



Digital Microscope Interactive System Solutions



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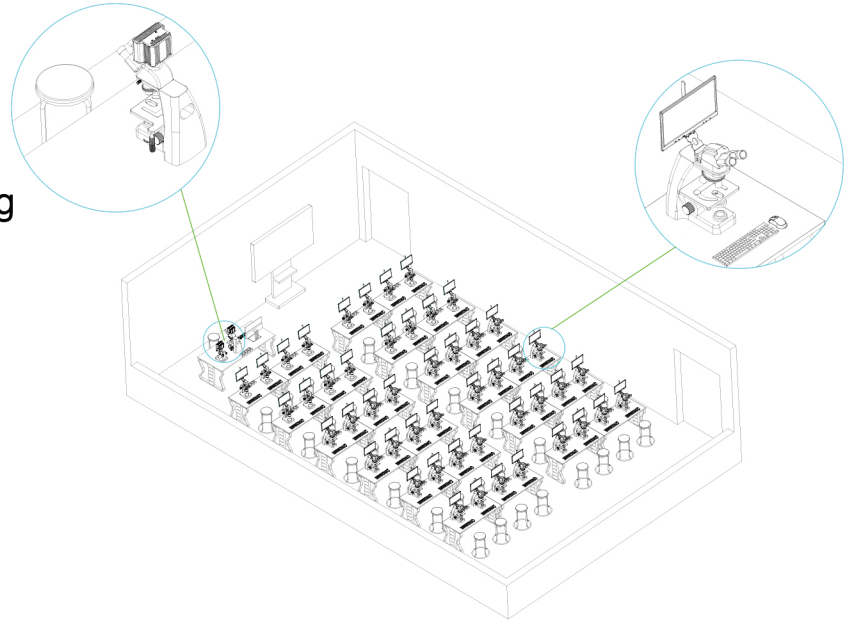
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System advantages

» Distributed wireless networking automatically

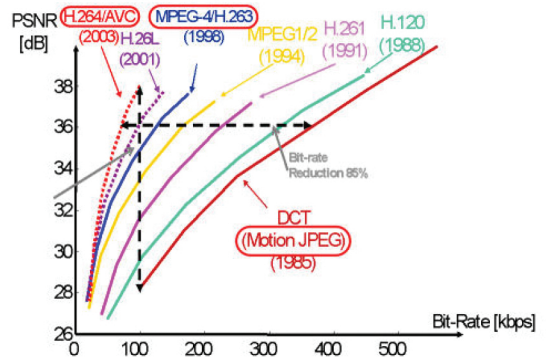
Won the invention patent. Simple installation, plug and play.

The digital units on the tutor station and the student station only need to be powered on, and the 5G WiFi local area network will be automatically set up.



» Leading image algorithms

- Thanks to H264 decoding technology, accurate color reproduction is guaranteed. Compared with the traditional MJPEG compression format, it has the advantages of low bit rate, low noise, making images more transparent, and previewing full resolution at a higher frame rate(30 FPS at 4000x3000 preview).
- Due to the differences between microscopes, the camera has built-in multiple sets of image firmware before leaving the factory. You only need to select a key in the software to obtain a more accurate color reproduction that matches the microscope.

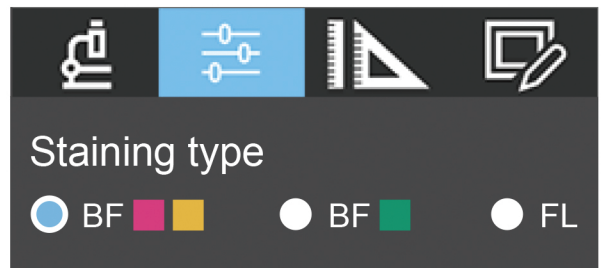


Item	H264	MPEG4	MJPEG
Image quality	Excellent	Average	Poor
Technical complexity	High	Average	Low
Network transmission speed	Fast	Average	Slow
Cost	High	Average	Low

*Source: <http://www.yaba.com.tw/cctv/h264mp4/h264mp4.htm>

Microscope type	
○ 9	Leica DM series(N PLAN)
● 11	Leica DM series(HI PLAN)
● 12	Leica DMn(HI PLAN)(BF-RD/GD)
● 13	Leica DM11(HI PLAN)(BF-GN)
● 2	Nikon E series- Embedded camera
● 5	Nikon E series-C-mount/dovetail groove camera
● 10	Nikon TS2
● 1	OLYMPUS CX series- Embedded camera
● 4	OLYMPUS CX series-C-mount/dovetail groove camera
● 6	OLYMPUS BX series- C-mount/ dovetail groove camera (BF-RD/GD)
● 7	OLYMPUS BX series-C-mount / dovetail groove camera (BF-GN)
● 8	OLYMPUS BX series-C-mount / dovetail groove camera (FL)
● 0	Stereo Microscope-Embedded camera
● 3	Stere Microscope-C-mount/ daveltai groove camera
.....	

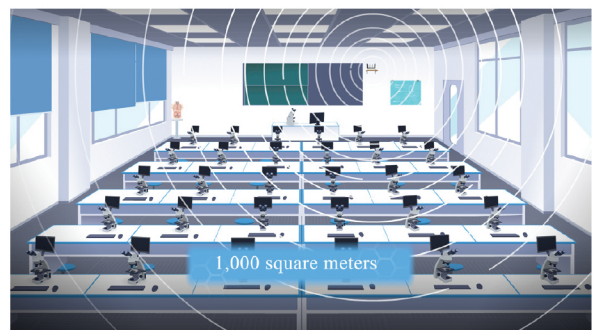
- Built-in exclusive working modes for different pathological specimens



» Stable WiFi signal with ultra-low latency and fast speed.

