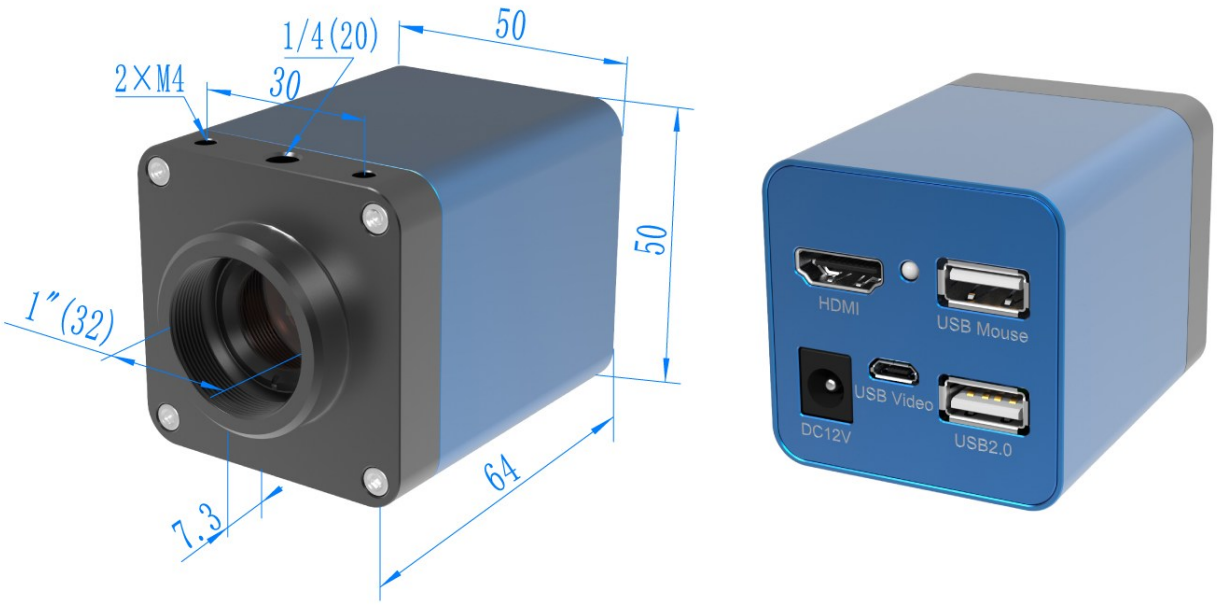


Figure 3-82 XCAMLITE4K-MINI Series Camera's Dimension

3.9.4 XCAMLITE4K-MINI Series Camera Packing Information

Figure 3-83 XCAMLITE4K-MINI Series Camera Packing Information

Standard Packing List			
A	Gift box : L:25.5cm W:17.0cm H:9.0cm (1pcs,1.48kg/ box)		
B	XCAMLITE4K-MINI series camera		
C	**Power Adapter:** Input: AC 100~240V 50Hz/60Hz, Output: DC 12V 1A **American standard**: Model: POWER-U-12V1A(MSA-C1000IC12.0-12H-US) **European standard:** Model: POWER-E-12V1A(MSA-C10001C12.0-12H-DE)		
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	USB flash drive		
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.)	

3.9.5 Extension of XCAMLITE4K-MINI Series Camera with Microscope Adapter

Extension	Picture	
C-mount Camera		Machine vision; Medical imaging; Semiconductor equipment; Test instruments; Document scanners; 2D barcode readers; Web camera and security video; Microscope imaging;
Microscope Camera	 XCAMLITE4K-MIN+AMAXXX(23.2mm Adapter)  XCAMLITE4K-MIN+FMAXXX(23.2mm Adapter)	

Figure 3-84 XCAMLITE4K-MINI Series Camera with the HDMI Displayer

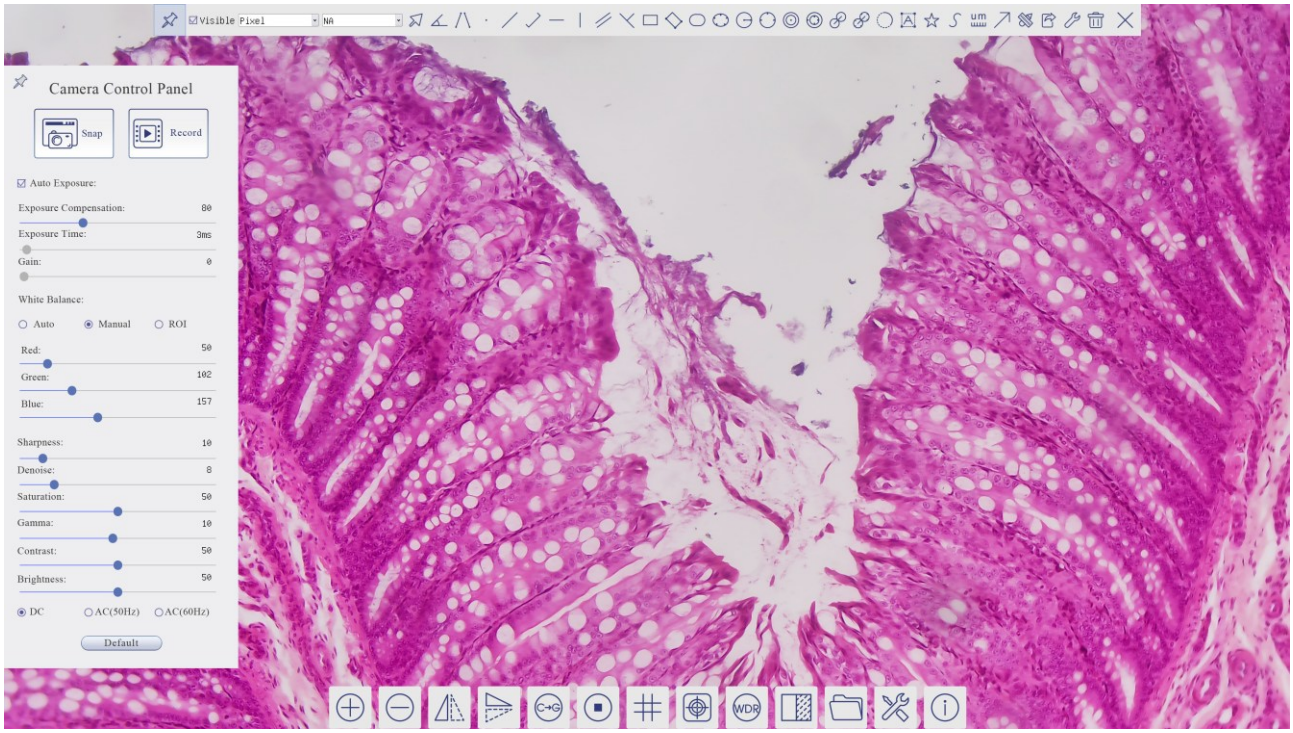


Figure 3-85 The XCAMLITE4K-MINI Series Camera Control GUI

3.9.6 Sample Photos Captured with XCAMLITE4K-MINI Series Camera

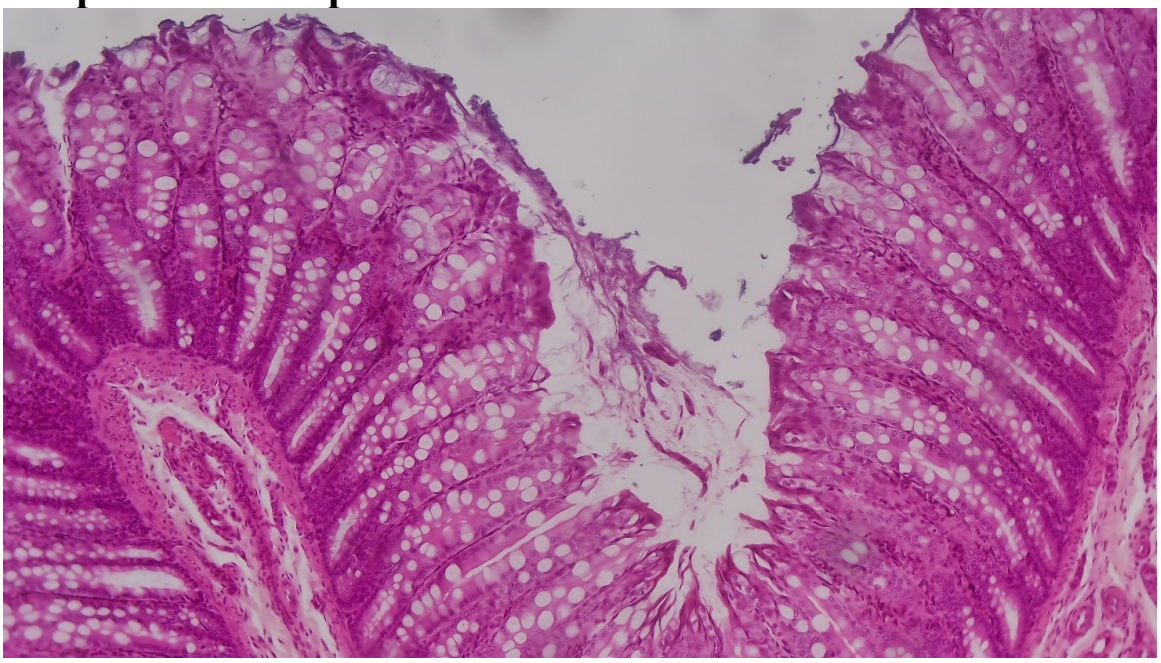


Figure 3-86 Alfalfa Stem Captured with XCAMLITE4K8MPA-MINI

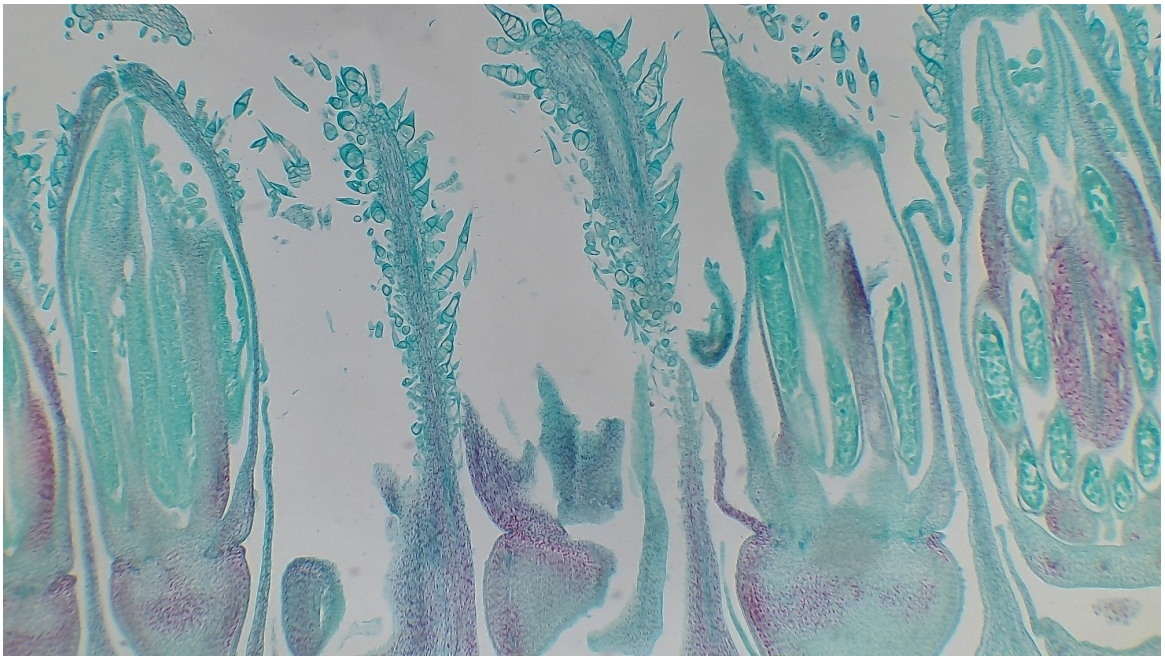


Figure 3-87 Top Bud. Captured with XCAMLITE4K8MPA-MINI

3.10 XCAM1080PX Series C-mount HDMI/USB2.0 Output CMOS Camera

3.10.1 XCAM1080PX Series Camera's Basic Characteristic

The XCAM1080P series camera is intended to be used for the acquisition of digital images from the stereo microscope and biological microscope. The basic characteristic is listed as below:

- Sony Exmor back illuminated CMOS sensor
- 1080P HDMI/USB multiple video outputs
- SD card for the captured image and video storage
- Embedded XCamView for the control of the camera
- With strong ISP and other related processing functions
- ToupView/ToupLite software for PC
- ToupLite software for MAC

3.10.2 XCAM1080PX series camera Datasheet (2)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity Dark Signal	FPS/Resolution	Binning	Exposure
XCAM1080P2MPA	Sony IMX385(C) 1/2"(7.2x4.05)	3.75x3.75	1175mv with 1/30s 0.15mv with 1/30s	60@1920*1080(HDMI) 50@1920*1080(USB)	1x1	0.04~1000
XCAM1080P8MPB	Sony IMX415(C) 1/2.8"(5.57x3.13)	1.45x1.45	300mv with 1/30s 0.13mv with 1/30s	30@1920*1080(HDMI) 30@3840*2160(USB)	1x1	0.04~1000

C: Color; M: Monochrome;

Interface	Function Description
USB Mouse	Connect USB mouse for easy operation with embedded XCamView software;
USB Video	Connect PC or other host device to realize video image transmission;
HDMI	Comply with HDMI1.4 standard. 1080P format video output for standard displayer;
USB	Connect USB flash drive for capturing video and image storage;

SD	Comply with SDIO3.0 standard and SD card could be inserted for video and images storage;
LED	LED status indicator;
DC12V	Power adapter connection (12V/1A);
ON/OFF	Power switch;
Video Output Interface	**Function Description**
HDMI Interface	Comply with HDMI1.4 standard; 60fps@1080P;
USB Video Interface	Connecting USB port of PC for video transfer; MJPEG format video;
Function Name	**Function Description**
Video Saving	Video format：1920*1080 H264 encoded MP4 file; Video saving frame rate：60fps (**XCAM1080P2MPA**); 30fps (**XCAM1080P8MPB**)
Image Capture	2M (1920*2160, XCAM1080P2MPA) JPEG/TIFF image in SD card ; 8M (3840*2160, XCAM1080P8MPB) JPEG/TIFF image in SD card ;
Measurement Saving	Measurement information saved in layer mode with image content; Measurement information is saved together with image content in burn in mode.
ISP Function	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
Image Operations	Zoom In/Zoom Out, Mirror/Flip, Freeze, Cross Line, Overlay, 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 / Thai / French / German / Japanese / Italian / Russian
Software Environment under USB Video Output	
White Balance	Auto White Balance
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
	Ethernet Port: RJ45 Ethernet Port
	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
Power Supply	DC 12V/1A Adapter

3.10.3 Dimension of XCAM1080PX Series Camera

Figure 3-88 Dimension of XCAM1080PX Series Camera

3.10.4 Packing Information for XCAM1080PX Series Camera

Figure 3-89 Packing Information of XCAM1080PX Series Camera

Standard Packing List	
A	Gift box: L:25.5cm W:17.0cm H:9.0cm (1pcs,1.47kg/ box)
B	One XCAM1080PX series camera
C	Power Adapter: Input: AC 100~240V 50Hz/60Hz, Output: DC 12V 1A **European standard**: Model:GS12E12-P1I 12W/12V/1A; TUV(GS)/CB/CE/ROHS **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
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 K and L 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.)	

3.10.5 Extension of XCAM1080PX Series Camera with Microscope

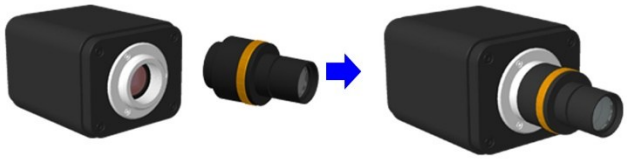
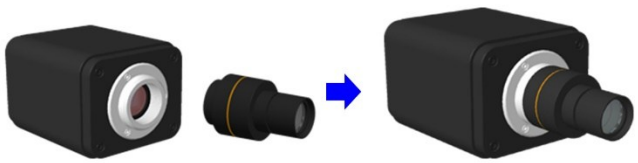
Extension	Picture	
C-mount Camera		Machine vision; Medical imaging; Semiconductor equipment; Test instruments; Document scanners; 2D barcode readers; Web camera and security video; Microscope imaging;
Microscope Camera	 XCAM1080PX+AMAXXX(23.2mm Adapter)  XCAM1080PX+FMAXXX(23.2mm Adapter)	

