Touptek Microscope - USB-Camera XCAM-4K-Series
4k-HDMI + USB 3.0 + SD-Card + Wifi

The XCAM4K series is the next-generation live-view imaging-system with 4K resolution at 60/30 FPS. XCAM4K series 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 monitor or television, or live-streamed to a PC via Gigabit Ethernet

(GE) 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 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 which can
capture video and still images, and includes limited processing features.

The XCAM4K8 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/ LAN/Wi-Fi / 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
- 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

Applications of Touptek XCAM-4K series:

- 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;

Technical Data:

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity / Dark Signal	FPS/Resolution	Binning	Exposure(ms)
XCAM4K8MPA XP4K8MA	4K/Sony IMX334(C) 1/1.8"(7.68x4.32)	2.0x2.0	505mv with 1/30s 0.13mv with 1/30s	60@3840*2160(HDMI) 30@3840*2160(NETWORK) 30@3840*2160(USB)	1x1	0.04~2000
XCAM4K8MPB XP4K8MB	Sony IMX485(C) 1/1.2"(11.14x6.26)	2.9x2.9	2188mv with 1/30s 0.39mv with 1/30s	60@3840*2160(HDMI) 30@3840*2160(NETWORK) 30@3840*2160(USB)	1x1	0.04~2000
XCAM4K16MPA XP4K16MA	Sony IMX183(C) 1/1.06"(13.06x7.34)	2.4x2.4	461mv with 1/30s 0.21mv with 1/30s	30@3840*2160(HDMI) 30@3840*2160(NETWORK) 15@5440*3060(USB)	1x1	0.04~2000

C: Color; M: Monochrome;

Interface & Button Functions

USB Mouse	Connect USB mouse for easy operation with embedded XCamView software.
USB3.0	Connect USB flash drive to save pictures and videos(Host Mode). Connect 5G WLAN module to transfer video wirelessly in real time(AP/STA, Host Mode); Connect computer with USB connection to transfer video in real time(Device Mode);
HDMI	Comply with HDMI2.0 standard. 4K/1080P format video output and supporting automatic switch between 4K and 1080P format according to the connected monitors..
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.
DC12V	Power adapter connection (12V/1A).
ON/OFF	Power switch.
LED	LED status indicator.

Other Specification for HDMI Output

UI Operation	With USB mouse
Image Capture	8M (3840*2160, XCAM4K8MPA, XCAM4K8MPB) JPEG/TIFF image in SD card or USB flash drive; 16M (3840*2160, XCAM4K16MPA) JPEG/TIFF image in SD card or USB flash drive.
Video Record	Video format：8M(3840*2160) H264 encoded MP4 file; Video saving frame rate：50~60fps(XCAM4K8MPA, XCAM4K8MPB) (related with SD card and video resolution); 26~30fps(XCAM4K16MPA) (related with SD card and video resolution);
Measurement Saving	Measurement information saved in different layer with image content; Measurement information is saved together with image content in burn in mode.
Camera Control Panel	Including Exposure, Gain, White Balance, Color Adjustment, Sharpness and Denoising Control
Toolbar	Including Zoom, Mirror, Comparison(Video~image, image~image), Freeze, Cross, Browser Function

Other Specification for GE Output

White Balance	Auto/Manual/ROI 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 Video

Software Environment

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

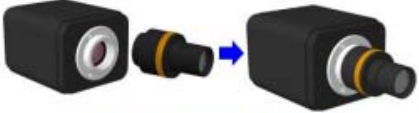| Operating Temperature (in Centidegree)	-10°~ 50°
Storage Temperature (in Centidegree)	-20°~ 60°
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 12V/1A Adapter

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Packing Information:

H, I , J , K adapters and L, M do not belong to standard scope of delivery.