The patented and core technology of 5G WiFi helps to automatically avoids congested channels.

The technology allows up to 120 stations to work together in a single system in a classroom without interfering with each other.



OLYMPUS

Nikon

Leica

ZEISS

» One-stop digitalize optical microscopes

The camera comes with dovetail slots which matches Olympus, Nikon, Leica and Carl Zeiss educational microscopes and enhances optical value greatly without damage to optical path.



» Provides the critically acclaimed software of interactive system

More than 300,000 times downloads , stable and easy to use.

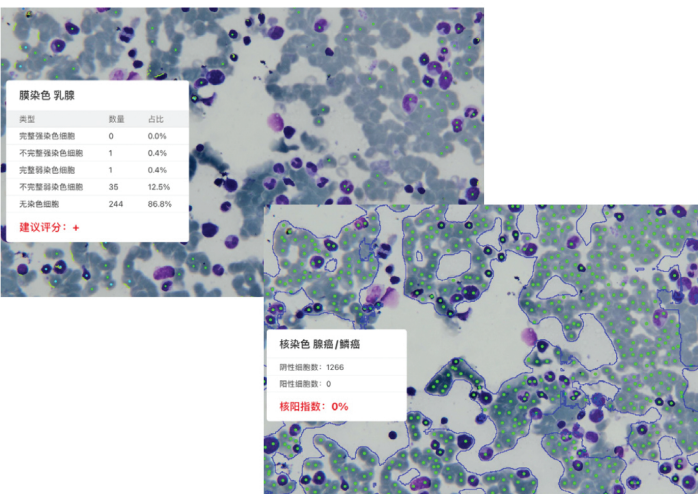
Tutor side: The software has high work efficiency, UI layout dominated by major four functions is simple and easy to understand, with strong logical correlation, powerful background management, and clear guidance.

Student side: Perfectly compatible with Windows, iOS and Android systems, let students truly immerse themselves in the joy of learning.



» Collaborative working with third-party virtual teaching software

The interactive system is not only a tool for microscopy observation, but also a hardware platform to run third-party virtual teaching educational software that using CS & BS Architecture or Android APP, achieving achieve cost-effective and saving desk space.



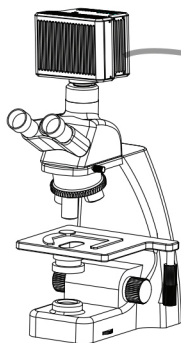
» Access to remote AI pathological diagnosis (Optional software module)

With the revolutionary AI Big Data Pathological Diagnosis Auxiliary module(optional),effectively improve students' practical ability in pathological diagnosis and, reduce teaching intensity.

Tutor station solution



Interactive workstation

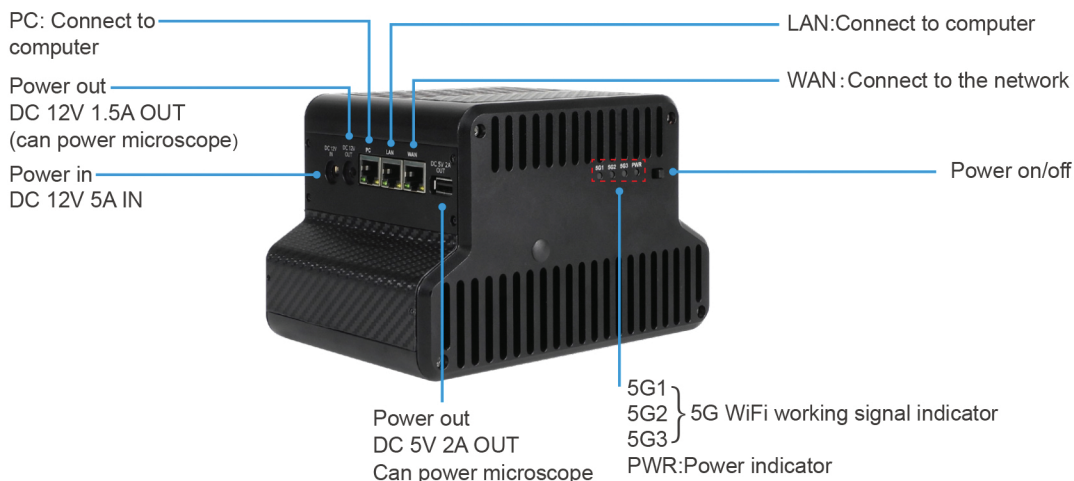


PC Computer

Computer requirements

System	CPU	Hard disk	Memory	Graphics card	Wired network card
Win10 or later versions	i7 8th generation or later versions	512GB or more	16GB or more	Nuclear display	10/100/1000 adaptive