Figure 3-90 XCAM1080P Series Camera with the HDMI Displayer

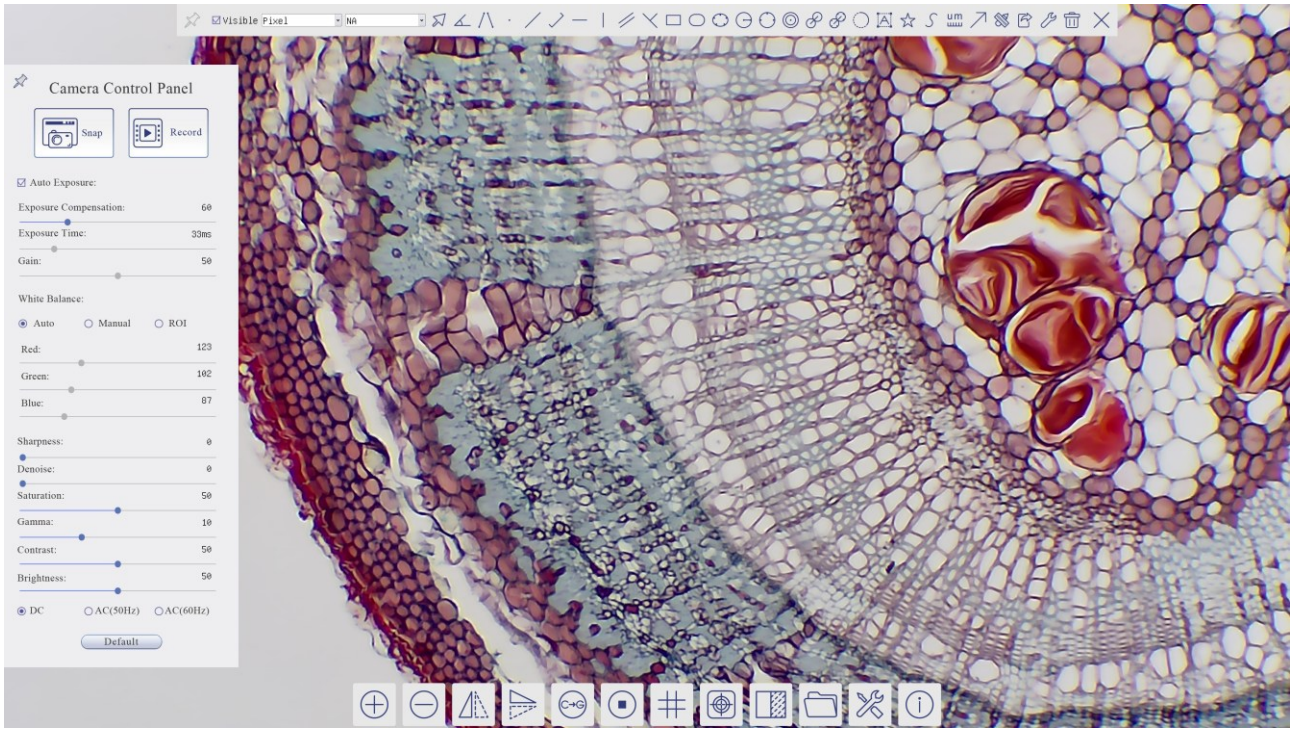


Figure 3-91 The XCAM1080P Series Camera Control GUI

3.10.6 Sample Photos Captured with XCAM1080P Series Camera

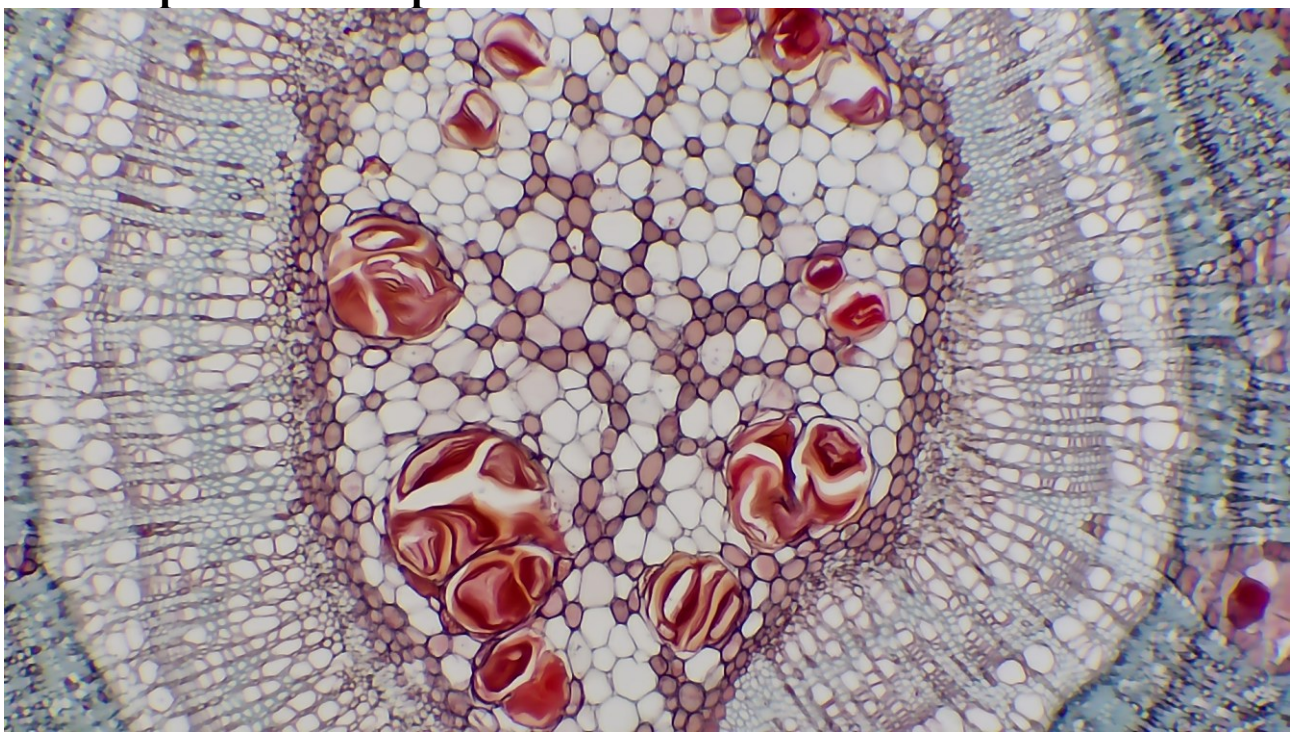


Figure 3-92 Suber Cell Captured with XCAM1080P2MPA

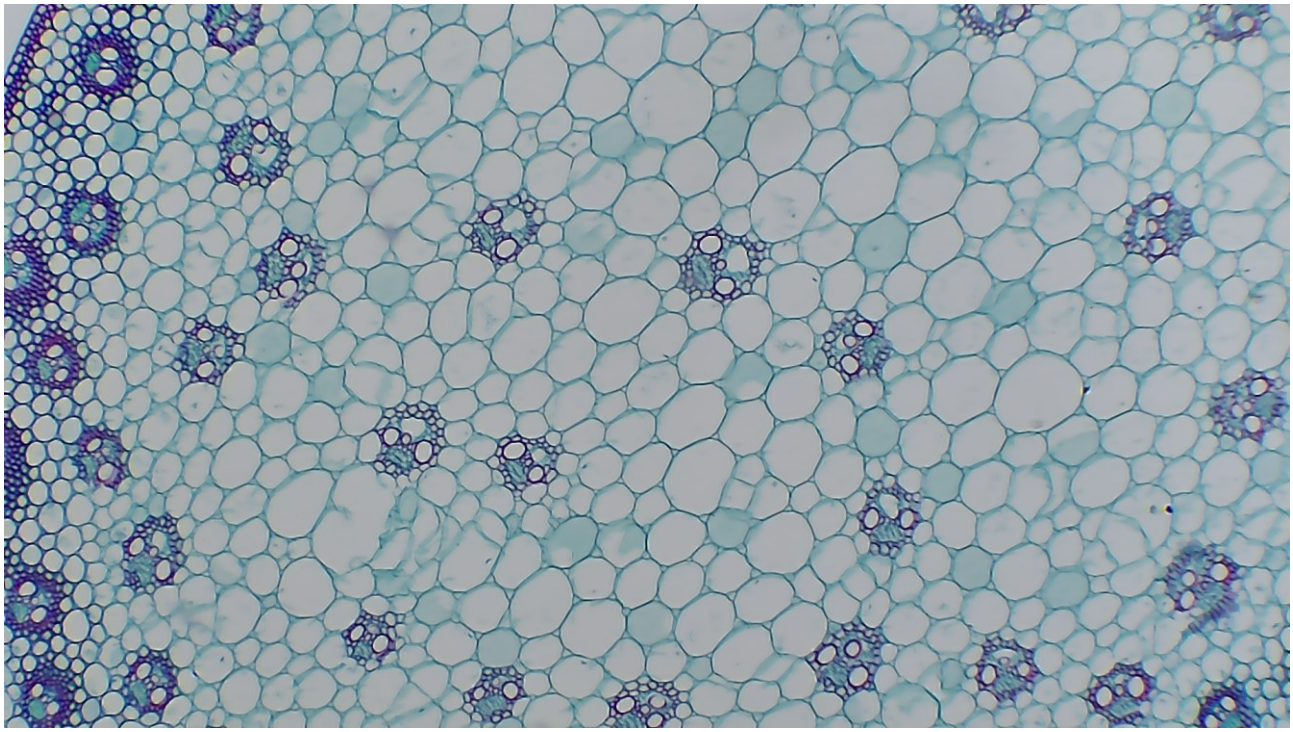


Figure 3-93 Monocot Stem Captured with XCAM1080P2MPA

3.11 XCAM1080PHX C-mount HDMI+WiFi Output CMOS Camera

3.11.1 XCAM1080PHX's Basic Characteristic

XCAM1080PHX is a multiple interfaces (HDMI+WiFi+SD card, X here means multiple interfaces) CMOS camera and it adopts ultra-high performance Sony CMOS sensor as the image-picking device. HDMI+WiFi are used as the data transfer interface to HDMI display or computer.

For HDMI output, The XCamView will be loaded and a camera control panel and toolbar are overlaid on the HDMI screen, in this case, the USB mouse can be used to set the camera, browse and compare the captured image, play the video ital.

For WiFi output, unplug the mouse and plug in the USB WiFi adapter, connect the computer WiFi to the camera, then the video stream can be transfer to computer with the advanced software ToupView. With ToupView, you can control the camera, process the image as ToupTek's other USB series camera.

The XCAM1080PHX's basic characteristic is as follows:

- C-mount CMOS camera with Sony high sensitivity sensor
- HDMI+WiFi outputs at the same time
- HDMI output can be controlled by XCamView through the USB mouse
- WiFi output can be enabled with wireless network USB adapter， and can be controlled with ToupView/ToupLite application
- Ultra-Fine Color Engine with perfect color reproduction capability (WiFi)
- 5.04M resolution image (2592*1944 XCAM1080PHB) or 2.0M resolution image (1920*1080 XCAM1080PHD/PHE (Global Shutter for PHE)) can be captured and saved for browsing; For video, 1080P video stream (asf format) can be captured and saved
- Windows/Linux/OSX multiple platform SDK
- CNC housing
- Can be used for industrial inspection, education and research, materials analysis, precision measurement, medical analyses etc.
- The possible applications of XCAM1080PHX are as follows:
- Scientific research, education (teaching, demonstration and academic exchanges);
- Digital laboratory, medical research;
- Industrial visual (PCB examination, IC quality control);
- Medical treatment (pathological observation);
- Food (microbial colony observation and counting);
- Aerospace;

3.11.2 XCAM1080PHX Datasheet (2)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity Dark Signal	FPS/Resolution	Binning	Exposure
XCAM1080PHB XP1080B	1080P/5M/Sony IMX178(C) 1/1.8"(6.22x4.67)	2.4x2.4	425mv with 1/30s 0.15mv with 1/30s	30@1920*1080(HDMI) 25@1920*1080(WiFi)	1x1	0.03ms~918ms
XCAM1080PHD XP1080D	1080P/2M/Sony IMX185(C) 1/1.9"(7.20x4.05)	3.75x3.75	1120mv with 1/30s 0.15mv with 1/30s	30@1920*1080(HDMI) 25@1920*1080(WiFi)	1x1	0.06ms~918ms

C: Color; M: Monochrome;

XCAM1080PHE adopt large Sony global shutter CMOS sensor which is a best replacement of traditional CCD video camera

Interface & Button Functions	
USB	USB Mouse/USB WiFi Adapter
HDMI	HDMI Output
DC12V	12V Power in
SD	SD Card Slot
ON/OFF	Power On/off Switch
LED	Power Indicator
Other Specification for HDMI Output	
UI Operation	With USB Mouse to Operate on the Embedded XCamView
Image Capture	JPEG Format with 5M Resolution (2592*1944) in SD Card(8G) (XAM1080PHB) JPEG Format with 2M Resolution in SD Card (XCAM1080PHD)
Video Record	ASF Format 1080P 30fps in SD Card(8G)
Camera Control Panel	Including Exposure, Gain, White Balance, Color Adjustment, Sharpness and Denoising Control
Toolbar	Including Zoom, Mirror, Comparison, Freeze, Cross, Browser Function, Muti-language and XCamView Version Information
Other Specification for WiFi Output	
UI Operation	ToupView or ToupLite on Windows/Linux/OSX/Android Platform
WiFi Performance	802.11n 150Mbps; RF Power 20dBm (Maximum)
Maximum Connected Devices	3~6(According to the Environment and Connection Distance)
White Balance	Auto White Balance
Color Technique	Ultra-Fine Color Engine (WiFi)
Capture/Control SDK	Windows/Linux/macOS/Android Multiple Platform SDK(Native C/C++, C#/VB.NET, Python, Java, DirectShow, Twain, etc) (WiFi)
Recording System	Still Picture or Movie (WiFi)
Software Environment (for USB2.0 Connection)	
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

	USB Port:USB2.0 High-speed Port(As Power Only, not as the USB Data Transfer)
	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
Power Supply	DC 12V/1A Adapter

3.11.3 Dimension of XCAM1080PHX Series Camera

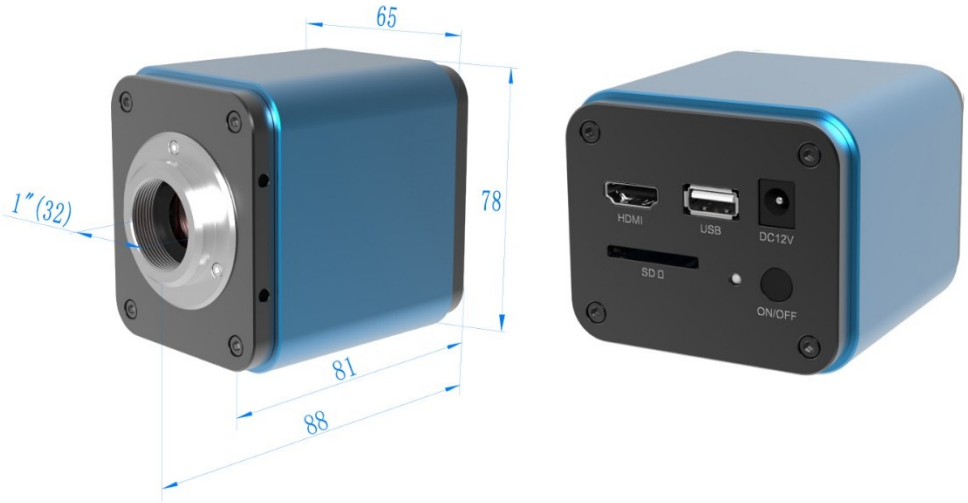


Figure 3-94 Dimension of XCAM1080PHX Series Camera

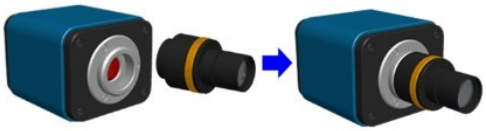
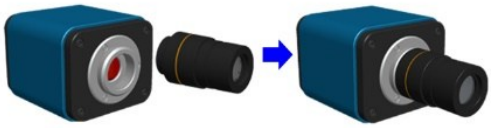
3.11.4 Packing Information for XCAM1080PHX Series Camera

Figure 3-95 Packing information of XCAM1080PHX Series Camera

Standard Packing List	
A	Gift box : L:25.5cm W:17.0cm H:9.0cm (1pcs, 1.43Kg/ box)
B	XCAM1080PHB or XCAM1080PHD or XCAM1080PHE camera

C	Power Adapter: Input: AC 100~240V 50Hz/60Hz, Output: DC 12V 1A **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 **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		
D	HDMI cable		
E	USB mouse		
F	Wireless network adapter with USB interface		
G	CD (Driver & utilities software, Ø12cm)		
Optional Accessory			
H	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
		C-Mount to Dia.31.75mm eyepiece tube (Please choose 1 of them for your telescope)	108008/ATA037 108009/ATA050 108010/ATA075
I	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
		C-Mount to Dia.31.75mm eyepiece tube (Please choose 1 of them for your telescope)	108011/FTA037 108012/FTA050 108013/FTA075
	Note: For H and I 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;		
J	108015(Dia.23.2mm to 30.0mm ring)/Adapter rings for 30mm eyepiece tube		
K	108016(Dia.23.2mm to 30.5mm ring)/ Adapter rings for 30.5mm eyepiece tube		
L	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.)	
M	SD card(4G or 8G)		

3.11.5 Extension of XCAM1080PHX 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"> 
XCAM1080PHX+AMAXXX(23.2mm Adapter)
 
XCAM1080PHX+FMAXXX(23.2mm Adapter)
 
XCAM1080PHX+ATAXXX(31.75mm Adapter)
 
XCAM1080PHX+FTAXXX(31.75mm Adapter)</td></tr>
<tr><td>Telescope Camera</td></tr>
</table>

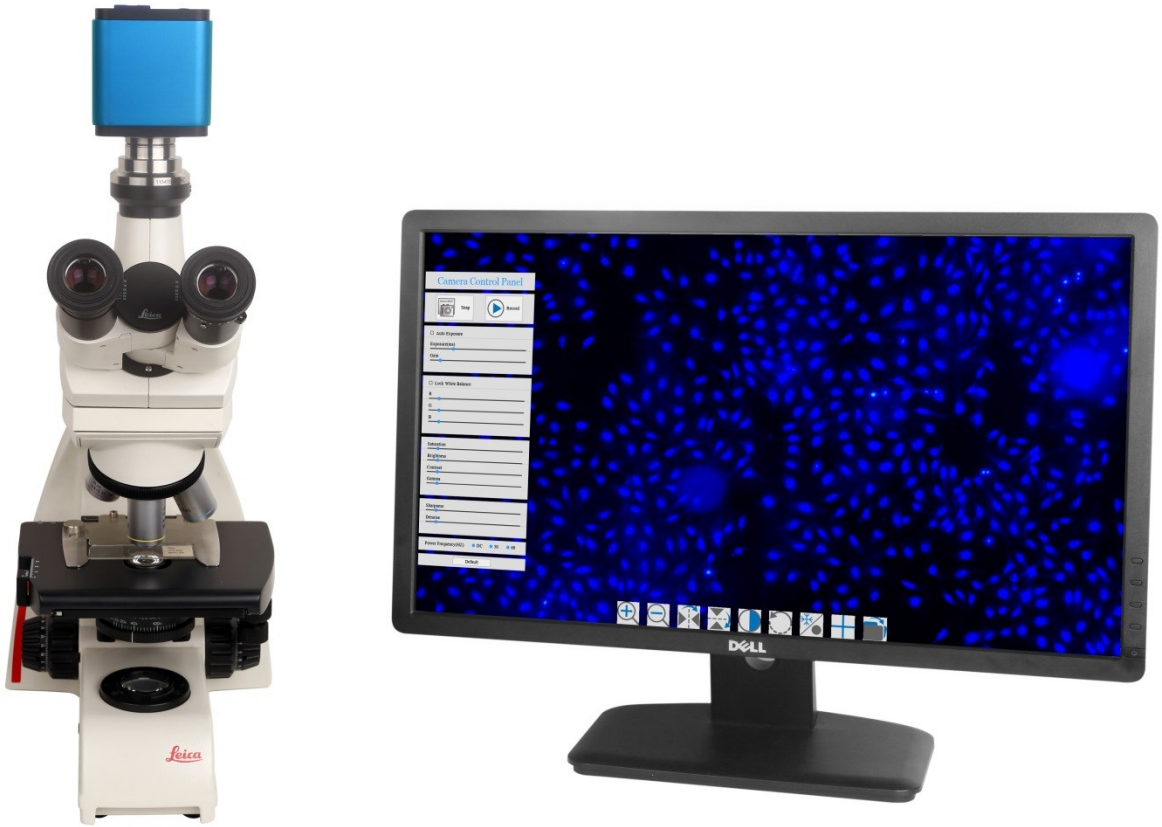


Figure 3-96 XCAM1080PHX+ Microscope+Display

Figure 3-97 XCamView UI for Mouse Control

3.11.6 Sample Photos Captured with XCAM1080PHX Series Camera

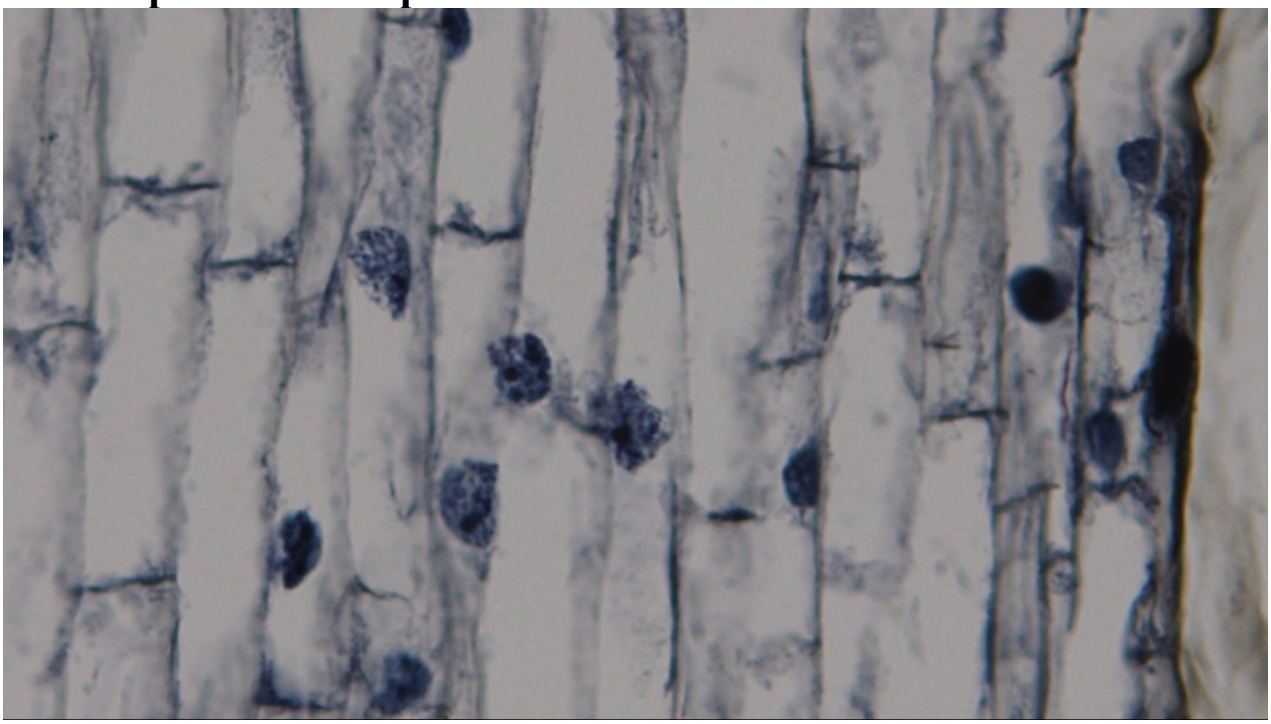


Figure 3-98 Onion skin photographed with XCAM1080PHX

3.12 O5CAM Series HDMI C-mount CMOS Camera

3.12.1 O5CAM Series Camera's Basic Characteristic

The O5CAM4K Series HDMI Camera is intended for acquisition of digital images from stereo microscopes, biological microscopes. Here are basic characteristics of the camera:

- Sony STARVIS 2 back-illuminated CMOS sensor
- 4K/1080P auto switching according to monitor resolution
- Support 4K 60fps low delay HDMI output mode, with an average delay of 40ms
- USB flash drive for captured image and video storage, support local preview and playback
- Support the capture and display of RAW format images
- Supports USB voice control module, enabling real-time control of the camera through voice commands for taking photos, recording videos, freezing, and other operations
- Supports scanning gun to capture images
- New browsing function, providing rich file operation functions, image to image comparison, image to real-time video comparison, multi-image EDF function, multi-image Stitch function
- Excellent ISP with local tone mapping and 3D denoising
- Provide real-time video EDF function and real-time video WDR output function
- Provide real-time Stitch function to obtain higher quality images through real-time processing
- Provide two sets of default ISP parameters for biological microscope and stereo microscope
- Embedded XCamView for the control of the camera and image processing, supporting automatic edge finding and measurement functions

3.12.2 O5CAM Series Camera's Datasheet and Functions (1)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity Dark Signal	FPS/Resolution	Binning	Exposure(ms)
O5CAM4K8MPA	Sony IMX678(C) 1/1.8"(7.68x4.32)	2.0x2.0	3541mv with 1/30s 0.15mv with 1/30s	60@3840*2160(HDMI)	1x1	0.019~1000

Interface or Button	Function Description
DC12V	Power adapter connector (12V/1A)
LED	LED status indicator
USB3.0(2)	Connect USB mouse for easy operation with embedded XCamView software Connect USB flash drive to save pictures and videos Connect USB microphone to record audio and video Connect USB voice control for enable real-time control of camera snap, recording, freezing, and other operations
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
Video Output Interface	**Function Description**
HDMI Interface	Comply with HDMI2.0 standard;60fps@4K or 60fps@1080P
Other Function	**Function Description**
Video Record	Video format：8M (3840*2160) H264/H265 encoded MP4 file Video saving frame rate：60fps in Low Delay Mode 30fps in WDR Mode
Image Capture	8M (3840*2160) JPEG/TIFF/RAW image in USB flash drive
Measurement Saving	Measurement information saved in different layer with image content in layered mode. Measurement information is saved together with image content in burn in mode
ISP	Exposure (Automatic / Manual Exposure) / White Balance, Sharpness, 3D Denoising, Saturation Adjustment, Gamma Adjustment, Contrast Adjustment, Brightness Adjustment, Dark Enhance, Color to Gray, 50HZ/60HZ Anti-flicker Function
Image Operation	Zoom In/Zoom Out (Up to 10X), Mirror/Flip, Freeze, EDF, Stitch, Cross Line, PIP, Browser (including Picture Browsing, Video Playback, Video Compare, Picture Compare, EDF, Stitch, Image Processing), 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

3.12.3 Dimension of O5CAM Series Camera

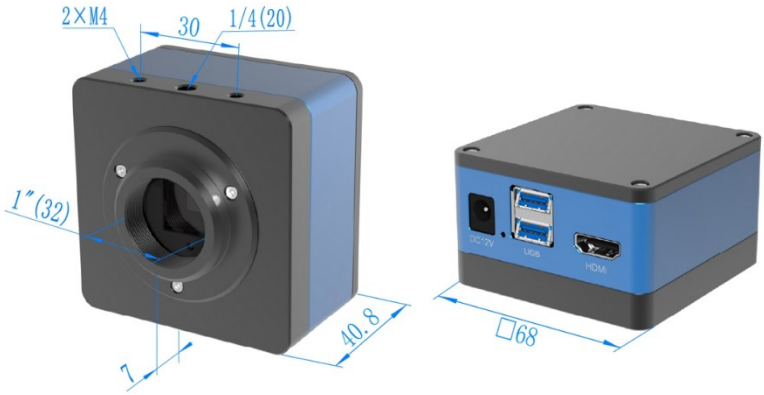


Figure 3-99 Dimension of O5CAM4K Series

3.12.4 Packing Information for O5CAM Series Camera

Figure 3-100 O5CAM4K Series HDMI Camera Packing Information

	Standard Packing List		
A	Gift box: L:18.4cm W:17.8cm H:8.1cm		
B	O5CAM4K Series HDMI 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) **European standard**: Model: POWER-E-12V1A(MSA-C10001C12.0-12W-DE)		
D	USB Mouse		
E	HDMI 2.0 Cable		
	Optional Accessory		
F	USB flash drive(USB3.0)		
G	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
H	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 G and H 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;		
I	108015(Dia.23.2mm to 30.0mm Ring)/Adapter rings for 30mm eyepiece tube		
J	108016(Dia.23.2mm to 30.5mm Ring)/ Adapter rings for 30.5mm eyepiece tube		
K	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.)

3.12.5 Sample Photos Captured with O5CAM Series Camera

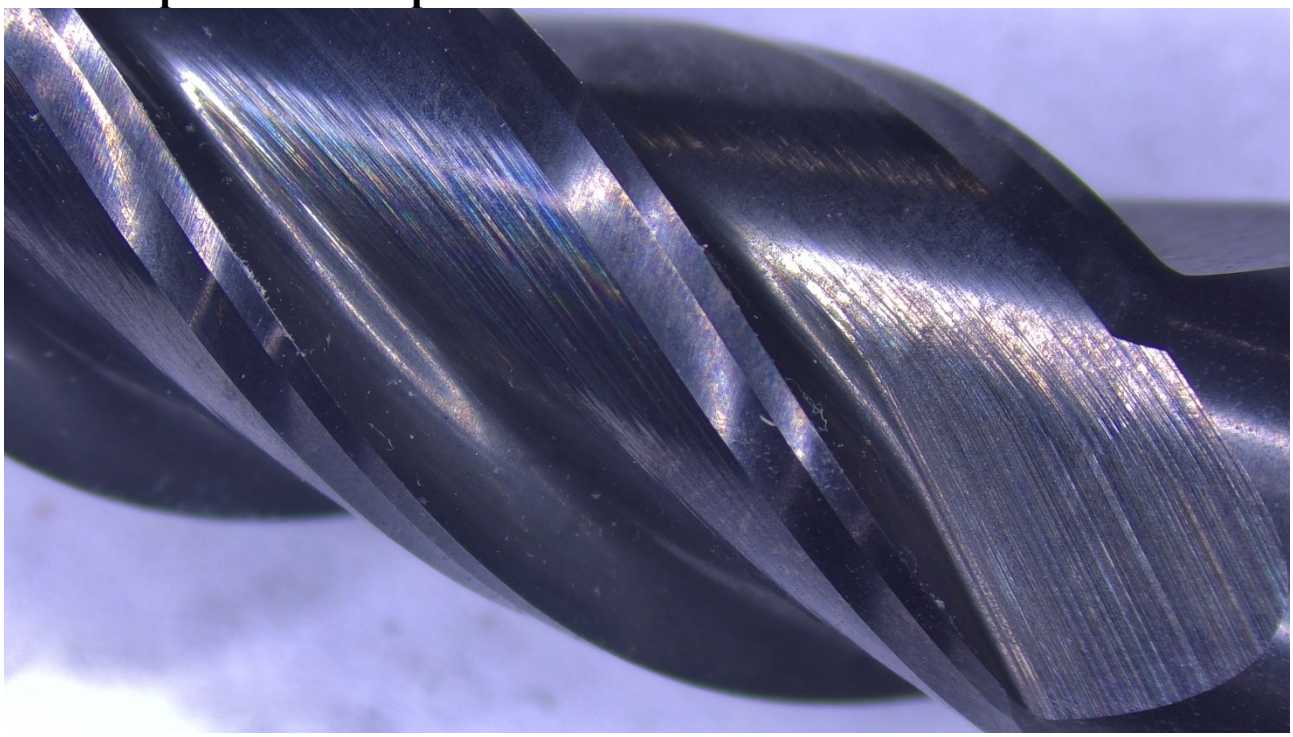


Figure 3-101 Cutter head. Captured with O5CAM4K8MPA

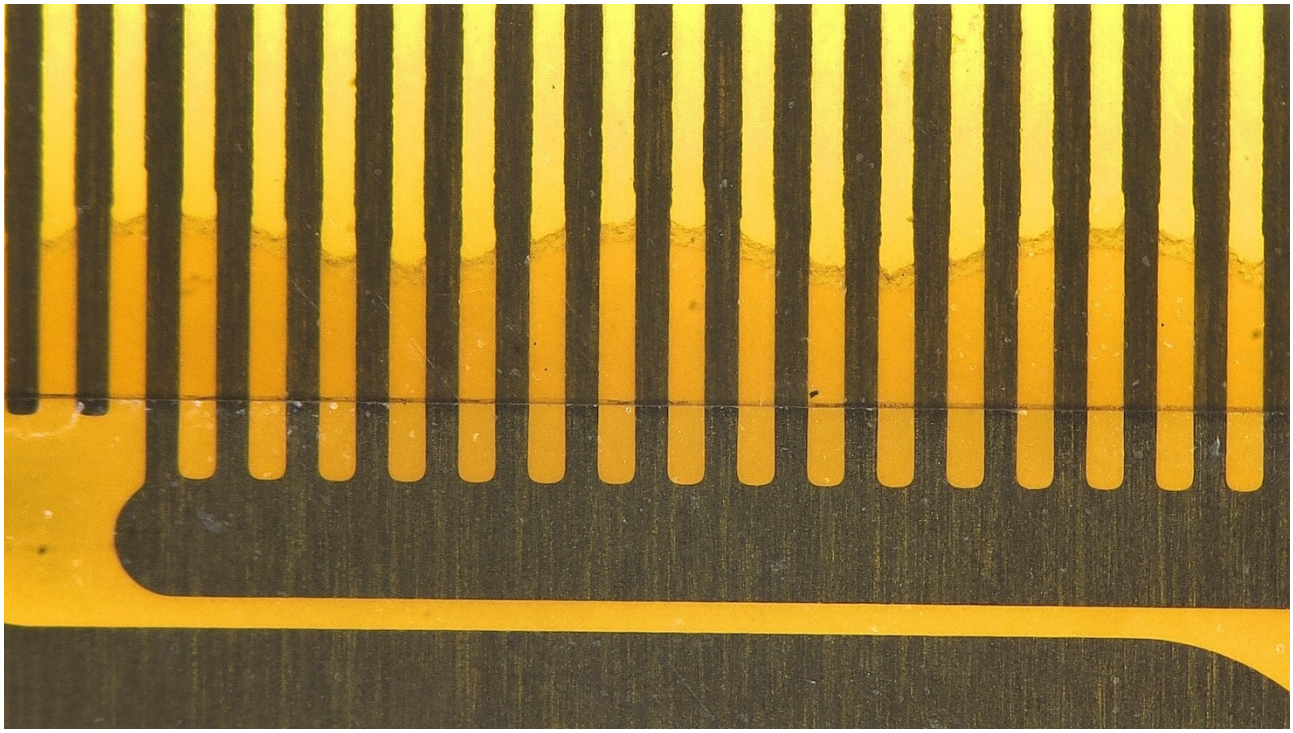


Figure 3-102 FPC line. Captured with O5CAM4K8MPA

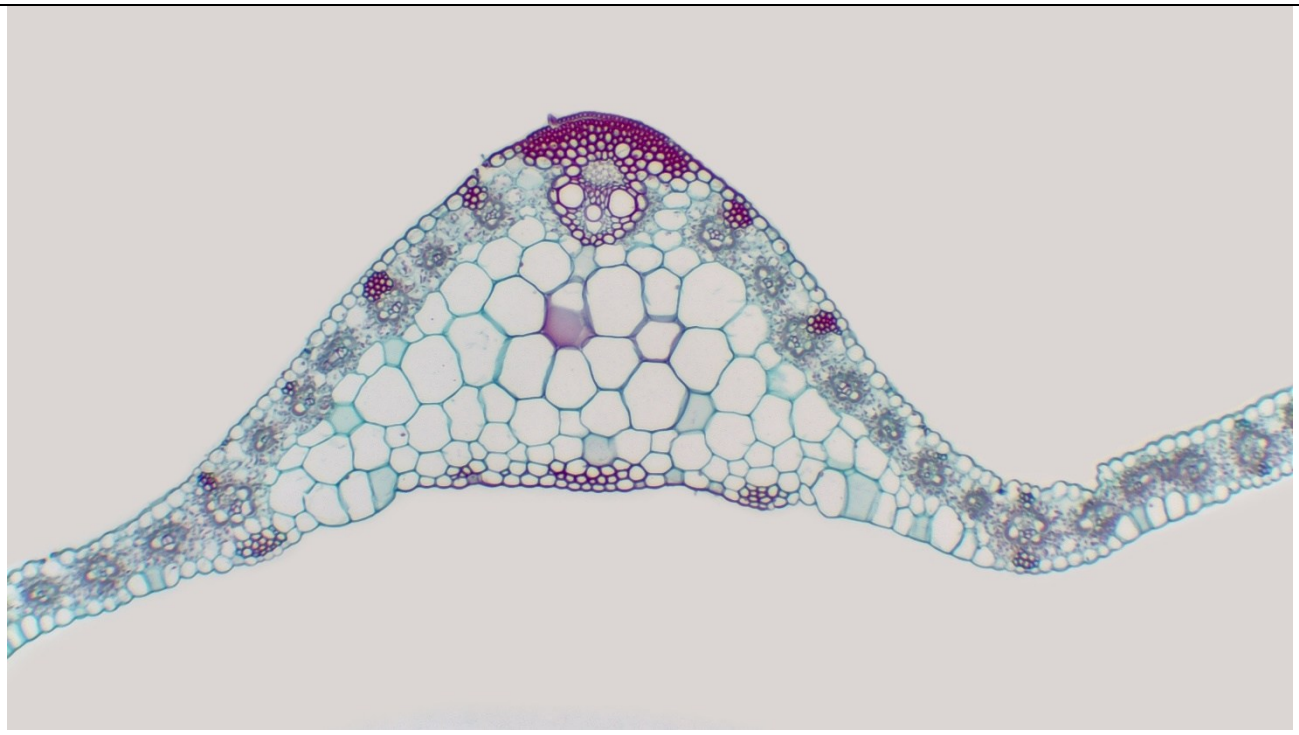


Figure 3-103 Fiber Connective Tissue.Sec. Captured with O5CAM4K8MPA

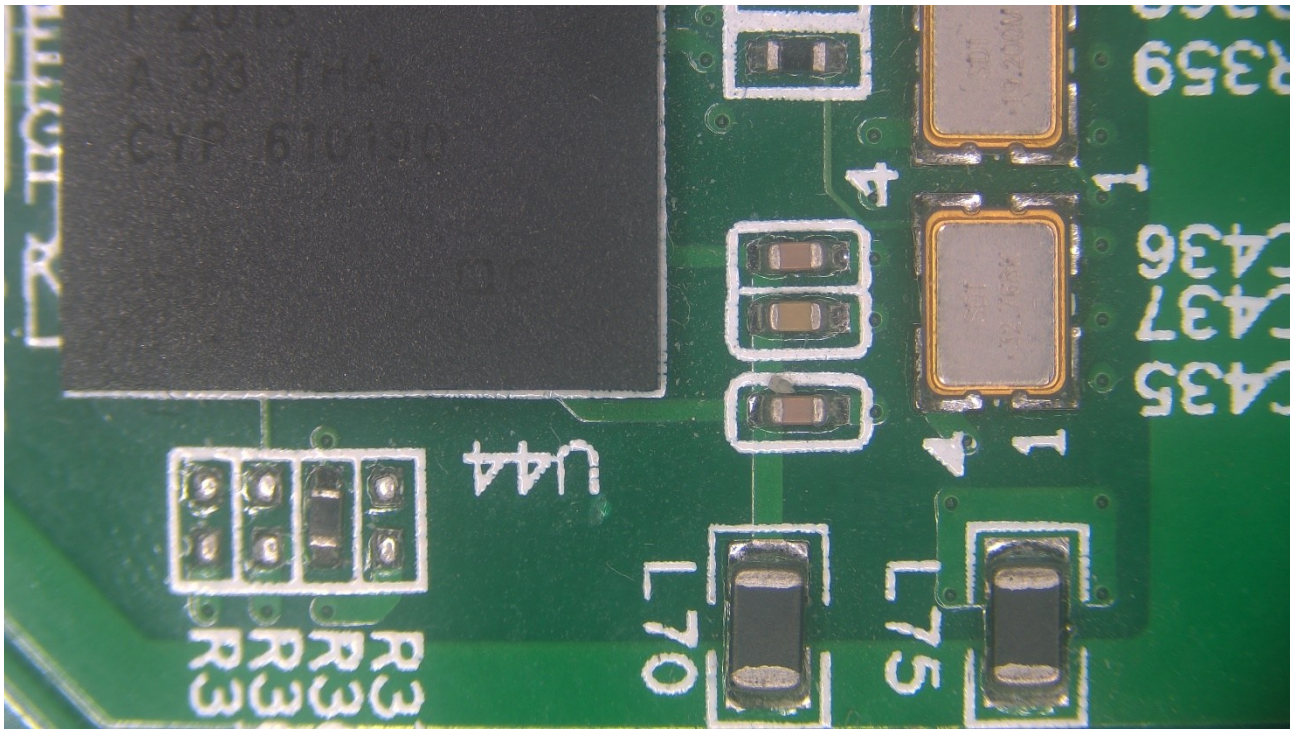


Figure 3-104 Circuit Board Captured with O5CAM4K8MPA

3.13 OCAM Series HDMI C-mount CMOS Camera

3.13.1 OCAM Series Camera's Basic Characteristic

Figure 3-105 The OCAM Series HDMI Camera

The OCAM Series HDMI Camera is intended for acquisition of digital images from stereo microscopes, biological microscopes. Here are basic characteristics of the camera:

- HDMI camera with Sony Exmor/STARVIS back-illuminated CMOS sensor
- Embedded XCamView software for controlling cameras with measurement, grid line overlay, and custom templates functions
- Providing automatic measurement functions such as automatic edge finding, parallel line distance measurement and rectangle measurement
- USB flash drive for captured image and video storage, support local preview and playback， picture to picture, picture to video comparison functions
- Excellent ISP with functions such as dark enhancement, sharpening, and 3D denoising
- Supports quick switching of default modes for biological and stereoscopic microscopes, making it convenient for users to in different scenarios

3.13.2 OCAM Series Camera's Datasheet and Functions (2)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity/Dark Signal	FPS/Resolution	Binning	Exposure(ms)
OCAM4K8MPA	Sony IMX678(C) 1/1.8"(7.68x4.32)	2.0x2.0	1364mv with 1/30s 0.15mv with 1/30s	30@3840*2160(HDMI)	1x1	0.04~1000
OCAM1080P2MPA	Sony IMX385(C) 1/2"(7.2x4.05)	3.75x3.75	1175mv with 1/30s 0.15mv with 1/30s	60@1920*1080(HDMI)	1x1	0.04~1000

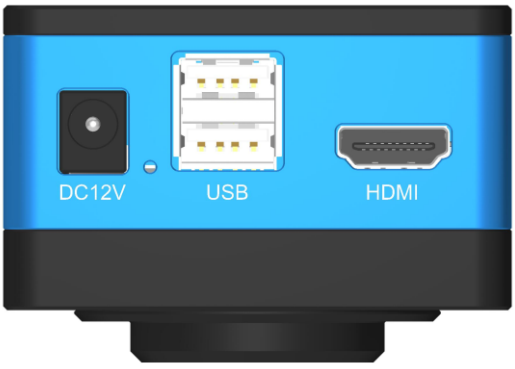


Figure 3-106 OCAM Series HDMI Camera Interface Panel Diagrams

Interface or Button	Function Description
DC12V	Power adapter connector (12V/1A)
LED	LED status indicator