	Standard Packing List	
A	Gift box : L:25.5cm W:17.0cm H:9.0cm (1pcs, 1.43Kg/ box)	
B	XCAM4K 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 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	USB Mouse	
E	HDMI 2.0 Cable(Support 3840x2160, 60FPS)	
F	High-speed USB3.0 A male to A male gold-plated connectors cable /2.0m	
G	CD (Driver & utilities software, Ø12cm)	

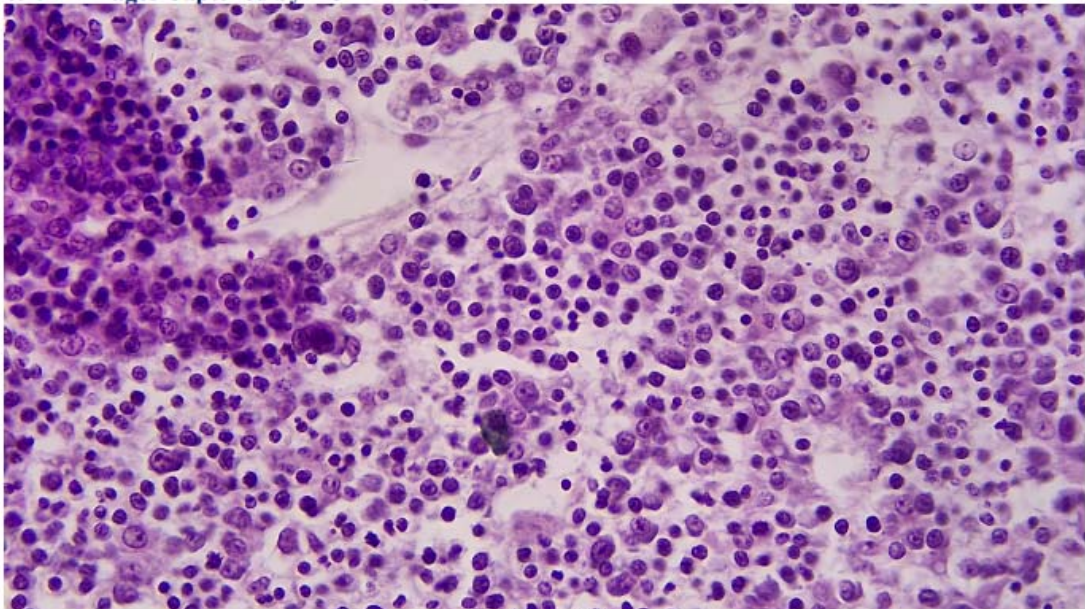|	Optional Accessory	
H	SD Card (16G or above; Speed: Class 10)	
I	USB WLAN adapter	
J	Ethernet cable	
K	Adjustable lens adapter	C-Mount to Dia.23.2mm eyepiece tube (Please choose 1 of them for your microscope)	108001/AMA037 108002/AMA050 108003/AMA075
		C-Mount to Dia.31.75mm eyepiece tube (Please choose 1 of them for your telescope)	108008/ATA037 108009/ATA050 108010/ATA075
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
		C-Mount to Dia.31.75mm eyepiece tube (Please choose 1 of them for your telescope)	108011/FTA037 108012/FTA050 108013/FTA075
	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	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.)