Interface



Models

Applicable to	Olympus	Nikon	Leica	Zeiss
C-mount models		CG20		
Dovetail models		YG20		
Category	A0-H	N2-H	L0-H	Z0-H
Physical resolution	20.0MP			
Image sensor	SONY IMX147 CMOS			
Exposure mode	Rolling Shutter			
Maximum resolution	5184×3888 (20,155,392 Pixels)			
ISO sensitivity	Equivalent to 100-12800			
Sensor size	1/2.3"			
Pixel size	1.2μm×1.2μm			
Spectral response	380-650nm			
Exposure capability	Real-time auto and manual adjustment			
Exposure time	10μm-333ms			
White balance	Real-time auto and manual RB adjustment			
Preview resolution	5184×3888@10fp			
Power supply	DC 12V 5A			
Wireless protocol	5G WiFi IEEE802.11ac			
Color bit depth	12Bit			

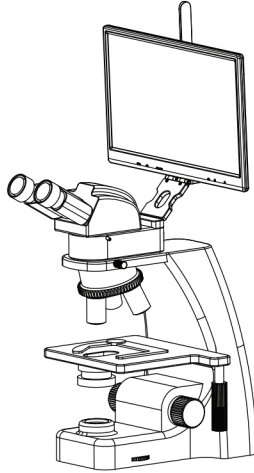
Olympus	Nikon	Leica	Zeiss
		CG12	
		YG12	
A0-H	N2-H	L0-H	Z0-H
12.0MP			
SONY IMX412 CMOS			
Rolling Shutter			
4000×3000 (12,000,000Pixels)			
Equivalent to 100-12800			
1/2.3"			
1.55μm×1.55μm			
380-650nm			
Real-time auto and manual adjustment			
10μs-333ms			
Real-time auto and manual RB adjustment			
4000×3000@30fps			
DC 12V 5A			
5G WiFi IEEE802.11ac			
12Bit			

Note: When ordering, the model and category (if any) need to be listed at the same time. For example, when ordering a 20.0MP camera, which needs to be installed on the Olympus trinocular dovetail slot, the corresponding order list: model: YG20, category: A0-H.

Student station solutions

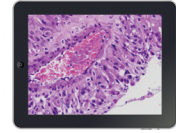
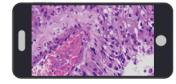
» Solution ① for Binocular (Embedded Smart Display Camera)

Suitable for compact layout environment



5G WiFi

Support max 30 mobile phones and tablets



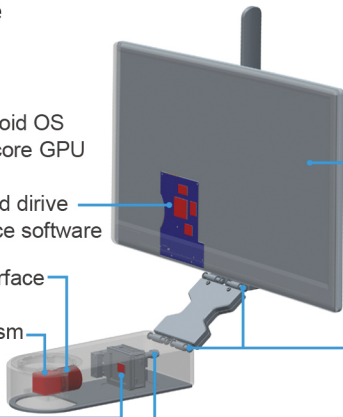
» Interface

Customized Android OS
4-core CPU + 2-core GPU
4GB DDR4 RAM
32GB EMMC hard drive
Coming with Office software

0.43X optical interface

50:50 splitting prism

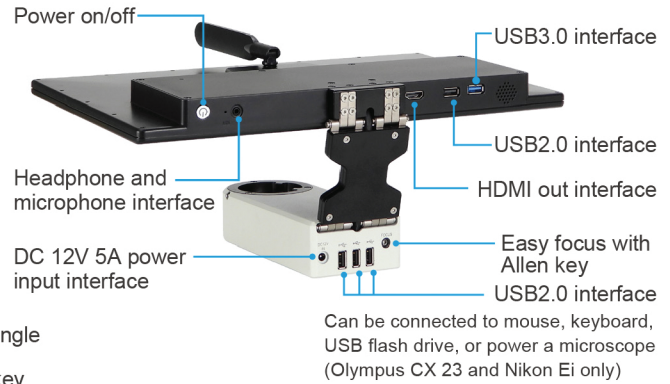
Imaging module



15.6" high color gamut IPS 1080P monitor

Two-axis adjustment for ergonomic viewing angle

Easy focus with Allen key



» Models

Physical resolution	20.0MP			
Applicable to	Olympus	Nikon	Leica	Zeiss
Model	FY20			
Category	A0-H	N2-H	L0-H	Z0-H

12.0MP			
Olympus	Nikon	Leica	Zeiss
HE1210-M	HE1210-M(N)	HE1210-ML	HE1210-MZ
N/A			

Note: When ordering, the model and category (if any) need to be listed at the same time. For example, when ordering a 20.0MP camera, which needs to be installed on the Olympus trinocular dovetail slot, the corresponding order list: Model: FY20 Category: A0-H.

» Installation with microscopes



OLYMPUS



Nikon

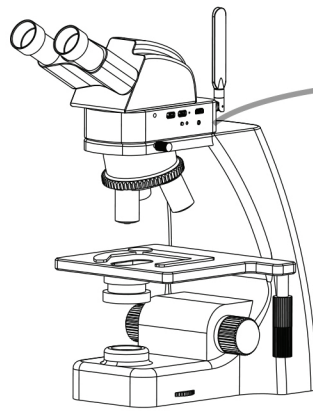


Leica

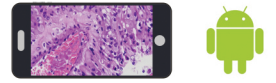


ZEISS

» Solution ② for Binocular (Embedded Smart Camera) Suitable for observing with larger monitor