USB	Connect USB mouse for easy operation with embedded **XCamView** software Connect USB flash drive to save pictures and videos
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 (**OCAM4K8MPA**) Comply with HDMI1.4 standard. 1080P format video output (**OCAM1080P2MPA**)
Video Output Interface	**Function Description**
HDMI Interface	Comply with HDMI1.4 standard 30fps@4K or 30fps@1080P(**OCAM4K8MPA**);60fps@1080P(**OCAM1080P2MPA**)
Other Function	**Function Description**
Video Record	Video format： 8M(3840*2160) H264/H265 encoded MP4 file(**OCAM4K8MPA**) 8M(3840*2160) H264/H265 encoded MP4 file(**OCAM1080P2MPA**) Frame rate during video record：30fps(**OCAM4K8MPA**);60fps(**OCAM1080P2MPA**)
Image Capture	8M (3840*2160, **OCAM4K8MPA**) JPEG/TIFF image in USB flash drive 2M (1920*1080, **OCAM1080P2MPA**) JPEG/TIFF image in USB flash drive
Measurement Saving	Measurement information saved in different layer with image content in Layered mode. Measurement information is saved together with image content in Burn in Mode
ISP	Exposure (Automatic / Manual Exposure) / Gain, White Balance, Sharpness, 3D Denoising, Saturation Adjustment, Contrast Adjustment, Brightness Adjustment, Gamma Adjustment, Color to Gray,50HZ/60HZ Anti-flicker Function
Image Operation	Zoom In/Zoom Out (Up to 10X), Mirror/Flip, Freeze, Cross Line, Compare(Comparison function between real-time video and pictures on storage media, image to image comparison), Embedded Files Browser, Video Playback, various 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
Operating Environment	
Operating Temperature (in Centidegree)	-10°~ 50°
Storage Temperature (in Centidegree)	-20°~ 60°
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 12V/1A Adapter

3.13.3 Dimension of OCAM Series Camera

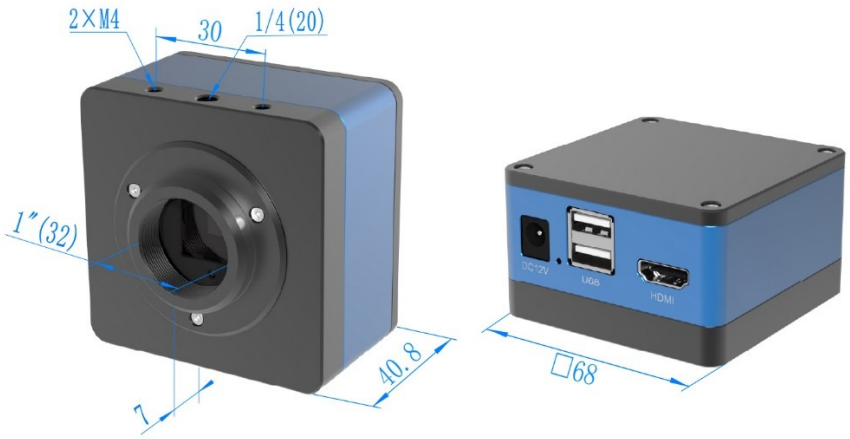


Figure 3-107 Dimension of OCAM Series

3.13.4 Packing Information for OCAM Series Camera

Figure 3-108 OCAM Series HDMI Camera Packing Information

	Standard Packing List		
A	Gift box: L:18.4cm W:17.8cm H:8.1cm		
B	OCAM Camera (pls specify which model you want)		
C	Power Adapter: Input: AC 100~240V 50Hz/60Hz, Output: DC 12V 1A **American standard**: Model: POWER-U-12V1A(MSA-C1000IC12.0-12W-US) **European standard**: Model: POWER-E-12V1A(MSA-C10001C12.0-12W-DE)		
D	USB Mouse		
E	HDMI Cable		
	Optional Accessory		
F	USB flash drive		
G	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
H	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 G and H 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;		
I	108015(Dia.23.2mm to 30.0mm Ring)/Adapter rings for 30mm eyepiece tube		
J	108016(Dia.23.2mm to 30.5mm Ring)/ Adapter rings for 30.5mm eyepiece tube		
K	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.)

3.13.5 Sample Photos Captured with OCAM Series Camera

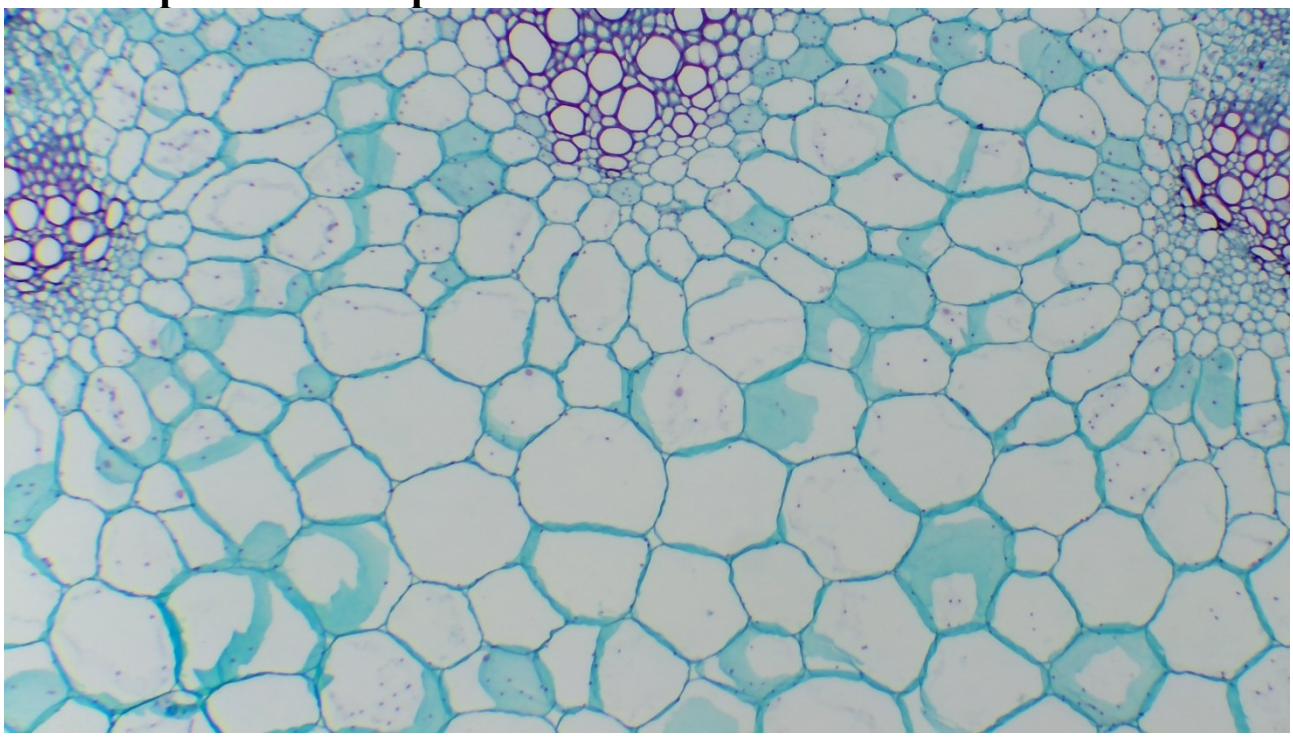


Figure 3-109 Sunflower Stem.C.S. Captured with OCAM4K8MPA

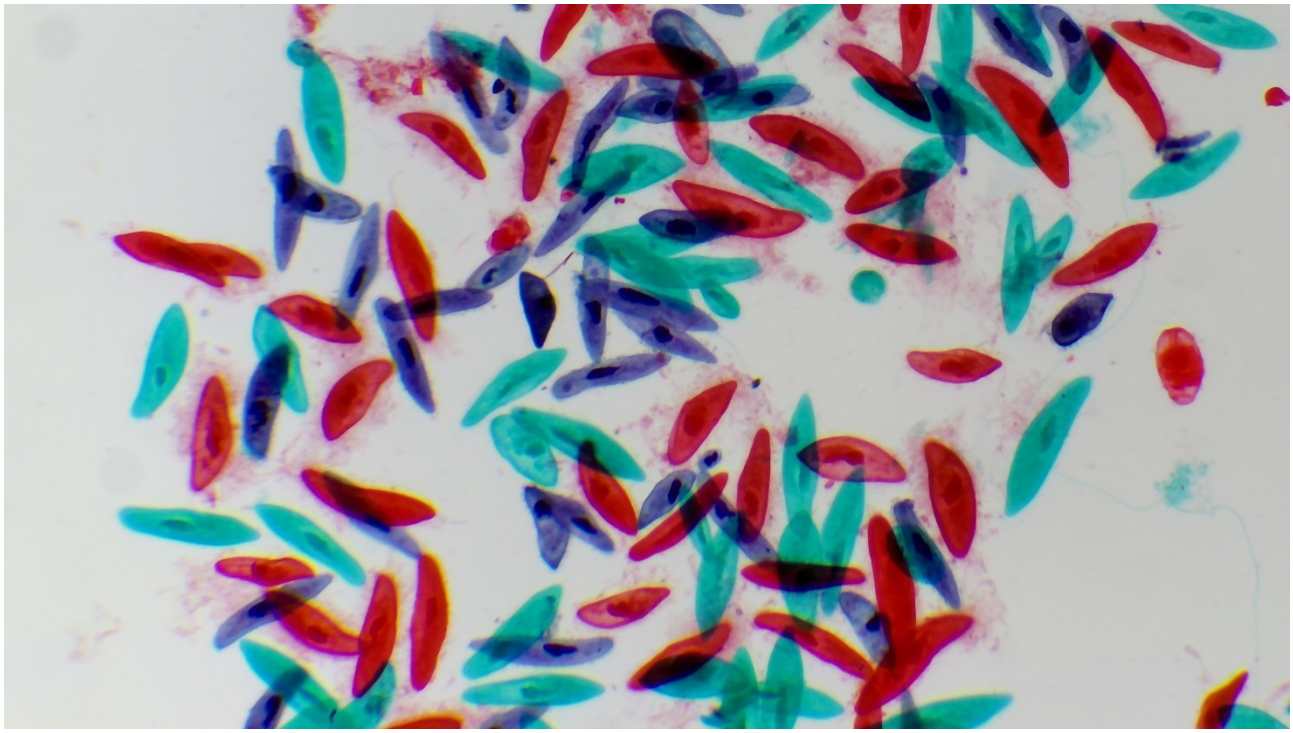


Figure 3-110 Paramecium.WM. Captured with OCAM4K8MPA

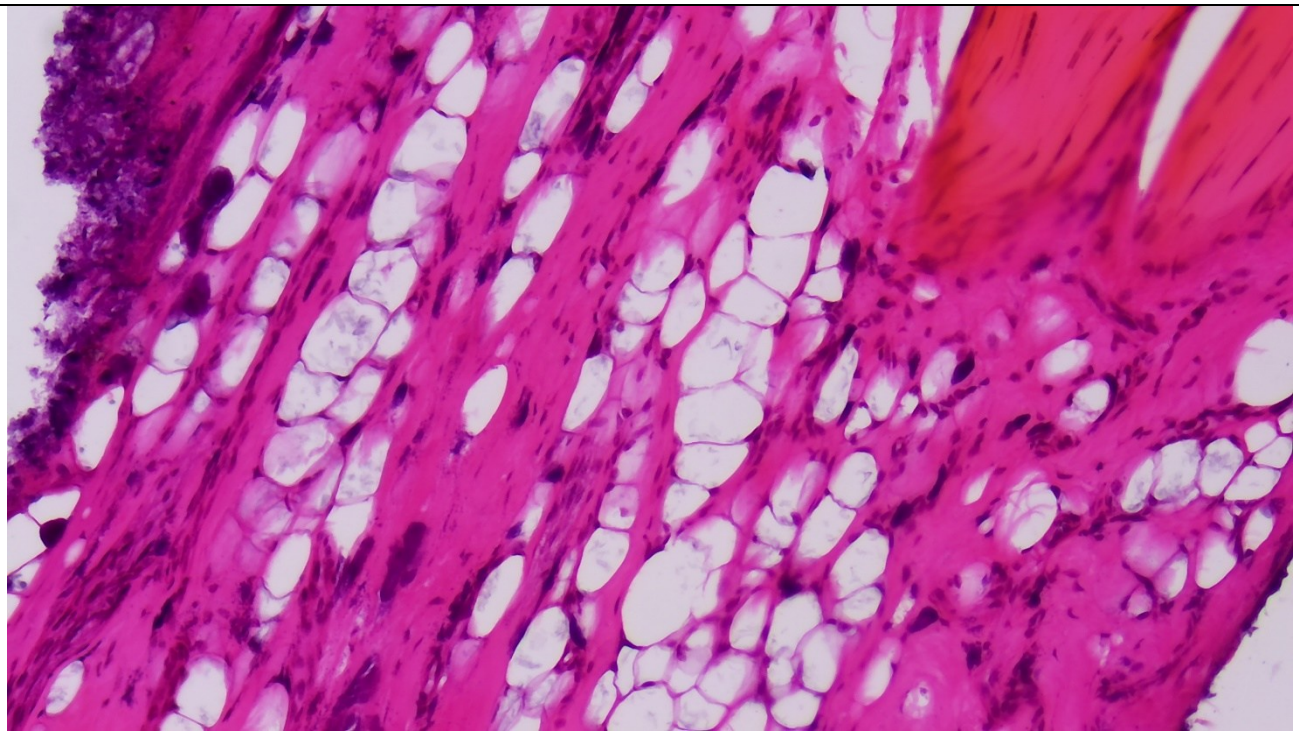


Figure 3-111 Fiber Connective Tissue.Sec. Captured with OCAM4K8MPA

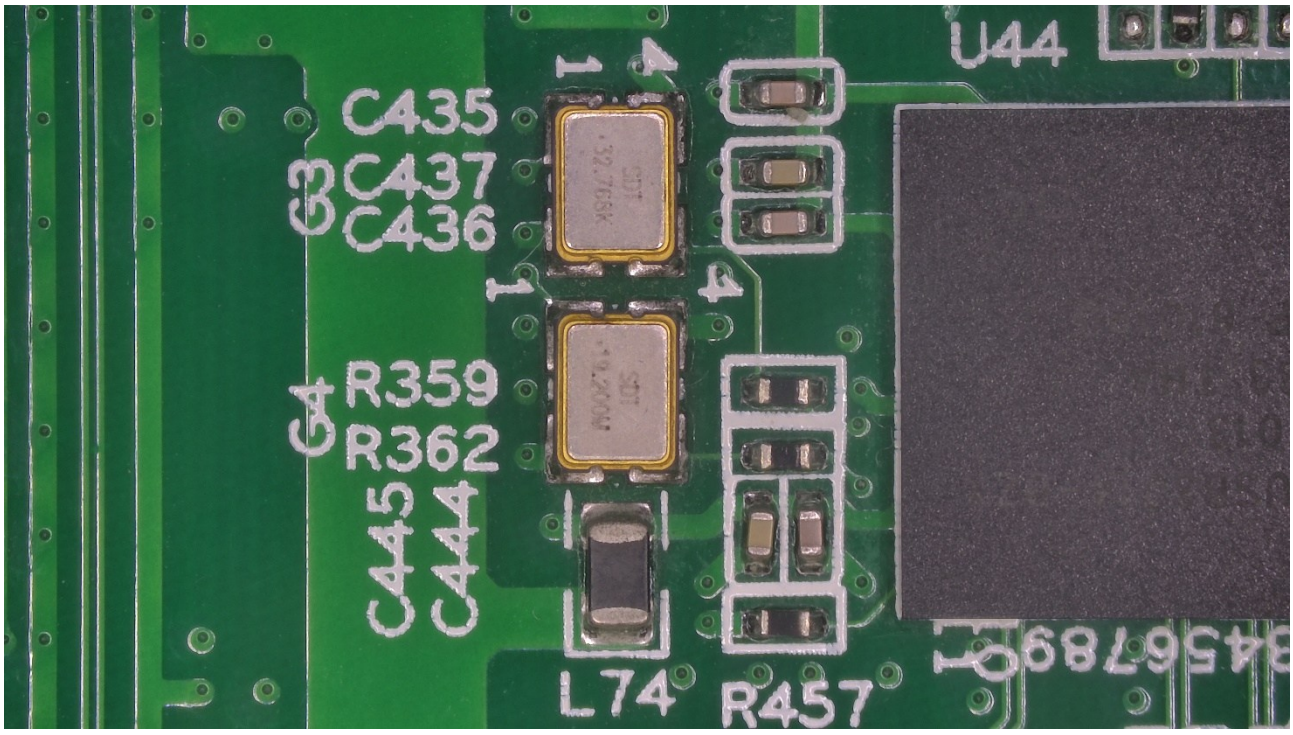


Figure 3-112 Circuit Board Captured with OCAM4K8MPA

3.14 XCAMLITE1080P Series HDMI C-mount CMOS Camera

3.14.1 XCAMLITE1080P Series Camera's Basic Characteristic

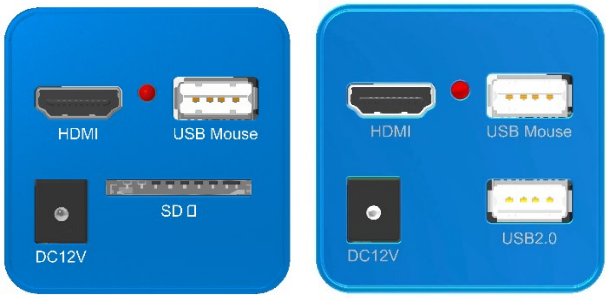
The XCAMLITE1080P series camera is intended to be used for the acquisition of digital images from the stereo microscope, biological microscope or online interactive teaching. The basic characteristic is listed as below:

- Sony Starvis back illuminated CMOS sensor
- 1080P HDMI video outputs
- SD card for the captured image and video storage
- Embedded XCamView for the control of the camera
- With strong ISP and other related processing functions

3.14.2 XCAMLITE1080P Series Camera's Datasheet and Functions (1)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity	FPS/Resolution	Binning	Exposure(ms)
XCAMLITE1080PA XPLITE1080PA	Sony IMX307(C) 1/2.8"(5.57x3.13)	2.9x2.9	1300mv with 1/30s	60@1920*1080(HDMI)	1x1	0.01~1000

C: Color; M: Monochrome;



Interface and Button	Function Description
HDMI	Comply with HDMI1.4 standard. 1080P format video output for standard FHD displayer
LED	LED status indicator
USB Mouse	Connect USB mouse for easy operation with embedded XCamView software
DC12V	Power adapter connection (12V/1A)
SD (Old Model)	Comply with SDIO3.0 standard and SD card could be inserted for video and images storage
USB2.0(New Model)	Connect USB flash drive to save pictures and videos
Video Output Interface	**Function Description**
HDMI Interface	Comply with HDMI1.4 standard; 60fps@1080P
Other Function	**Function Description**
Video Saving	Video format：2M(1920*1080) H264 encoded MP4 file; Video saving frame rate：50~60fps (related with SD card performance);
Image Capture	2M (1920*1080) JPEG image in SD card
Measurement Saving	Measurement information saved in different layer with image content; Measurement information is saved together with image content in burn in mode.
ISP Function	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
Image Operations	Zoom In/Zoom Out, Mirror/Flip, Freeze, Cross Line, Overlay, 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 / Thai / French / German / Japanese / Italian / Russian
Operating Environment	
Operating Temperature (in Centidegree)	-10°~ 50°
Storage Temperature (in Centidegree)	-20°~ 60°
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 12V/1A Adapter