Optional adapters to connect XCAM-4K to 23.2 mm eye piece tubus

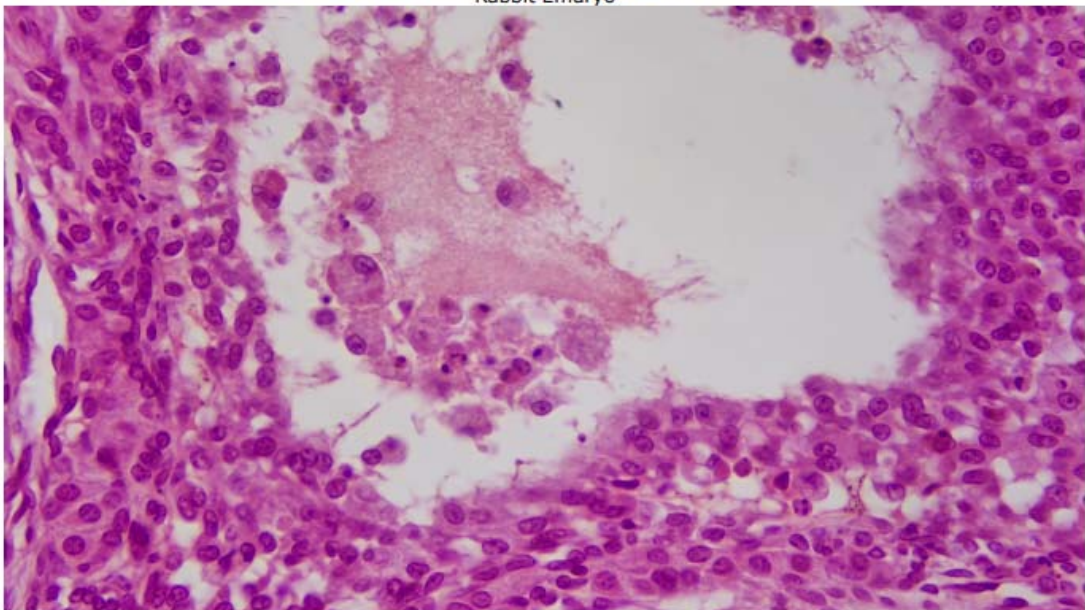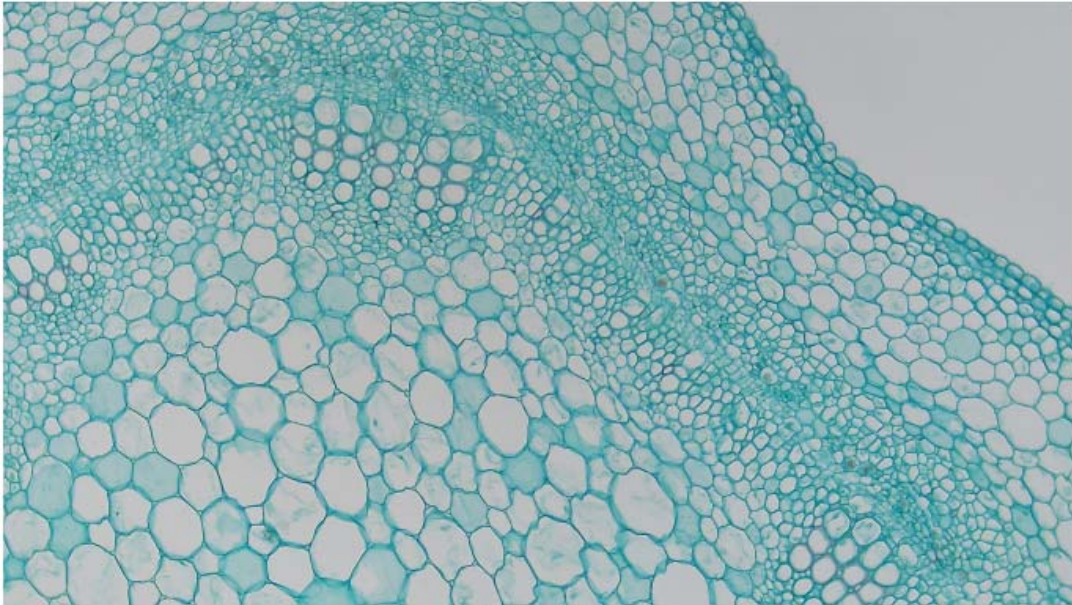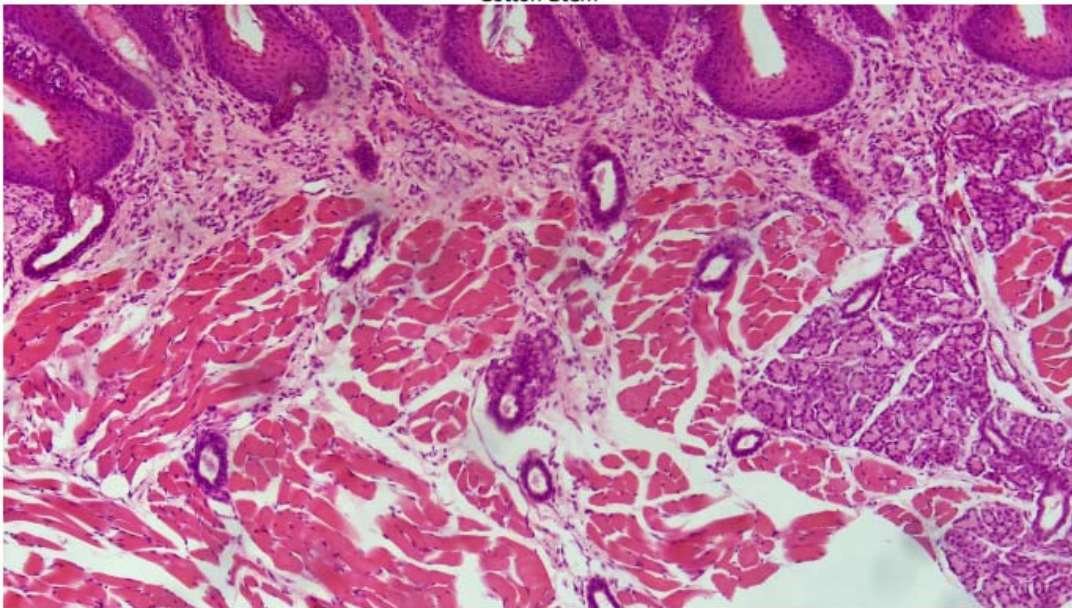| Extension	Picture	
C-mount Camera		Machine vision; Medical imaging; Semiconductor equipment; Test instruments; Document scanners; 2D barcode readers; Web camera and security video; Microscope imaging;
Microscope Camera	 4K HDMI+AMAXXX(23.2mm Adapter)	 4K HDMI+FMAXXX(23.2mm Adapter)
Telescope Camera	 4K HDMI+ATAXXX(31.75mm Adapter)	 4K HDMI+FTAXXX(31.75mm Adapter)