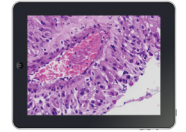


Recommend 24~27"high color gamut monitor

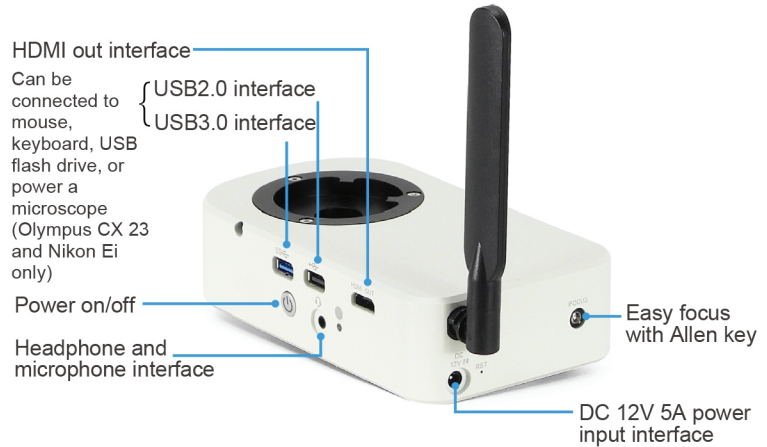
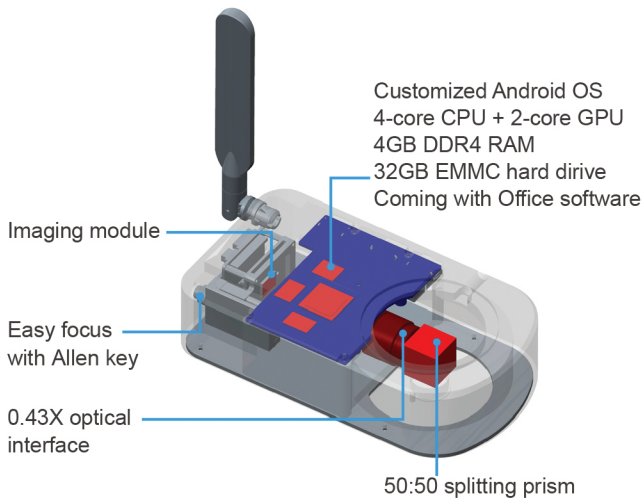


5G WiFi

Support max 30 mobile phones and tablets



» Interface



» Models

Physical resolution	20.0MP			
Applicable to	Olympus	Nikon	Leica	Zeiss
Model	FS20			
Category	A0-H	N2-H	L0-H	Z0-H

12.0MP			
Olympus	Nikon	Leica	Zeiss
TE1200-M	HW1210-M(N)	TE1200-ML	TE1200-MZ
N/A			

Note: When ordering, the model and category (if any) need to be listed at the same time. For example, when ordering a 20.0MP camera, which needs to be installed on the Olympus trinocular dovetail slot, the corresponding order list: Model: FS20 Category: A0-H.