3.14.3 Dimension of OCAM Series Camera

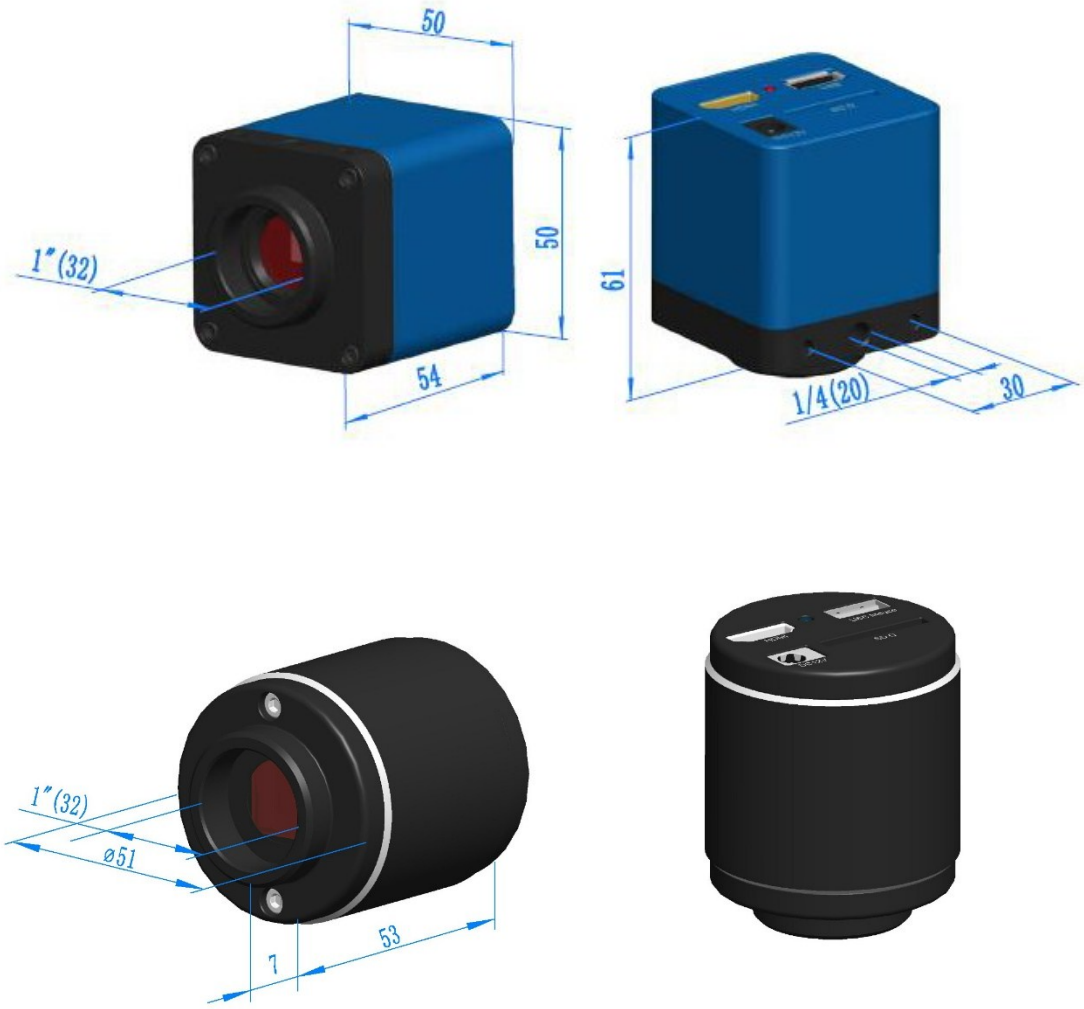


Figure 3-113 Dimension of XCAMLITE1080P Series

3.14.4 Packing Information for XCAMLITE1080P Series Camera

Figure 3-114 XCAMLITE1080P Series Camera's Packing Information (Square and Cylinder-shaped)

Standard Packing List			
A	Gift box : L:17.4cm W:17.4cm H:7.6cm (1pcs,0.54kg/ box)		
B	A XCAMLITE1080P series camera		
C	**Power Adapter**: Input: AC 100~240V 50Hz/60Hz, Output: DC 12V 1A **American standard**: Model: GS12U12-P1I 12W/12V/1A: UL/CUL/BSMI/CB/FCC **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		
D	HDMI cable		
E	USB mouse/USB wireless mouse		
Optional Accessory			
F	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
G	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 F and G 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;		

H	108015(Dia.23.2mm to 30.0mm ring)/Adapter rings for 30mm eyepiece tube	
I	108016(Dia.23.2mm to 30.5mm ring)/ Adapter rings for 30.5mm eyepiece tube	
J	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.)
K	SD card	

3.14.5 Sample Photos Captured with XCAMLITE1080P Series Camera

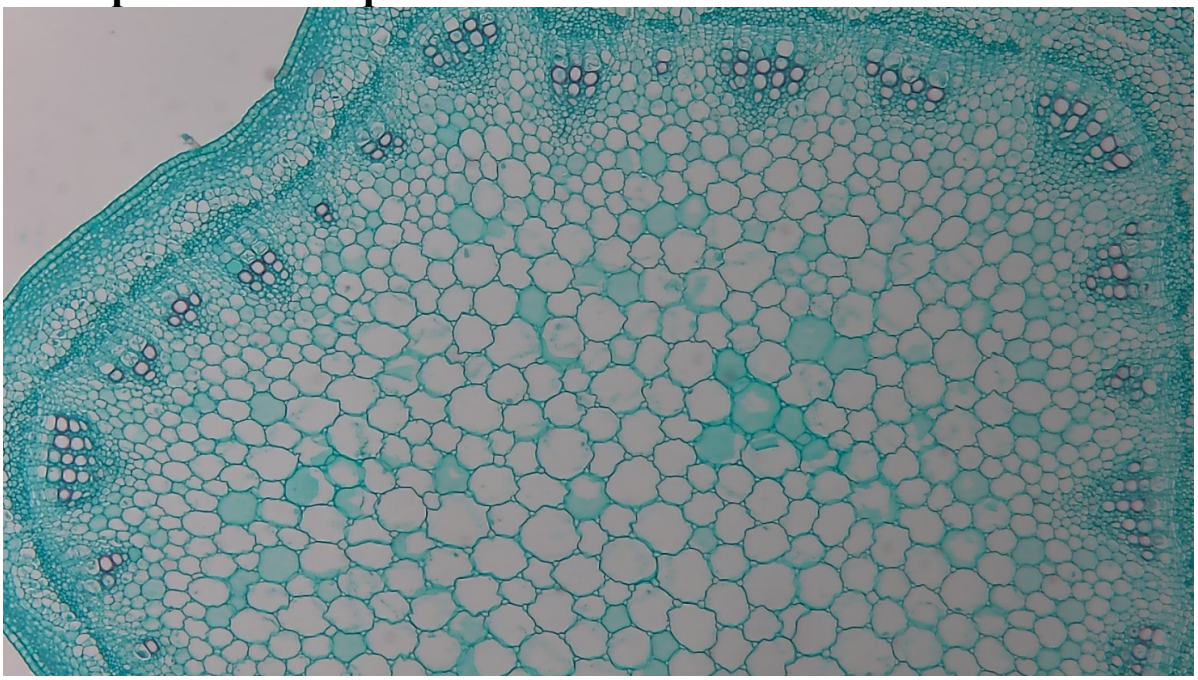


Figure 3-115 Alfalfa Stem Captured with XCAMLITE1080PA

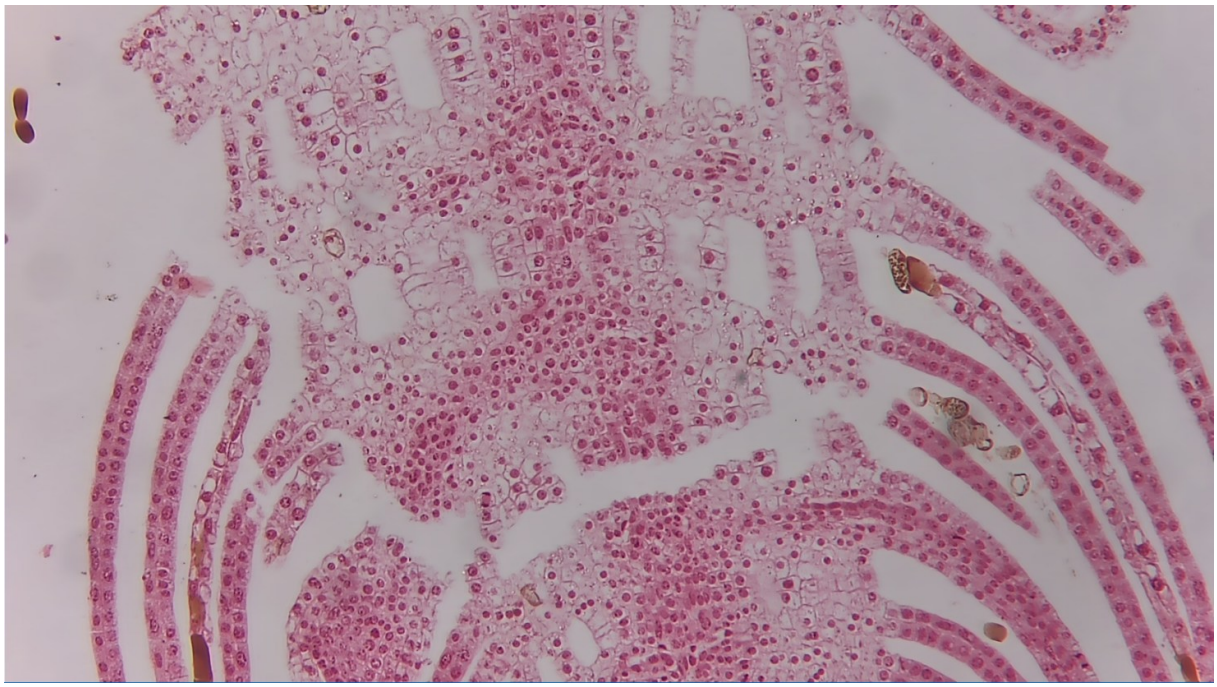
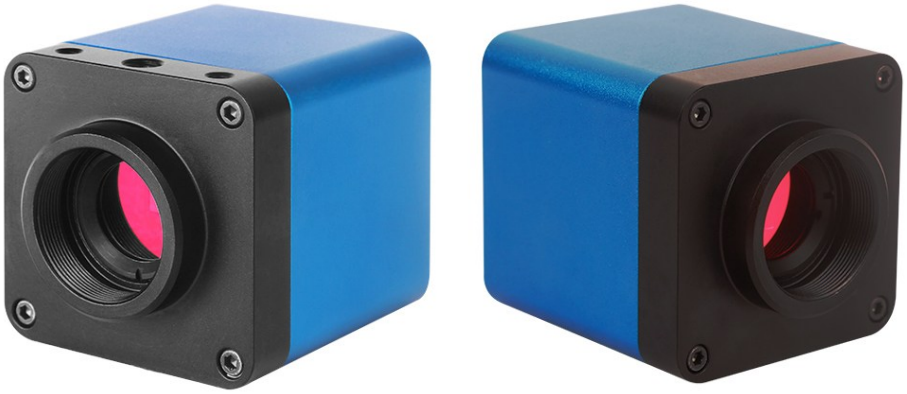


Figure 3-116 Top Bud. Captured with XCAMLITE1080PA

3.15 XCAM0720PHC C-mount HDMI CMOS Camera

3.15.1 XCAM0720PHC's Basic Characteristic

- Through standard HDMI interface to stream the video to displayer or HDTV;
- Aptina CMOS sensor;
- Easy connecting to other equipment on the production line with the C-mount optical interface;
- High-resolution and high frame rate, perfect color reproduction, highly integrated and compact, low failure rate and stable performance;
- 1280 × 720 (720P) resolutions to match the current high-definition displayer on the market;
- XCAM720PHC embedded XCamView based on the Qt platform. The camera characteristic can be controlled by XCamView through the mouse. The other basic processing and choosing can also be realized by the XCamView;
- XCAM0720PHC can meet various applications and can be widely used in industrial inspection, education and research, materials analysis, precision measurement, medical analyses etc.



3.15.2 XCAM0720PHC's Datasheet (2)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Responsivity Dynamic range SNRmax	FPS/Resolution	Binning	Exposure(ms)
XCAM0720PHC XP0720C	720P/2M/IMX322(C) 1/2. 8"(5.78x3.02)	2.8 x2.8	510mv with 1/30s (G Sensitivity) 0.15mv with 1/30s (Dark Signal)	30@1280x720 (HDMI) 1920x1080 (Capture)	1x1	0.06ms~1900ms

Interface & Button Functions	
Photos of XCAM0720PHC	
Camera Interface	
HDMI	HDMI Output Port
USB	USB Mouse for XCamView Control
DC12V	Power Input Slot
SD	SD Card Slot
Overall Dimensions	
Width x Depth x Height	50 mm (1.97") x 50 mm (1.97") x 61mm (2.4")
Shipping Weight	0.47kg (0.55 lbs)
Operating Environment	

Operating Temperature (in Centidegree)	-10~ 50
Storage Temperature (in Centidegree)	-20~ 60
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V/1A Adapter
Optional Accessories	
Lens	C-mount Lens
Cable	HDMI Cable
Memory Card	SD Card
Mouse	USB mouse/USB Wireless Mouse

3.15.3 Hardware Interface and XCamView UI Description

The XCAM0720PHC light indicator flashes about 15s after the power on. The camera will load XCamView, and then the system begins to work. Auto exposure and white balance are the default state now.

- HDMI：The HDMI cable connected to the HDMI diaplayer;
- USB：USB mouse;
- DC 12V：Power in 12V/1A；
- LED: The blue LED indicator;
- SD：SD card;

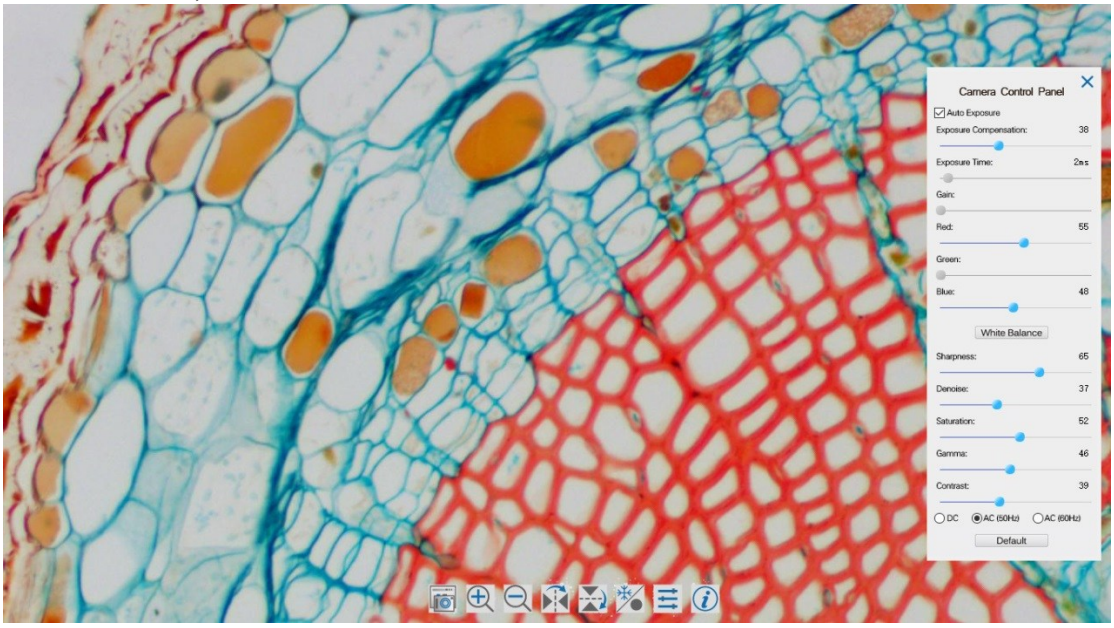


Figure 3-117 The GUI of the embeded camera control panel of XCamView in XCAM720PHC

Figure 3-118 XCamView toolbar for XCAM0720PHC

Move mouse to the bottom of the HDMI displayer, the bottom toolbar will be available. The function of each toolbar buttons are described as follows:

1：Image Capture
2：Digital Zoom In
3：Digital Zoom Out
4：Horizontal Flip
5：Vertical Flip
6：Video Freez /Cancel Video Freeze
7：Display/Hide the Camera Control Panel
8：Display the XCamView Version Information

3.15.4 Dimension of XCAM0720PHC

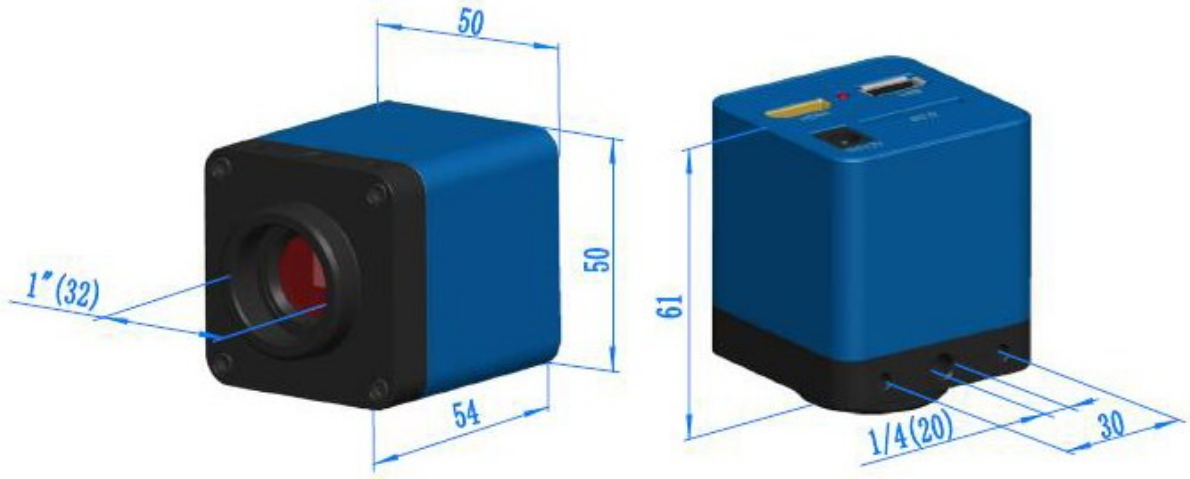


Figure 3-119 Dimension of XCAM720PHC Series Camera

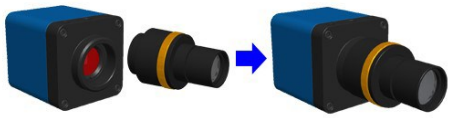
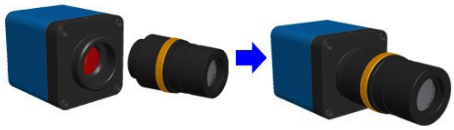
3.15.5 Packing Information for XCAM0720PHC

Packing Information for XCAM0720PHC

Standard Packing List	
A	Gift box : L:17.5cm W:17.5cm H:8.5cm (1pcs, 0.85kg/ box)

B	XCAM0720PHC		
C	Power Adapter: Input: AC 100~240V 50Hz/60Hz, Output: DC 12V 1A **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		
	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		
D	HDMI Cable		
E	USB mouse/USB Wireless Mouse		
	Optional Accessory		
F	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
		C-Mount to Dia.31.75mm eyepiece tube (Please choose 1 of them for your telescope)	108008/ATA037 108009/ATA050 108010/ATA075
G	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
		C-Mount to Dia.31.75mm eyepiece tube (Please choose 1 of them for your telescope)	108011/FTA037 108012/FTA050 108013/FTA075
	Note: For F and G 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;		
H	108015(Dia.23.2mm to 30.0mm ring)/Adapter rings for 30mm eyepiece tube		
I	108016(Dia.23.2mm to 30.5mm ring)/ Adapter rings for 30.5mm eyepiece tube		
J	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.)	
K	SD card(4G or 8G)		

3.15.6 Extension of XCAM0720PHC 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> 
XCAM720PHC+AMAXXX(23.2mm Adapter)</td><td> 
XCAM720PHC+FMAXXX(23.2mm Adapter)</td></tr>
<tr><td>Telescope Camera:</td><td> 
XCAM720PHC+ATAXXX(31.75mm Adapter)</td><td> 
XCAM720PHC+FTAXXX(31.75mm Adapter)</td></tr>
</table>

4 Network Multi-Interface Camera

4.1 WUCAM Series WiFi + USB CMOS Camera

4.1.1 WUCAM Series Camera's Basic Characteristic

The WUCAM series cameras can connect to smart devices and computers via wireless networks, or connect directly to computers via USB Type-C (WUCAM8MPA/WUCAM1080PB) or Micro USB (WUCAM1080PA) interfaces for capturing video and images from stereo microscopes or biological microscopes.