Application Example:
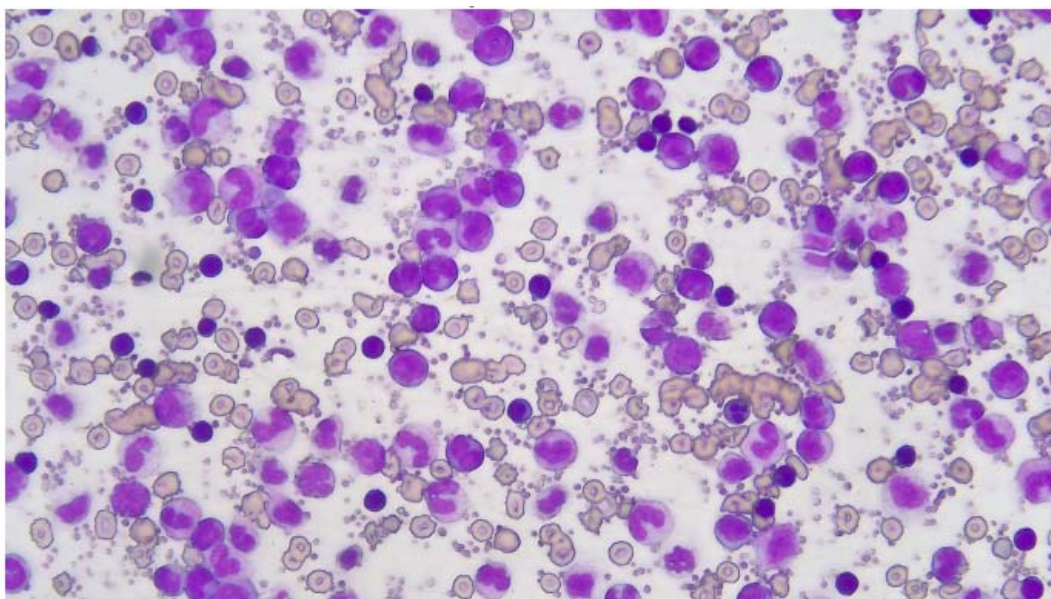

Images:

Rabbit Emdryo

Ovary

Cotton Stem

Taste Bad

MK54-40

Figure 6- 1 XCAM4K Camera and Leica Microscope

Figure 6- 2 XCAM4K Camera and Zeiss Microscope

All images made by Touptek