» Installation with microscopes



OLYMPUS



Nikon



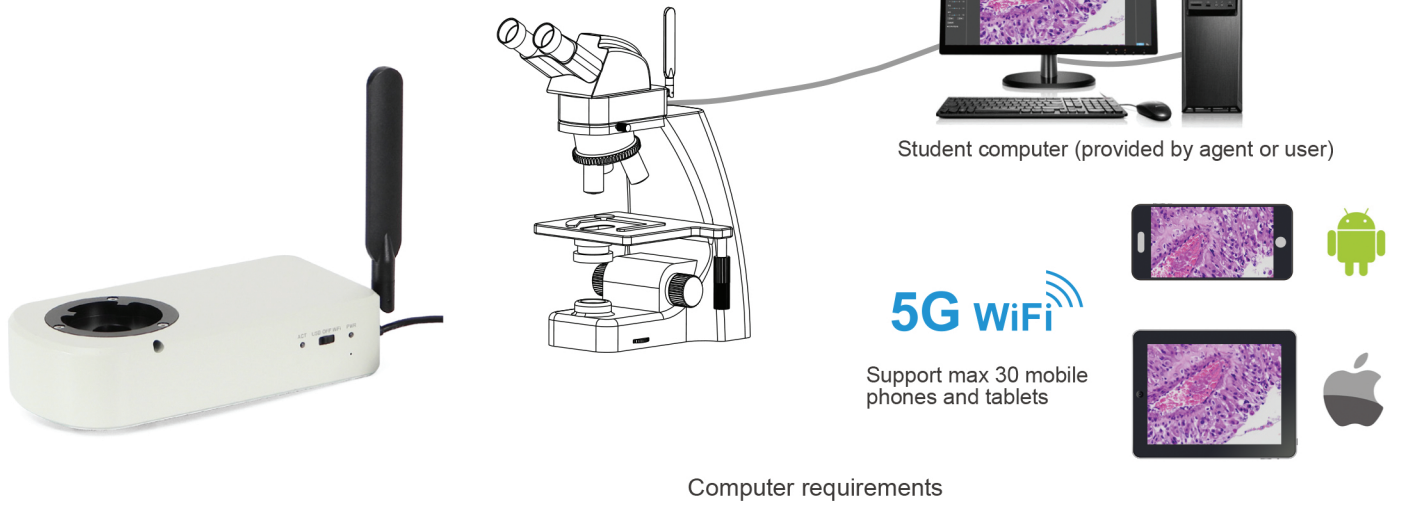
Leica



ZEISS

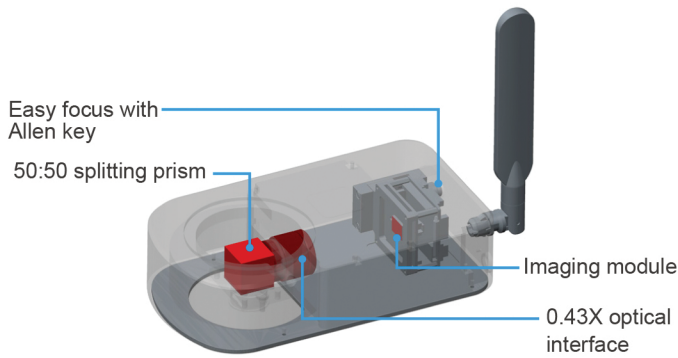
►►► Solution ③ for Binocular (Embedded WiFi Camera)

Suitable for multi-tasking applications



System	CPU	Hard disk	Memory	Graphics card	Wired network card
Win10 or later versions	i5 10th generation or later versions	512GB or more	8GB or more	Nuclear display	10/100/1000 adaptive

►►► Interface



►►► Models

Physical resolution	20.0MP			
Applicable to	Olympus	Nikon	Leica	Zeiss
Model	FF20			
Category	A0-H	N2-H	L0-H	Z0-H

12.0MP			
Olympus	Nikon	Leica	Zeiss
FF12			
A0-H	N2-H	L0-H	Z0-H

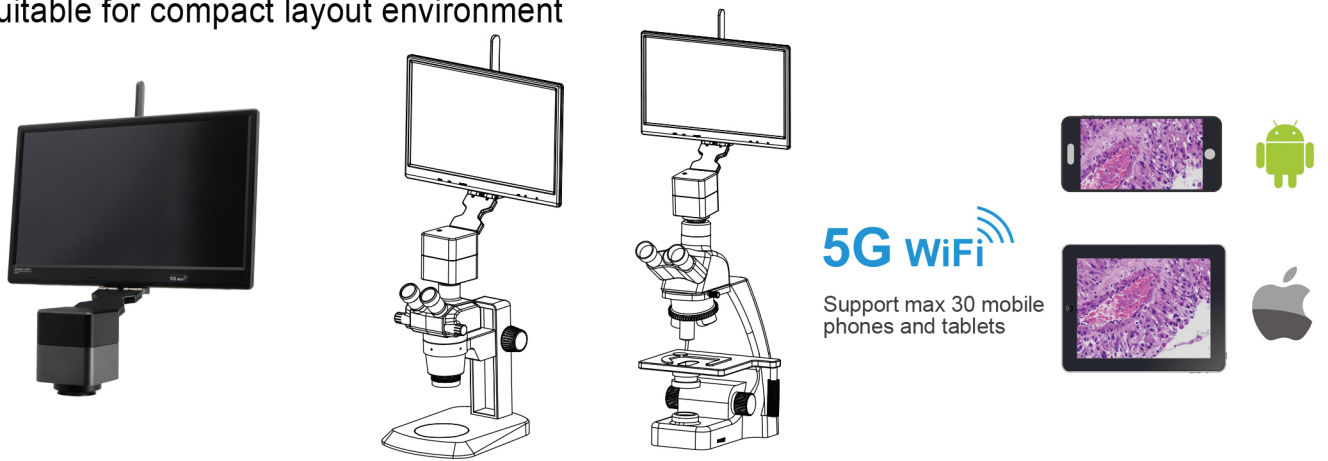
Note: When ordering, the model and category (if any) need to be listed at the same time. For example, when ordering a 20.0MP camera, which needs to be installed on the Olympus trinocular dovetail slot, the corresponding order list: Model: FF20 Category: A0-H.