- Sony Starvis 2 back illuminated CMOS sensor with lower noise and better photosensitive characteristics
- USB Type-C/WiFi multiple video outputs, using 802.11AC WiFi5 chip with high gain antenna, with higher transmission bandwidth (WUCAM8MPA/WUCAM1080PB)
- Micro USB/WiFi multi-interface output, utilising an 802.11b/g/n WiFi4 chip (WUCAM1080PA)
- Provide rich ISP processing functions, Hue, Saturation, ROI white balance
- ToupView/ToupLite software for PC, fully applicable for biological and stereological observations
- iOS/Android app for smart phones or tablets

Figure 4-1 WUCAM8MPA/WUCAM1080PB Camera

Figure 4-2 WUCAM1080PA Camera

4.1.2 WUCAM Series Camera's Datasheet and Functions (3)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity Dark Signal	Sensor Output (FPS/Resolution)	Binning	Exposure (ms)
WUCAM8MPA	Sony IMX678(C) 1/1.8"(7.68x4.32)	2.0x2.0	1364mv with 1/30s 0.15mv with 1/30s	30@3840*2160	1x1	0.04~1000
WUCAM1080PB	Sony IMX678(C) 1/1.8"(7.68x4.32)	2.0x2.0	1364mv with 1/30s 0.15mv with 1/30s	60@1920*1080	1x1	0.04~1000
WUCAM1080PA	Sony IMX307(C) 1/2.8"(5.57x3.13)	2.9x2.9	1300mv with 1/30s	60@1920*1080	1x1	0.01~1000

Camera Model	USB Type-C(FPS/Resolution)	WiFi(FPS/Resolution)
WUCAM8MPA	30@3840*2160 30@2688*1512 30@1920*1080	30@3840*2160 30@1920*1080 30@1280*720
WUCAM1080PB	60@1920*1080	60@1920*1080 60@1280*720
WUCAM1080PA	50@1920*1080 (Micro USB)	50@1920*1080

Figure 4-3 Interface Panel Diagram for WUCAM8MPA / WUCAM1080PB Camera

Interface	Function Description
USB	Connect the USB Type C 5V/2A power supply to power the camera, at this time the camera provides WiFi connection mode. Connect the USB Type C cable to the USB port of the computer to achieve video image output.
Slide Switch	WiFi AP/STA mode sliding switch, dial to the left for AP, dial to the right for STA mode. Connecting 2~3 clients for a single camera is recommended
RP-SMA Antenna Interface	It is commonly used for antenna connections in wireless routers and other devices.
LED	LED status indicator
Video Output Interface	**Function Description**
USB Interface	Connect to PC USB Type C cable to transfer MJPEG real-time images, support 30fps@3840*2160(WUCAM8MPA) 60fps@1920*1080(WUCAM1080PB).
WiFi Interface	Support 802.11ac protocols in AP/STA mode; 30fps@3840*2160(WUCAM8MPA) 60fps@1920*1080(WUCAM1080PB).

Software Environment under USB / WiFi Output	
White Balance	Auto, Manual and ROI White Balance
Color Technique	Ultra-Fine Color Engine
ISP	Exposure (Automatic/Manual Exposure)/ Gain, White Balance (Auto, Manual and ROI White Balance), Hue, Saturation Adjustment， Contrast Adjustment， Brightness Adjustment， Gamma Adjustment，50HZ/60HZ Anti-flicker，Mirror/Flip， Color to Grey, Network Bandwidth Adjustment
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 / 11(32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory: 4GB or More
	WiFi Adaptor: Support 802.11 ac
	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
Power Supply	USB Type C DC 5V/2A Adapter

Figure 4-4 WUCAM1080PA Camera Interface Panel Diagram

Interface and Indicator	Function Description
Micro USB	Connect to 5V power supply with Micro USB cable, Camera provides WiFi AP connection mode; Connecting to PC with Micro USB cable, Camera provides UVC function.
WiFi LED	WiFi function indicator
PWR LED	Power indicator
Video Output Interface	**Function Description**
USB Video Interface	Connecting USB port of PC for video transfer; MJPEG format video, supported 50fps@1080P;
WiFi Interface	Support 802.11b/g/n protocols in AP mode; 50fps@1920*1080 H264 encoded video and Jpeg image capture; support up to 3 clients, 1 client connection is the best.
Other Function	**Function Description**
Color Technique	Ultra-Fine Color Engine;
ISP Function	Exposure(Automatic / Manual Exposure) , Gain， White Balance(Automatic / Manual / ROI Mode)，Sharpening， 3D Denoise， Saturation Adjustment， Contrast Adjustment， Brightness Adjustment，Gamma Adjustment， Color to Gray， 50HZ/60HZ Anti-flicker Function, Anti-flicker， Mirror/Flip
Capture/Control SDK	Windows/Linux/macOS/Android Multiple Platform SDK;
Recording System	Still Picture or Movie
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory: 4GB or More
	WiFi Adaptor: Support 802.11 b/g/n
	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
Power Supply	USB DC 5V/1A Adapter

4.1.3 Dimension of WUCAM Series Camera

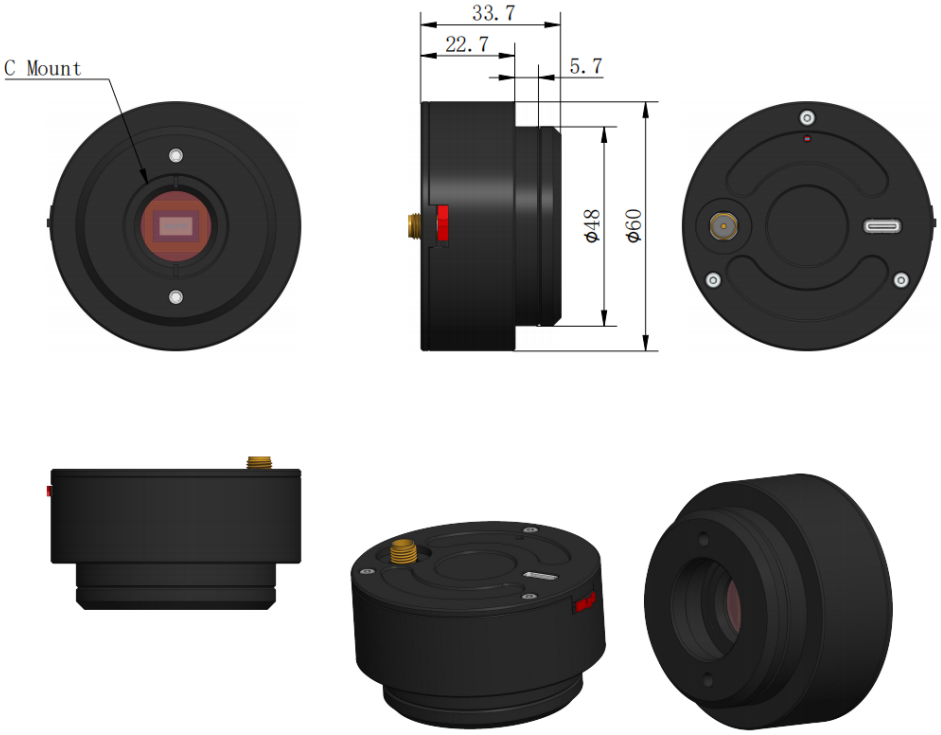


Figure 4-5 Dimension of WUCAM8MPA/WUCAM1080PB Camera

Figure 4-6 Dimension of WUCAM1080PA Camera

4.1.4 Packing Information for WUCAM Series Camera

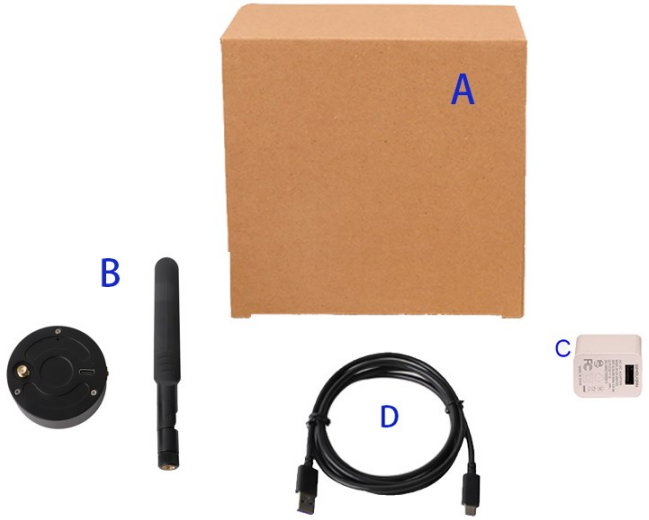


Figure 4-7 Packing Information for WUCAM Series Camera

Standard Packing List	
A	Gift box: L:17cm W:15cm H:6cm (1pcs, 0.5kg/ box)
B	One WUCAM series camera
C	Power Adapter: Input: AC 100~240V 50Hz/60Hz, Output: DC 5V 2A **American standard**: Model: POWER-U-5V2A(SK12G-0500100U): UL/CE/FCC **European standard**: Model: POWER-E-5V2A(SK12G-0500100V): UL/CE/FCC
D	USB Type C cable 1.5 metres

Figure 4-8 Packing Information of WUCAM1080PA Camera

Standard Packing List			
A	Gift box : L:17.4cm W:17.4cm H:7.6cm (1pcs, 0.54kg/ box)		
B	WUCAM1080PA		
C	Power Adapter: Input: AC 100~240V 50Hz/60Hz, Output: DC 5V 1A **American standard**: Model: POWER-U-5V1A(SK12G-0500100U): UL/CE/FCC **European standard**: Model: POWER-E-5V1A(SK12G-0500100V): UL/CE/FCC		
D	Micro USB data cable 1.5m		
Optional Accessory			
E	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
F	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 **E** and **F** 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;		
G	108015(Dia.23.2mm to 30.0mm Ring)/Adapter rings for 30mm eyepiece tube		
H	108016(Dia.23.2mm to 30.5mm Ring)/ Adapter rings for 30.5mm eyepiece tube		
I	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.)	

4.2 WECAM Series +WiFi +Ethernet CMOS Camera

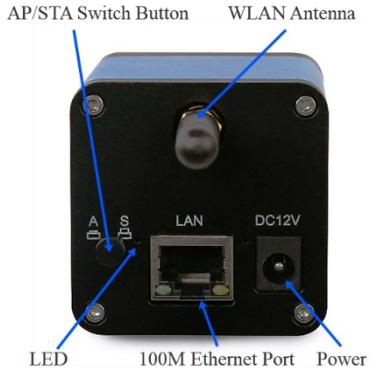
4.2.1 The Characteristic of WECAM Series Camera

The WECAM series camera is intended to be used for the acquisition of digital images from the stereo microscope, biological microscope or online interactive teaching. The basic characteristics are listed as below:

- Sony Exmor back illuminated CMOS sensor
- LAN, WiFi(AP/STA mode) multiple video outputs
- Powerful ISP functions
- ToupView/ToupLite software for PC
- iOS/Android app for smart phones or tablets

4.2.2 WECAM Series Camera Datasheet and Functions (1)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity Dark Signal	FPS/Resolution	Binning	Exposure (ms)
WECAM5MPA	5M/Sony IMX178(C) 1/1.8"(6.22x4.67)	2.4x2.4	425mv with 1/30s 0.15mv with 1/30s	30@2592*1944	1x1	0.03ms~918ms



Interface	Function Description
WiFi Antenna	Antenna for the WiFi signal
LED	LED status indicator When the power adapter is inserted into the power slot, the LED light will be on and the starting process will last about 8 seconds; WiFi AP mode: the LED flashes fast; WiFi STA mode: the LED flashes slowly; LAN mode: the Ethernet indicator and the LED light will be on;
DC12V	Power jack (12V/1A).
AP/STA Switch Button	Press to switch between AP and STA mode;
LAN	100M Ethernet port to connect to the router or computer to transfer video. Video can be transmitted via LAN or WiFi. LAN and WiFi cannot be used at the same time. The priority of LAN connection is higher than WiFi;
Video Output Interface	Function Description
LAN Interface	30fps@2592*1944 H264 encoded video and Jpeg image capture
WiFi Interface	Support 802.11ac protocols in AP/STA mode; 30fps@2592*1944 H264 encoded video and Jpeg image capture
Other Function	Function Description
Software Environment under LAN/WiFi/Output	
White Balance	Auto White Balance
Color Technique	Ultra-Fine Color Engine

ISP	Exposure(Automatic/Manual Exposure)/ Gain， White Balance(Manual / One Push), Sharpening，3D Denoise， Saturation Adjustment，Contrast Adjustment，Brightness Adjustment，Gamma Adjustment，50HZ/60HZ Anti-flicker，Mirror/Flip，Network Bandwidth Adjustment
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
	Ethernet: RJ45 Interface, 100M bps or more
	WiFi Adaptor: Support 802.11 b/g/n/ac
	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
Power Supply	DC 12V/1A Adapter

4.2.3 Dimension of WECAM Series Camera

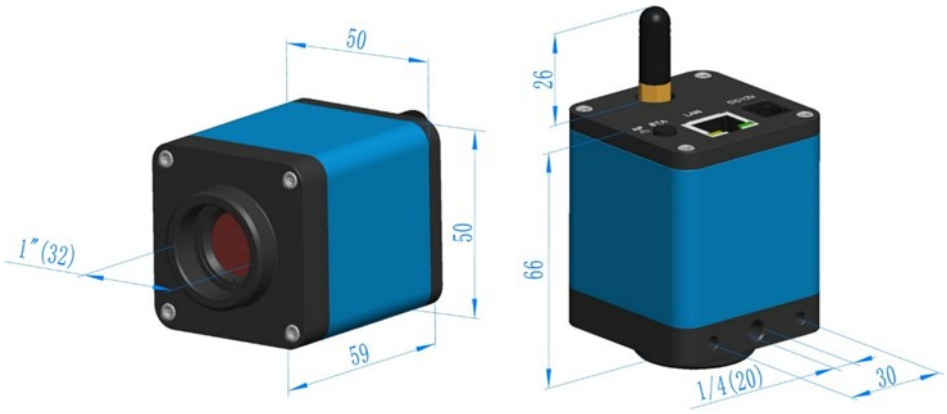


Figure 4-9 Dimension of WECAM Series Camera

4.2.4 Packing Information for WECAM Series Camera

Figure 4-10 Packing Information for WECAM Series Camera

Standard Packing List			
A	Gift box : L:15cm W:15cm H:10cm (1pcs, 0.46kg/ box)		
B	One WECAM series camera		
C	Power Adapter: Input: AC 100~240V 50Hz/60Hz, Output: DC 12V 1A **American standard:** Model: GS12U12-P1I 12W/12V/1A: UL/CUL/BSMI/CB/FCC **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		
D	CD (Driver & utilities software, Ø12cm)		
Optional Accessory			
E	Ethernet cable		
F	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
G	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 F and G 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;		
H	108015(Dia.23.2mm to 30.0mm ring)/Adapter rings for 30mm eyepiece tube		
I	108016(Dia.23.2mm to 30.5mm ring)/ Adapter rings for 30.5mm eyepiece tube		
J	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.)	

4.3 WEUCAM Series +WiFi +Ethernet + USB CMOS Camera

4.3.1 The Characteristic of WEUCAM Series Camera

The WEUCAM series cameras can be connected to smart devices and computers through the network or directly connected to a computer via USB. It can be used for video and image acquisition of stereo microscope or biomicroscope, and can also be used for interactive microscope teaching system, which is convenient for teachers to teach and students to learn. The main features are as follows:

- Sony Exmor back illuminated large-sized CMOS sensor with lower noise and better photosensitive characteristics
- USB/LAN/WiFi multiple video outputs, WiFi adopts 802.11AC chip, with higher transmission bandwidth
- Powerful ISP functions, real-time video transmission can reach up to 30fps/4M
- ToupView/ToupLite software for PC, fully applicable for biological and stereological observations
- iOS/Android app for smart phones or tablets

4.3.2 WEUCAM Series Camera Datasheet and Functions (1)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity/Dark Signal	FPS/Resolution	Binning	Exposure (ms)
WEUCAM4MPA	4M/Sony IMX347(C) 1/1.8"(7.8x4.38)	2.9x2.9	921mv with 1/30s 0.15mv with 1/30s	30@2688*1512(USB) 30@2688*1512(NETWORK)	1x1	0.021ms~1000ms

Interface	Function Description
LAN	100M Ethernet port to connect to the router or computer to transfer video. Video can be transmitted via LAN or WiFi. LAN and WiFi cannot be used at the same time. The priority of LAN connection is higher than WiFi.
USB	Connect the Micro USB 5V/1A power supply to power the camera, at this time the camera provides LAN or WiFi connection mode. Connect the Micro USB cable to the USB port of the computer to achieve video image output.
AP/STA Switch Button	Press to switch between AP and STA mode. Connecting 2~3 clients for a single camera is recommended
Video Output Interface	**Function Description**
LAN Interface	30fps@2688*1512 H264 encoded video and Jpeg image capture.
USB Interface	Connect to PC via Micro USB cable to transfer MJPEG/H264 real-time images, support 30fps@2688*1512 and 30fps@1920*1080.
WiFi Interface	Support 802.11ac protocols in AP/STA mode; 30fps@2688*1512 H264 encoded video and Jpeg image capture.
Software Environment under USB/LAN/WiFi/Output	
White Balance	Auto, Manual and ROI White Balance
Color Technique	Ultra-Fine Color Engine

ISP	Exposure(Automatic/Manual Exposure)/ Gain, White Balance(Auto, Manual and ROI White Balance), Sharpening, 3D Denoise, Saturation Adjustment， Contrast Adjustment， Brightness Adjustment， Gamma Adjustment，50HZ/60HZ Anti-flicker， Mirror/Flip， color to grey, Network Bandwidth Adjustment
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 / 11(32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory: 4GB or More
	Ethernet RJ45 Interface: 100M bps or more
	WiFi Adaptor: Support 802.11 b/g/n/ac
	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
Power Supply	Micro USB DC 5V/1A Adapter
Camera Size	
Length x Width x Height	50 mm x 50mm x 112mm
Shipping Weight	0.19 kg

4.3.3 Dimension of WEUCAM Series Camera

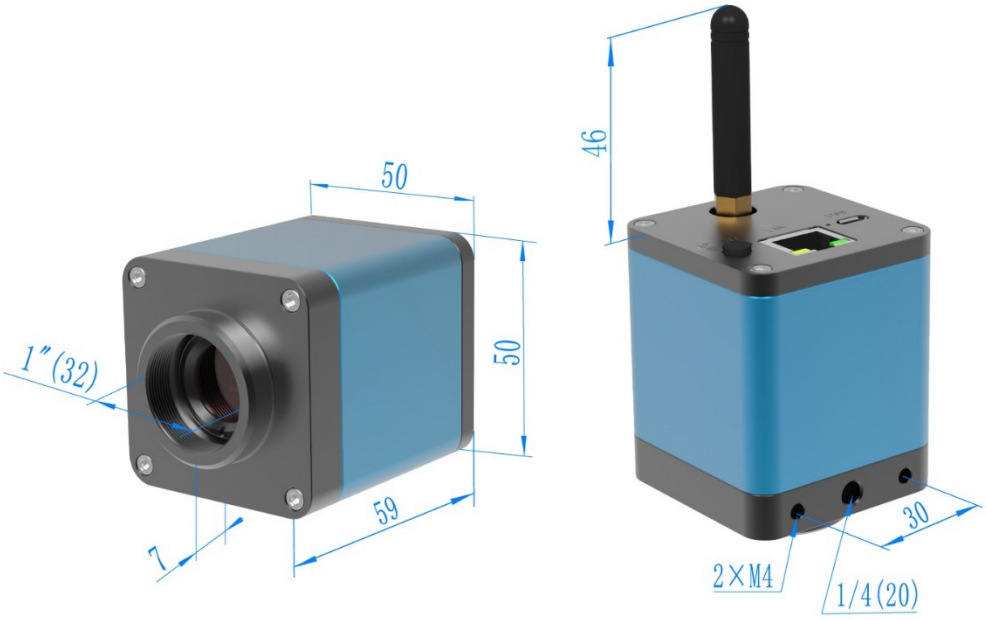


Figure 4-11 Dimension of WEUCAM Series Camera

4.3.4 Packing Information for WEUCAM Series Camera

Figure 4-12 Packing Information for WEUCAM Series Camera

Standard Packing List			
A	Gift box : L:15cm W:15cm H:10cm (1pcs, 0.5kg/ box)		
B	One WEUCAM series camera		
C	Power Adapter: Input: AC 100~240V 50Hz/60Hz, Output: DC 5V 1A American standard: Model: POWER-U-5V1A(SK12G-0500100U): UL/CE/FCC European standard: Model: POWER-E-5V1A(SK12G-0500100V): UL/CE/FCC		
D	Micro USB cable 1.5 metres		
E	CD (Driver & utilities software, Ø12cm)		
Optional Accessory			
F	Ethernet cable		
G	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
H	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 G and H 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;		
I	108015(Dia.23.2mm to 30.0mm ring)/Adapter rings for 30mm eyepiece tube		
J	108016(Dia.23.2mm to 30.5mm ring)/ Adapter rings for 30.5mm eyepiece tube		
K	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.)	

5 Split-Type Multi-Interface Camera

5.1 X5CAM4K_MR Series HDMI/NETWORK/USB 3.0 Multi-Output C-Mount CMOS Camera

5.1.1 X5CAM4K_MR Series Camera's Basic Characteristic

The X5CAM4K_MR is a separated long-distance transmission HDMI camera developed by Touptek, the master device and the image acquisition sub-device are connected by USB3.0 cable, the connection cable is up to 10 metres long, with USB3.0 A male to MicroB interface and screw lock. Separate design can be convenient for customers to integrate the small volume of capture sub-equipment into the host of the relevant industry, the master device external, easy to connect to the monitor or computer for operation and control. The basic characteristic is listed as below:

- Sony STARVIS 2 back-illuminated CMOS sensor
- 4K HDMI/ NETWORK/ USB multiple video synchronous outputs
- 4K/1080P auto switching according to monitor resolution
- 4K 60fps low delay HDMI output mode, with an average delay of 40ms
- SD card/USB flash drive for captured image and video storage, customizable storage location and support local preview and playback
- Support external keyboard, input in both Chinese and English
- Support the capture and display of JEPG, TIFF, PNG and RAW format images
- Supports external USB 3.0 interface solid-state drive, and supports automatic saving of recorded videos in case of sudden power failure
- Support the editing function of recorded videos and the optional time watermark in recorded videos or images
- Support Image Auto Upload to the server over the network.
- Supports USB voice control module, enabling real-time control of the camera through voice commands for taking photos, recording videos, freezing, and other operations
- New browsing function, providing rich file operation functions, image to image comparison, image to real-time video comparison, multi-image EDF function, multi-image Stitch function
- Excellent ISP with local tone mapping and 3D denoising
- Provide real-time video EDF function and real-time video WDR output function
- Provide real-time Stitch function to obtain higher quality images through real-time processing
- Provide two sets of default ISP parameters for biological microscope and stereo microscope
- Embedded XCamView for the control of the camera and image processing, supporting automatic edge finding and measurement functions
- ToupView/ToupLite software for PC
- iOS/Android applications for smart phones or tablets

Figure 5-1 The X5CAM4K_MR Series Camera (Image Capture Sub-device and Master Device)

5.1.2 X5CAM4K_MR Series Camera's Datasheet and Functions (2)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity Dark Signal	Sensor Output (FPS/Resolution)	Binning	Exposure(ms)
X5CAM4K8MPA_MR	IMX678(C) 1/1.8"(7.68x4.32)	2.0x2.0	3541mv with 1/30s 0.15mv with 1/30s	60@3840*2160	1x1	0.019~1000
X5CAM4K8MPB_MR	IMX585(C) 1/1.2"(11.14x6.26)	2.9x2.9	5970mv with 1/30s 0.13mv with 1/30s	60@3840*2160	1x1	0.048~1000

Camera Model	Video Saving (FPS/Resolution)	HDMI2.0(FPS/Resolution)	USB3.0(FPS/Resolution)	NETWORK(FPS/Resolution)

X5CAM4K8MPA_MR	60@3840*2160 60@1920*1080 60@1280*720	60@3840*2160 60@1920*1080	30@3840*2160 45@2688*1512 60@1920*1080	30@3840*2160 60@1920*1080 60@1280*720
X5CAM4K8MPB_MR	60@3840*2160 60@1920*1080 60@1280*720	60@3840*2160 60@1920*1080	30@3840*2160 45@2688*1512 60@1920*1080	30@3840*2160 60@1920*1080 60@1280*720

Figure 5-2 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 Connect USB voice control for enable real-time control of camera snap, recording, freezing, and other operations
USB3.0	Connect USB flash drive to save pictures and videos Connect 5G WiFi module to transfer video wirelessly in real time Connect USB microphone to record audio and video Connect USB voice control for enable real-time control of camera snap, recording, freezing, and other operations
USB Video	Connect PC or other host device to realize video image transmission
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
LAN	LAN port to connect router and switch to transfer video
SD	SD card slot, comply with SDIO3.0 standard and SD card could be inserted for video and images saving
ON/OFF	Power switch
LED	LED status indicator
DC12V	Power adapter connection (12V/1A)
Video Output Interface	**Function Description**
HDMI Interface	Comply with HDMI2.0 standard;60fps@4K or 60fps@1080P
LAN Interface	Support real time resolution switching(4K/1080P/720P) H264 encoded video DHCP configuration or manual configuration Unicast/multicast configuration
WiFi Interface	Connecting 5G WiFi adapter (USB3.0 slot) in AP/STA mode
USB Video Interface	Connecting USB Video port of PC for video transfer H264/MJPEG format video
Other Function	**Function Description**
Video Saving	Video format：8M (3840*2160) H264 encoded MP4 file Video saving frame rate：60fps in low delay mode 30fps in WDR mode
Image Capture	8M (3840*2160) JPEG/TIFF/PNG/RAW image in SD card or USB flash drive (Default SD card priority, priority can be modified in settings)
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, Hue Adjustment, 50HZ/60HZ Anti-flicker, Color to Gray Function
Image Operation	Zoom In/Zoom Out (Up to 10X), Horizontal/Vertical Flip, Freeze, EDF, Stitch, Grids, Overlay, PIP, Browser (including Picture Browsing, Video Playback, Video Compare, Picture Compare, EDF, Stitch, Image Processing), 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 / Spanish / Japanese / Italian / Russian / Dutch / Portuguese
Software Environment under Network/USB Video Output	
White Balance	Auto White Balance
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 / 11(32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory: 4GB or More
	Ethernet Port: RJ45 Ethernet Port
	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
Power Supply	DC 12V/1A or above Adapter

5.1.3 Dimension of X5CAM4K_MR Series Camera

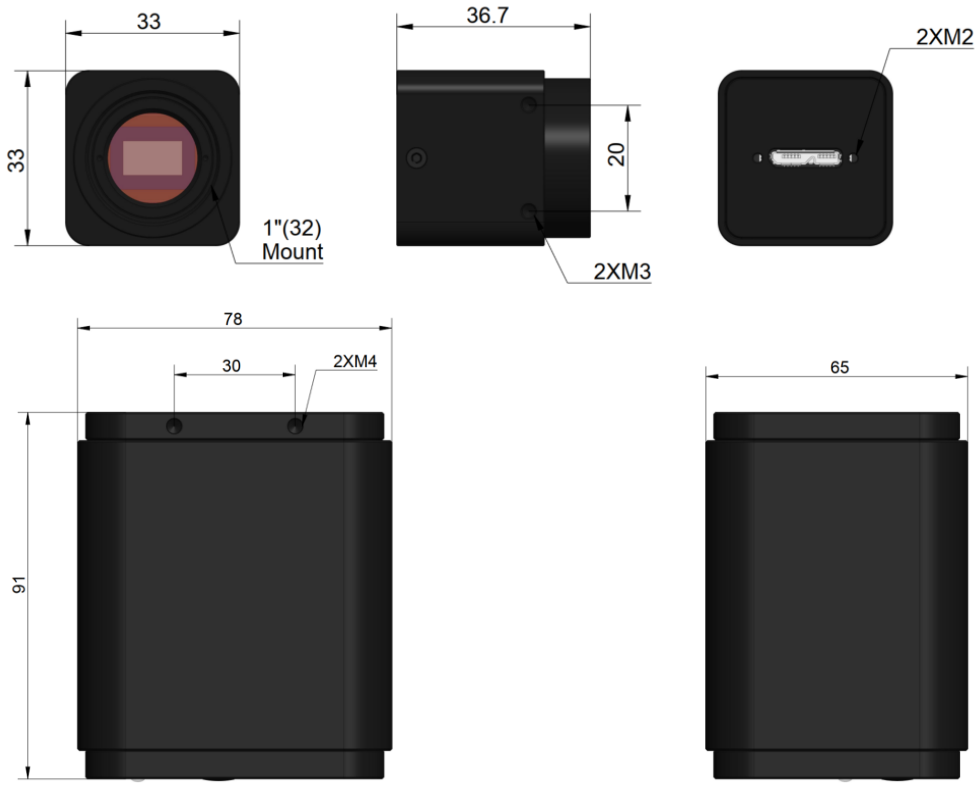


Figure 5-3 Dimension of X5CAM4K_MR Series Camera (Image Capture Sub-device and Master Device)

5.1.4 Packing Information of X5CAM4K_MR Series Camera

Figure 5-4 X5CAM4K_MR Series Camera Packing Information

	Standard Packing List		
A	Gift box: L:25.5cm W:17.0cm H:9.0cm (1pcs, 2Kg/ box)		
B	X5CAM4K_MR Camera master device		
C	X5CAM4K_MR Camera image capture sub-device		
D	USB3.0 A Male to MicroB Cable (4.5m)		
E	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		
F	USB Mouse		
G	HDMI Cable		
H	USB3.0 A male to A male gold-plated connectors cable /1.5m		
	Optional Accessory		
I	SD Card (16G or above; Speed: class 10)		
J	USB flash drive		
K	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
L	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 **K** and **L** 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;		
M	108015(Dia.23.2mm to 30.0mm Ring)/Adapter rings for 30mm eyepiece tube		
N	108016(Dia.23.2mm to 30.5mm Ring)/ Adapter rings for 30.5mm eyepiece tube		
O	USB WiFi adapter		

P	Ethernet cable
Q	Voice Control Module

5.1.5 Sample Photos Captured with X5CAM4K_MR Series Camera

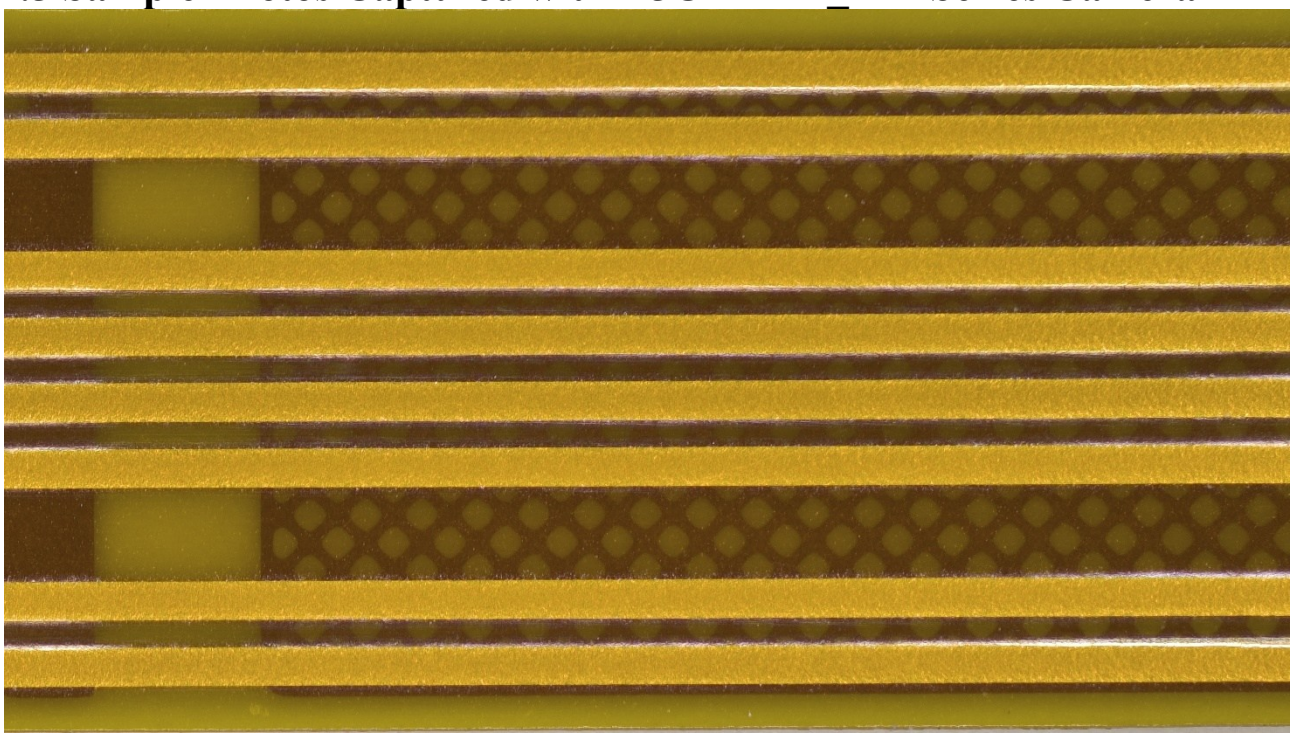


Figure 5-5 FPC PCB Captured with X5CAM4K8MPA_MR

Figure 5-6 Teeth Captured with X5CAM4K8MPA_MR

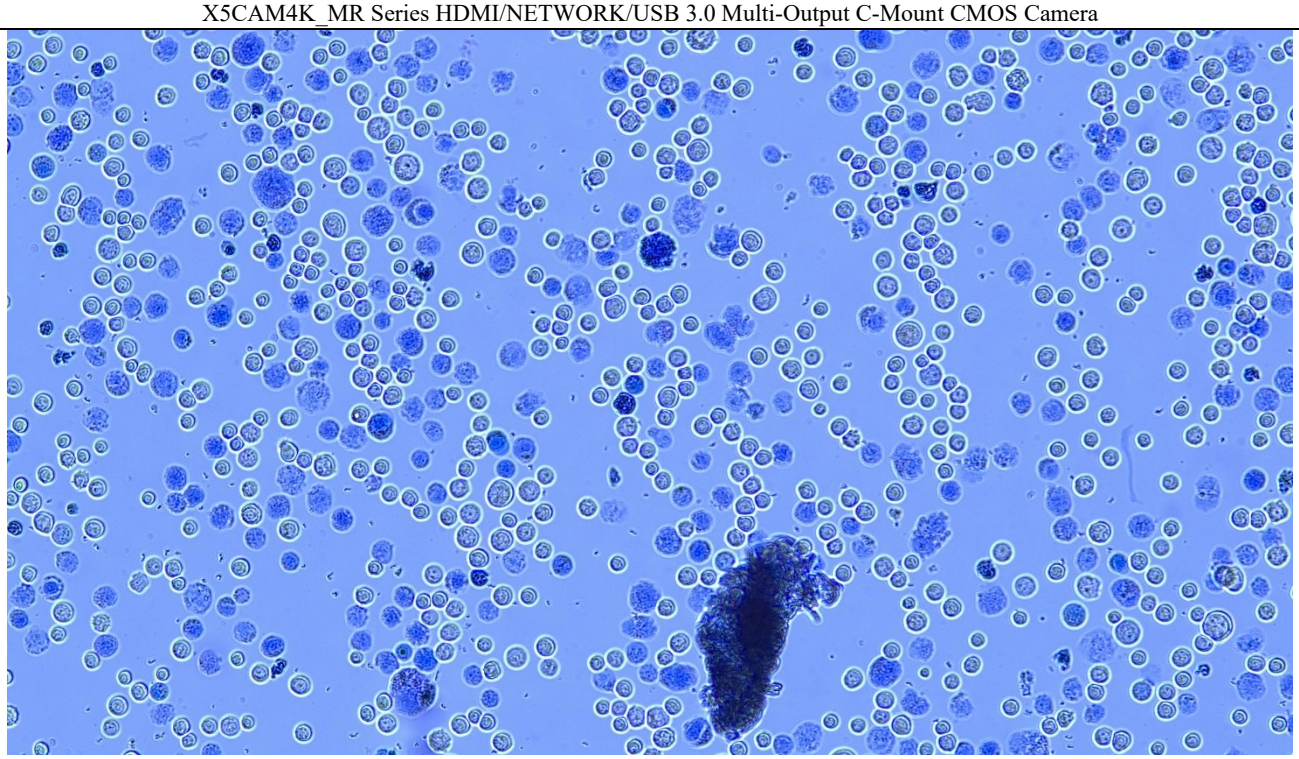


Figure 5-7 Cell Captured with X5CAM4K8MPA_MR

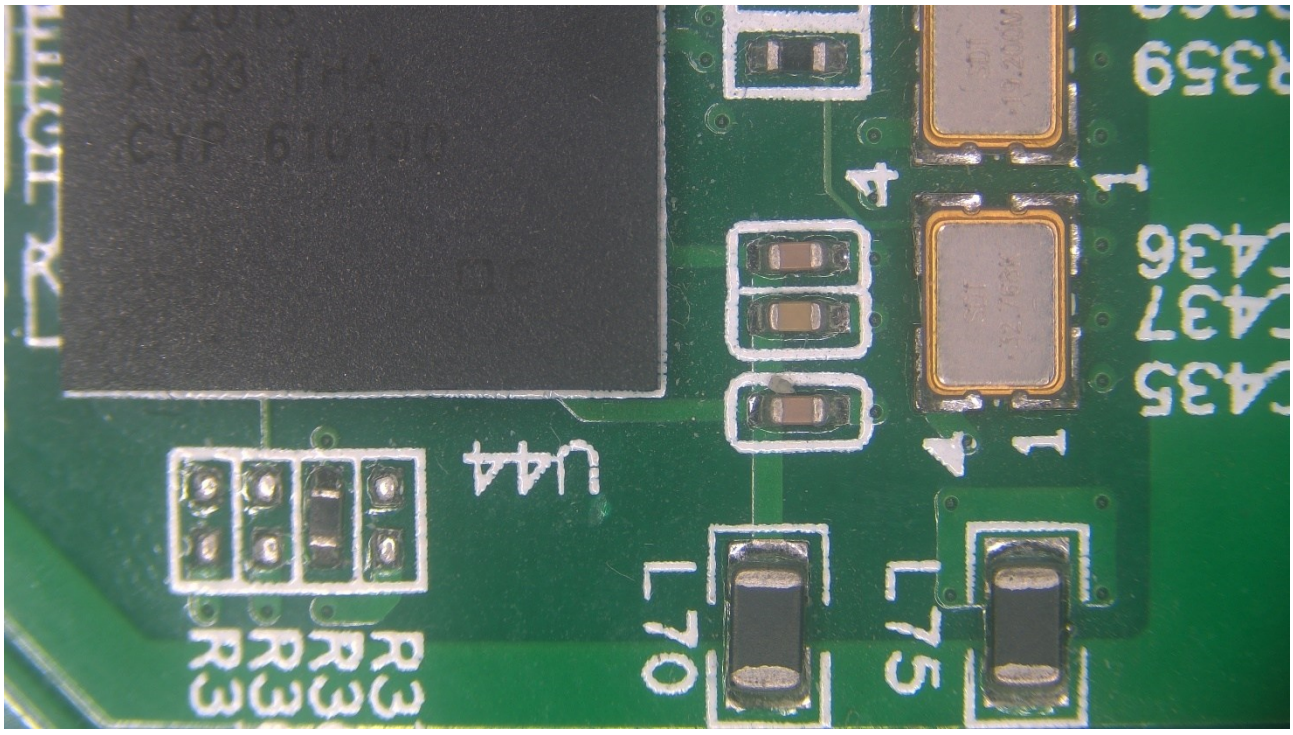


Figure 5-8 Circuit Board Captured with X5CAM4K8MPA_MR

6 Type-C Multi-Interface Camera

6.1 CXCAM Series C-Mount CMOS Camera

6.1.1 CXCAM Series Camera's Basic Characteristic

The first letter C in the CXCAM series of cameras represents the Type-C interface, that the camera does not require an external power supply. Simply connect a Type-C cable to a monitor equipped with a Type-C video input interface, or simply connect a Type-C cable to a USB Type-A interface on a computer. They can be used for video and image acquisition and processing in stereomicroscopes or biological microscopes. Its main features are as follows:

- The camera does not require a separate power supply and is provided by an external monitor or computer
- Sony Starvis or Starvis 2 back-illuminated CMOS sensor
- 4K multiple video outputs
- Smart AR glasses supporting Type-C interface input
- USB flash drive for captured image and video storage, support local preview and playback
- Supports USB Voice Control module, enabling real-time control of the camera through voice commands for snap, recording, freeze, and other operations
- Embedded XCamView for the control of the camera and image processing, supporting automatic edge finding and measurement functions
- Excellent ISP with local tone mapping and 3D denoising
- ToupView/ToupLite software for PC
- iOS/Android applications for smart phones or tablets