►►► Installation with microscopes

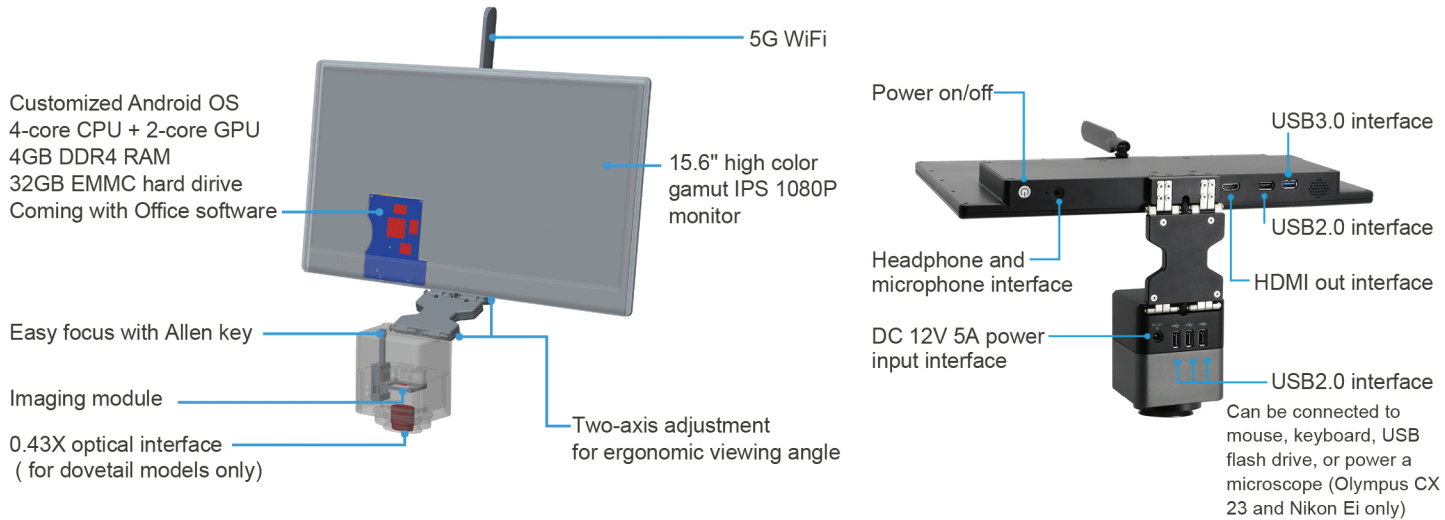


» Solution ① for Trinocular (Smart Display Camera)

Suitable for compact layout environment



» Interface



» Models

Physical resolution	20.0MP				12.0MP			
Applicable to	Olympus	Nikon	Leica	Zeiss	Olympus	Nikon	Leica	Zeiss
C-mount models	CY20				JX1200-M			
Dovetail models	YY20				JX1200-M04	JX1200-M04N	JX1200-M04L	JX1200-M04Z
Category	A0-H	N2-H	L0-H	Z0-H	N/A			

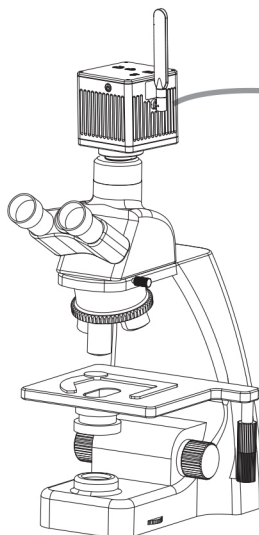
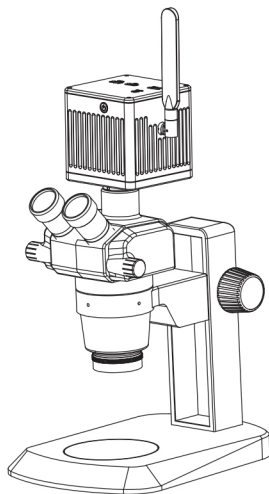
Note: When ordering, the model and category (if any) need to be listed at the same time. For example, when ordering a 20.0MP camera, which needs to be installed on the Olympus trinocular dovetail slot, the corresponding order list: Model: YY20 Category: A0-H.

» Installation with microscopes



» Solution ② for Trinocular (Smart Camera)

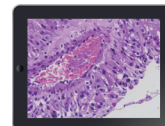
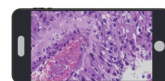
Suitable for observing with larger monitor



Recommend 24~27"high color gamut monitor

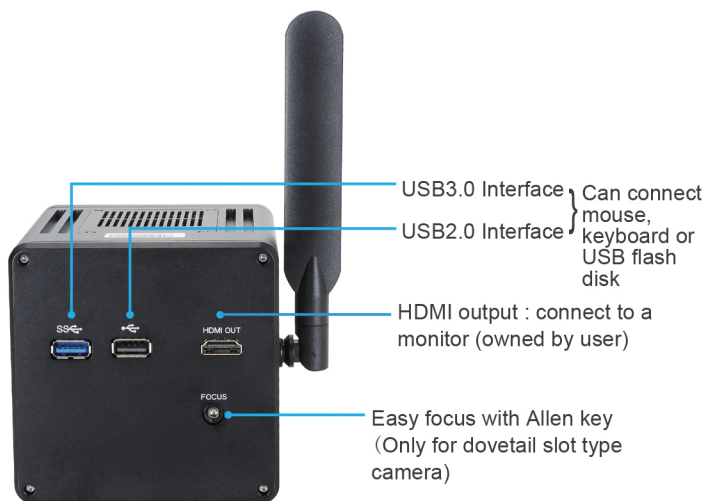
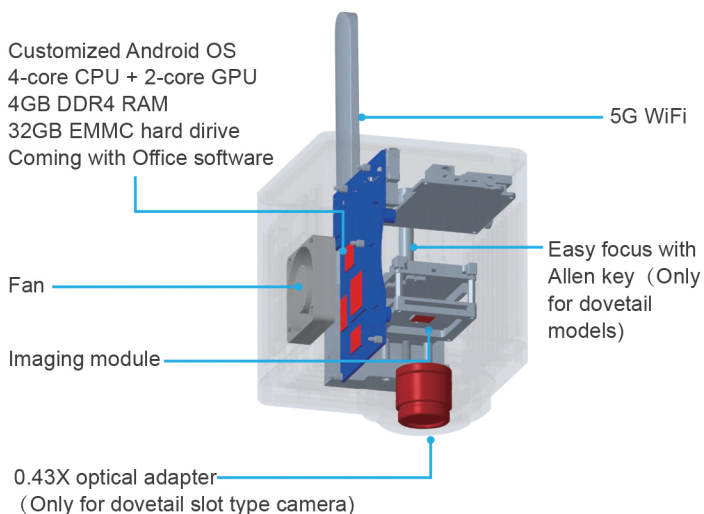
5G WiFi

Support max 30 mobile phones and tablets



» Interface

Customized Android OS
4-core CPU + 2-core GPU
4GB DDR4 RAM
32GB EMMC hard drive
Coming with Office software



» Models

Physical resolution	20.0MP				12.0MP			
Applicable to	Olympus	Nikon	Leica	Zeiss	Olympus	Nikon	Leica	Zeiss
C-mount models	CS20				CS12			
Dovetail models	YS20				YS12			
Category	A0-H	N2-H	L0-H	Z0-H	A0-H	N2-H	L0-H	Z0-H

Note: When ordering, the model and category (if any) need to be listed at the same time. For example, when ordering a 20.0MP camera, which needs to be installed on the Olympus trinocular dovetail slot, the corresponding order list: Model: YS20 Category: A0-H.