6.1.2 CXCAM Series Camera's Datasheet and Functions (4)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity Dark Signal	FPS/Resolution	Binning	Exposure(ms)
CXCAM4K8MPA	Sony IMX334(C) 1/1.8"(7.68x4.32)	2.0x2.0	505mv with 1/30s 0.1mv with 1/30s	30@3840*2160	1x1	0.04~1000
CXCAM4K8MPB	Sony IMX585(C) 1/1.2"(11.14x6.26)	2.9x2.9	5970mv with 1/30s 0.39mv with 1/30s	30@3840*2160	1x1	0.04~1000
CXCAM4K8MPC	Sony IMX678(C) 1/1.8"(7.68x4.32)	2.0x2.0	1364mv with 1/30s 0.15mv with 1/30s	30@3840*2160	1x1	0.04~1000
CXCAM1080P2MPA	Sony IMX385(C) 1/2"(7.2x4.05)	3.75x3.75	1175mv with 1/30s 0.15mv with 1/30s	60@1920*1080	1x1	0.04~1000

Camera Model	Video Saving (FPS/Resolution)	Monitor (FPS/Resolution)	USB Video (FPS/Resolution)	WiFi(FPS/Resolution)
CXCAM4K8MPA	30@3840*2160	30@3840*2160 30@1920*1080	30@3840*2160 30@2688*1512 30@1920*1080	30@3840*2160 30@1920*1080 30@1280*720
CXCAM4K8MPB	30@3840*2160	30@3840*2160 30@1920*1080	30@3840*2160 30@2688*1512 30@1920*1080	30@3840*2160 30@1920*1080 30@1280*720
CXCAM4K8MPC	30@3840*2160	30@3840*2160 30@1920*1080	30@3840*2160 30@2688*1512 30@1920*1080	30@3840*2160 30@1920*1080 30@1280*720
CXCAM1080P2MPA	60@1920*1080	60@1920*1080	60@1920*1080	60@1920*1080 60@1280*720

Interface or Button	Function Description
USB 2.0(2)	Connect USB mouse for easy operation with embedded XCamView software Connect USB flash drive to save pictures and videos Connect 5G WiFi module to transfer video wirelessly in real time Connect USB microphone to record audio and video Connect the USB Voice Control module to enable real-time control of camera snap, recording, freeze, and other operations through voice commands
USB Video	Connect the Type C cable to the USB Type-A port of the computer to achieve video image output.
Monitor	The Type-C cable is connected to a monitor with a Type-C video input interface. The monitor provides power to the camera, which outputs 4K/1080P video images to the monitor. The monitor supports automatic switching of 4K/1080P resolution The Type-C cable connects to smart AR glasses equipped with a Type-C video input port, transmitting 1080P video footage from the camera to the smart AR glasses
LED	LED status indicator
Video Output Interface	**Function Description**
Monitor Interface	Comply with Type-C standard 30fps@4K or 30fps@1080P (CXCAM4K8MPA, CXCAM4K8MPB, CXCAM4K8MPC) 60fps@1080P(CXCAM1080P2MPA)
WiFi Interface	Connecting 5G WiFi adapter (USB slot) in AP/STA mode
USB Video Interface	Connecting USB Video port of PC for video transfer MJPEG format video
Other Function	**Function Description**
Video Saving	Video format：8M (3840*2160) H264 encoded MP4 file(CXCAM4K8MPA,CXCAM4K8MPB,CXCAM4K8MPC) 2M (1920*1080) H264 encoded MP4 file(CXCAM1080P2MPA) Video saving frame rate:30fps(CXCAM4K8MPA,CXCAM4K8MPB,CXCAM4K8MPC); 60fps（CXCAM1080P2MPA）
Image Capture	8M (3840*2160 CXCAM4K8MPA, CXCAM4K8MPB, CXCAM4K8MPC) JPEG/TIFF image in USB flash drive 2M (1920*1080 CXCAM1080P2MPA) JPEG/TIFF image in 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 Conversion， 50HZ/60HZ Anti-flicker Function
Image Operation	Zoom In/Zoom Out (Up to 10X), Mirror/Flip, Freeze, Grids, Overlay, Compare (Comparison between real time video and images in 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 WiFi/USB Video Output	
White Balance	Auto White Balance
Color Technique	Ultra-Fine Color Engine
Capture/Control SDK	Windows/Linux/Mac
Recording System	Still Picture or Movie
Operating System	Microsoft® Windows® / 7 / 8 / 8.1 /10/ 11(32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory: 8GB or More
	USB interface: USB 2.0 interface or higher
	Type-C interface: Supports Video Input
Operating Environment	

Operating Temperature (in Centidegree)	-10°~ 50°
Storage Temperature (in Centidegree)	-20°~ 60°
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH

6.1.3 Dimension of CXCAM Series

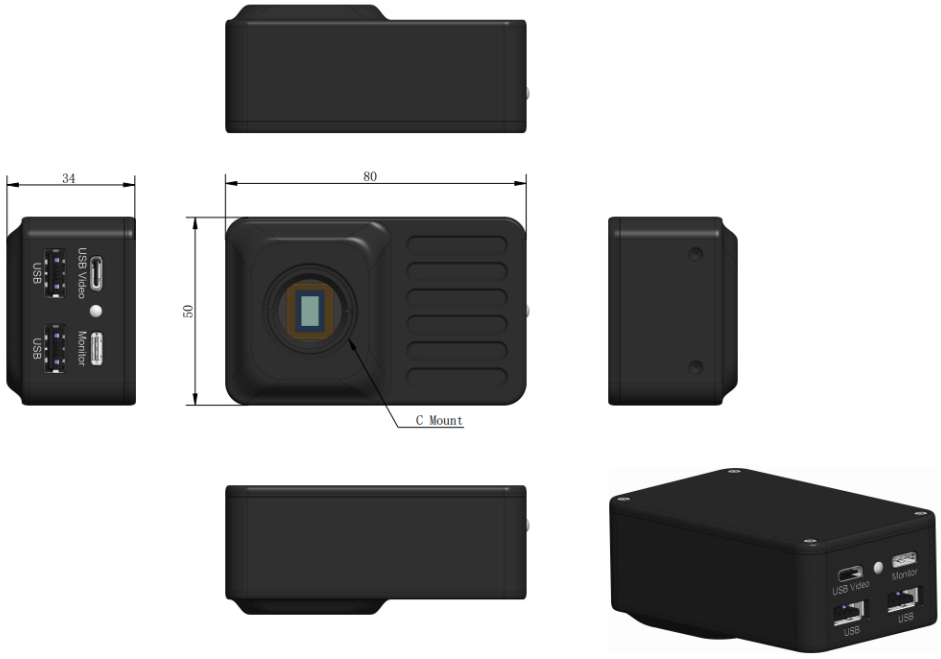


Figure 6-1 Dimension of CXCAM Series

6.1.4 Packing Information of CXCAM Series Camera

Figure 6-2 CXCAM Series Camera Packing Information

Standard Packing List	
A	Gift box: L:16.3cm W:16.3cm H:7.4cm
B	CXCAM Camera (One of the four different shapes)
C	USB Type-C to Type-C data cable 1.5 meters (Connecting the monitor)
D	USB Mouse
E	USB Type-C to Type-A data cable 1.5 meters (Connecting the PC)
Optional Accessory	
F	USB flash drive
G	USB WiFi adapter

6.1.5 Sample Photos Captured with CXCAM Series Camera

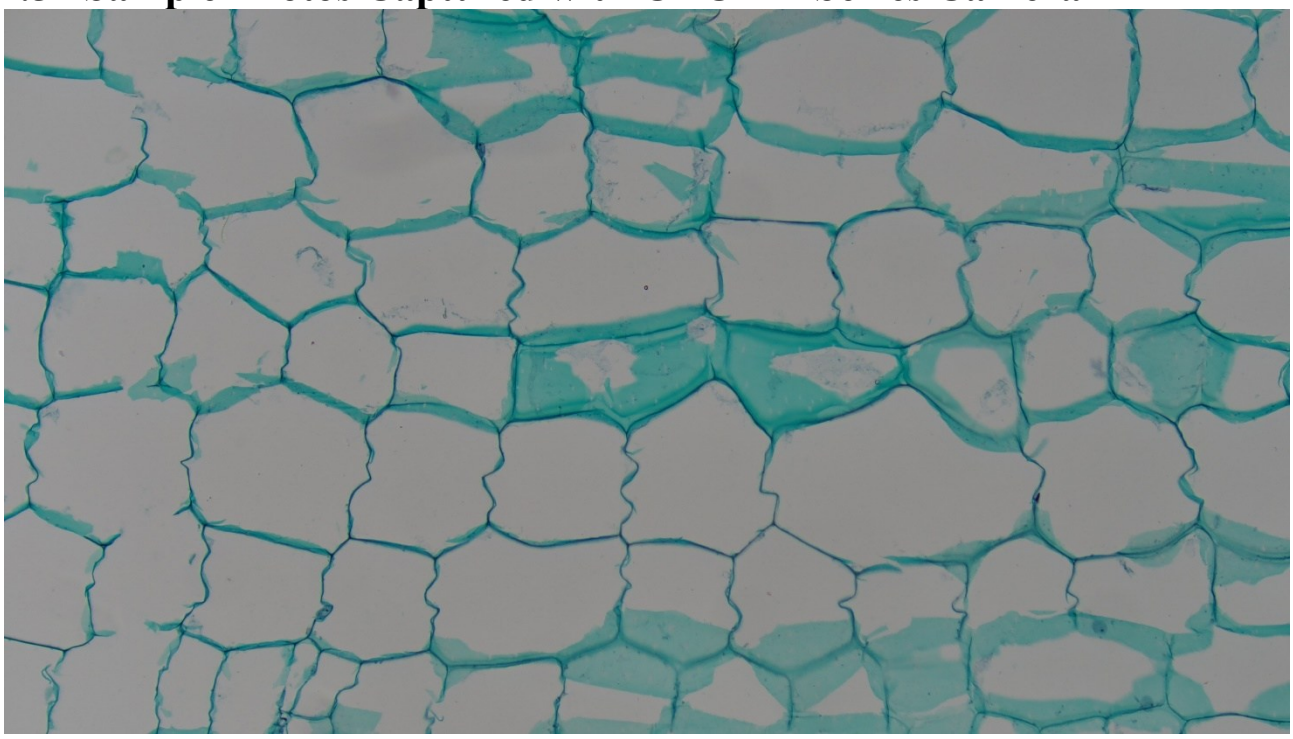


Figure 6-3 Cucurbit Stem.L.S. Captured with CXCAM4K8MPC

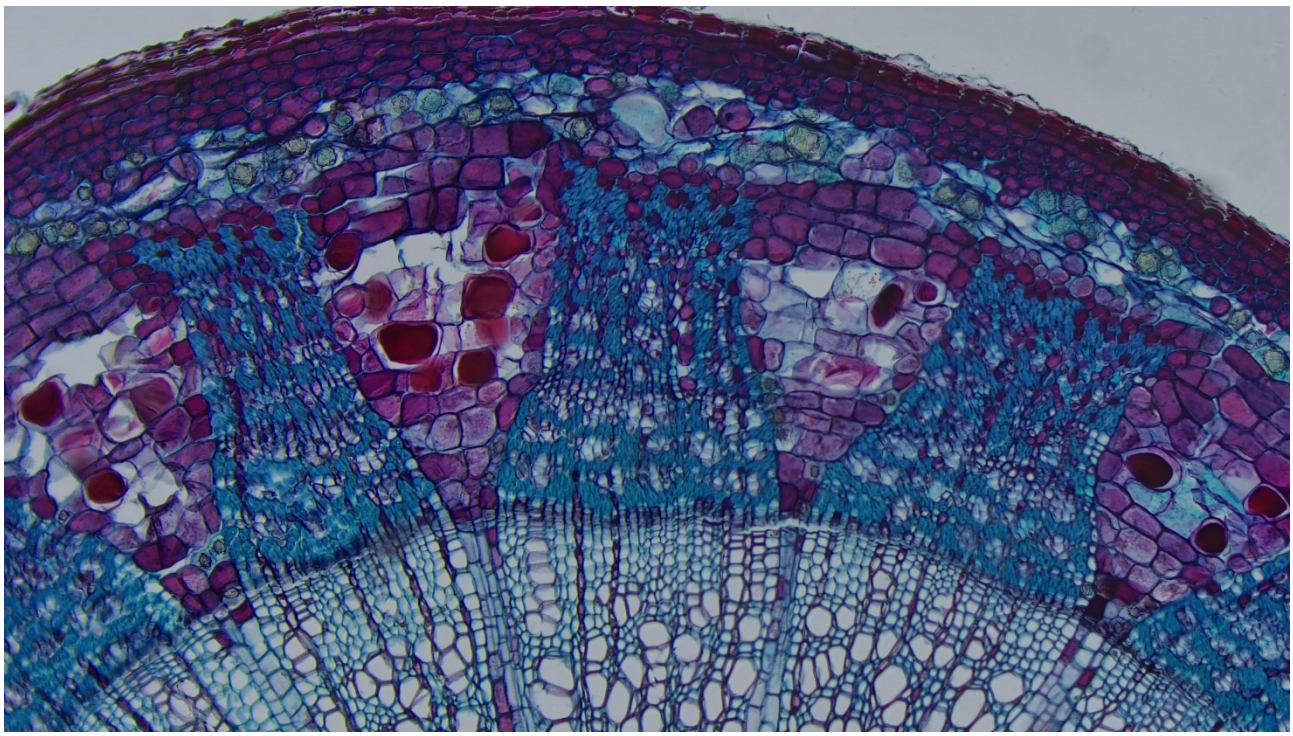


Figure 6-4 Two Year Tilia Stem.C.S. Captured with CXCAM4K8MPC

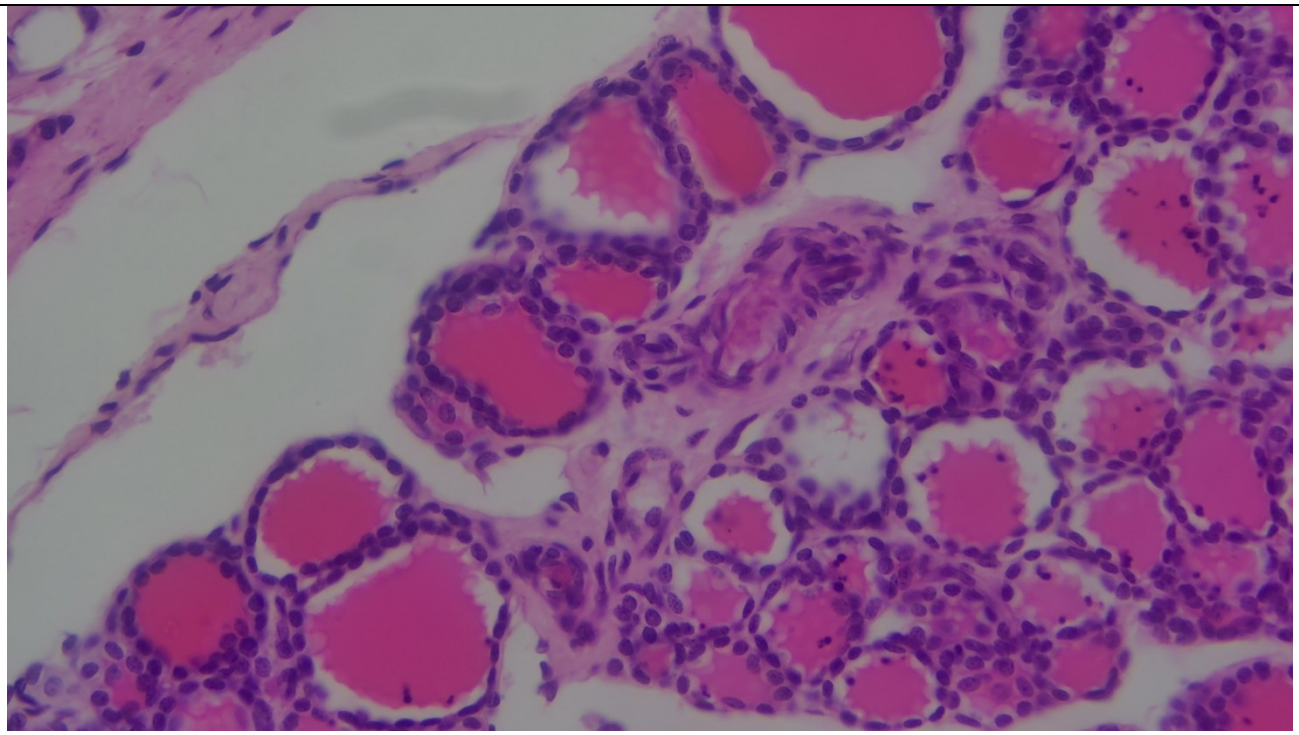


Figure 6-5 Simple Cuboidal Epithelium.Sec. Captured with CXCAM4K8MPC

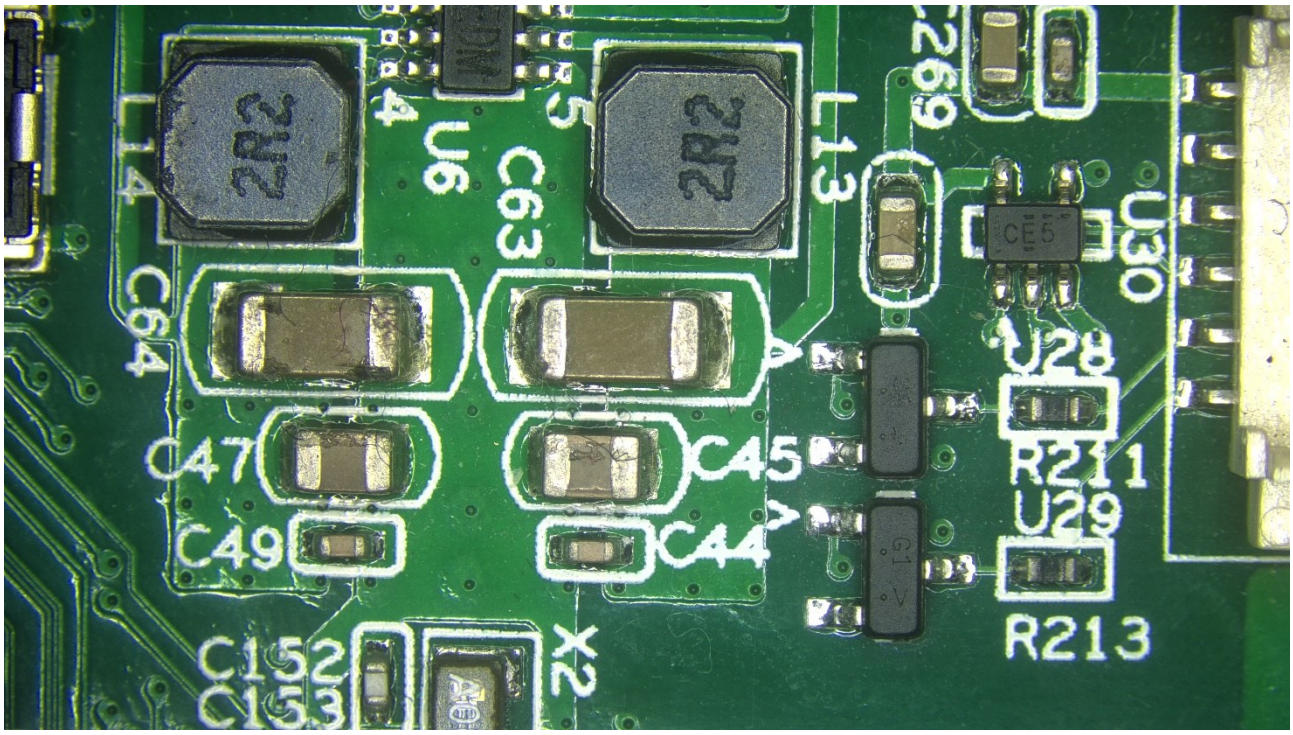


Figure 6-6 Circuit Board Captured with CXCAM4K8MPC

7 ToupTek®-- Contact Information

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8 ToupTek Web

8.1 Microscopic Web

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English: https://www.touptek.com
English: https://www.touptekphotonics.com

8.2 Astronomy Web

Chinese: https://www.touptek-astro.com.cn
Chinese: https://www.touptek-astro.cn
English: https://www.touptek-astro.com

8.3 Astronomy independent station/shop

English: https://www.touptekastro.com