» Installation with microscopes



OLYMPUS



Nikon



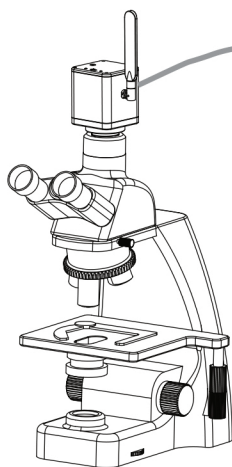
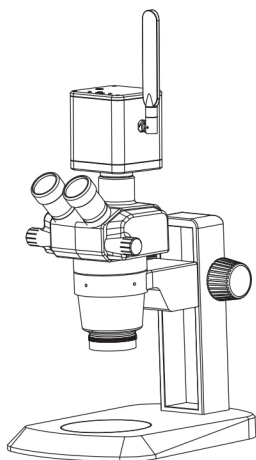
Leica



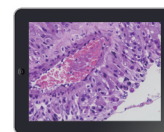
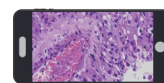
ZEISS

» Solution ③ for Trinocular (WiFi Camera)

Suitable for multi-tasking applications



Student computer (provided by agent or user)



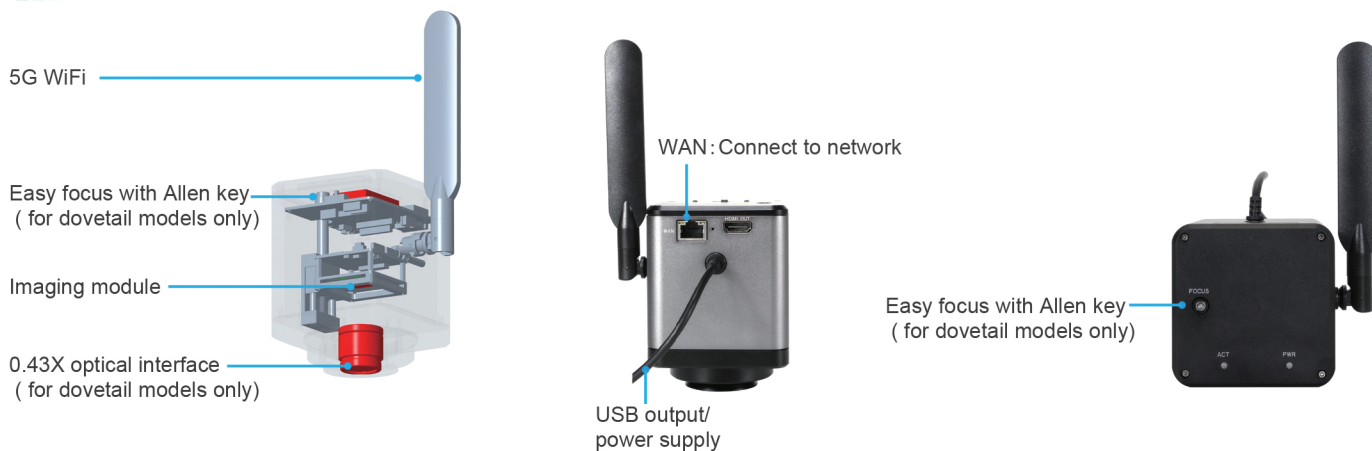
5G WiFi

Support max 30 mobile phones and tablets

Computer requirements

System	CPU	Hard disk	Memory	Graphics card	Wired network card
Win10 or later versions	i5 10th generation or later versions	512GB or more	8GB or more	Nuclear display	10/100/1000 adaptive

» Interface



» Models

Physical resolution	20.0MP				12.0MP			
Applicable to	Olympus	Nikon	Leica	Zeiss	Olympus	Nikon	Leica	Zeiss
C-mount models	CF20				MC1211-M			
Dovetail models	YF20				MC1211-M04	MC1211-M04N	MC1211-M04L	MC1211-M04Z
Category	A0-H	N2-H	L0-H	Z0-H	N/A			

Note: When ordering, the model and category (if any) need to be listed at the same time. For example, when ordering a 20.0MP camera, which needs to be installed on the Olympus trinocular dovetail slot, the corresponding order list: Model: YF20 Category: A0-H.

» Installation with microscopes



OLYMPUS



Nikon



Leica



ZEISS

Specifications of student camera solutions

Physical resolution	20.0MP	12.0MP
Image sensor	SONY IMX147 CMOS	SONY IMX412 CMOS
Exposure mode	Rolling Shutter	Rolling Shutter
Maximum resolution	5184×3888 (20,155,392 Pixels)	4000×3000 (12,000,000Pixels)
ISO sensitivity	Equivalent to 100-12800	Equivalent to 100-12800
Sensor size	1/2.3"	1/2.3"
Pixel size	1.2μm×1.2μm	1.55μm×1.55μm
Spectral response	380-650nm	380-650nm
Exposure capability	Real-time auto and manual adjustment	Real-time auto and manual adjustment
Exposure time	10μm-333ms	10μs-333ms
White balance	Real-time auto and manual RB adjustment	Real-time auto and manual RB adjustment
Preview resolution	5184×3888@10fps	4000×3000@30fps
Power supply	DC 12V 5A(solution ①②),DC 5V 2A(solution ③)	DC 12V 5A(solution ①②),DC 5V 2A(solution ③)
Wireless protocol	5G WiFi IEEE802.11ac	5G WiFi IEEE802.11ac
Color bit depth	12Bit	12Bit
Software and App	Built-in camera App: PrimeCam Edu AO(solution ①②) App for mobiles: PrimeCam Edu (solution ①②③)	Windows Software: PrimeCam WiFi Edu-S (solution ③)

» Student camera solution ① 15.6" high color gamut display

Number of pixels	1920(horizontal) x 1080 (vertical)
Pixels arrangement	RGB vertical stripe
Display number of colors	16.7M(8Bit)
Surface treatment	Anti-glare
Surface hardness	3H
Viewing angel range	170 horizontal, 170 vertical
Contrast	800
Brightness	500cd/ m ² (average of 5 points)

Accessories, product size and weight

» Accessories for tutor stations

» Allen key (3mm)



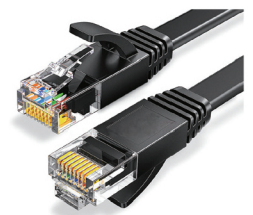
» Power adapter and power cord (Optional Chinese, American, European, Australian, Korean, British standard etc.)



» Dust cover 40cm width (opening) x 59cm height x 40cm side; Material: Oxford



» Gigabit Ethernet cable (2 m)



» Accessories for student stations

» Wired mouse and keyboard
(solution ①②)



» Allen key (3mm)



» Power adapter and power cord
(Optional Chinese, American, European, Australian, Korean, British standard etc. solution ①②)



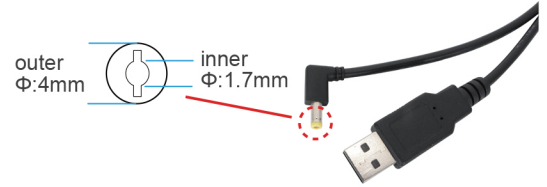
» Dust cover
40cm width (opening) x 59cm height x 40cm side; Material: Oxford



» Gigabit Ethernet cable (2 m)
(solution ③)



» USB to DC5.0 power cable (70cm)

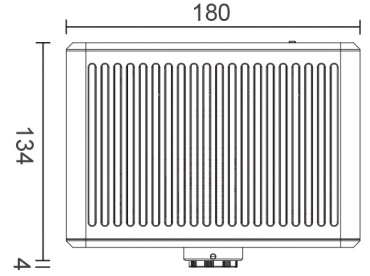
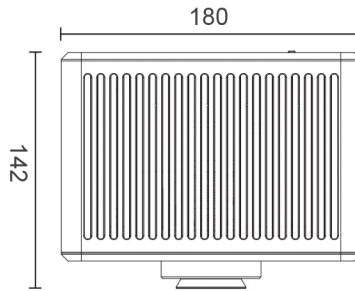
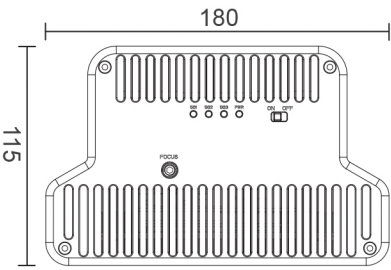


» Product size (unit :mm)

» Interactive workstation

Dovetail models, net weight ≈ 2kg

C-mount models, net weight ≈ 1.9kg

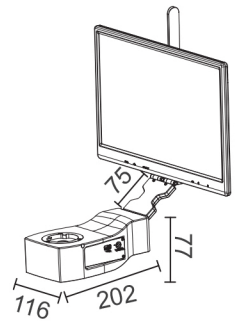
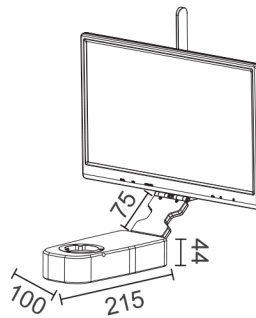
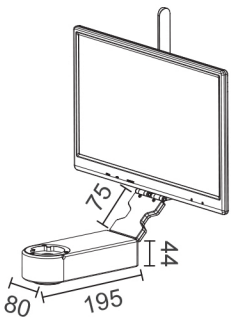


» Embedded Smart Display Camera

For Olympus, net weight ≈ 2.2kg

For Nikon and Zeiss, net weight ≈ 2.5kg

For Leica, net weight ≈ 3.1kg

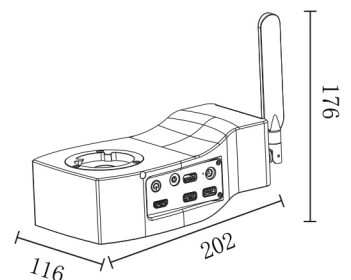
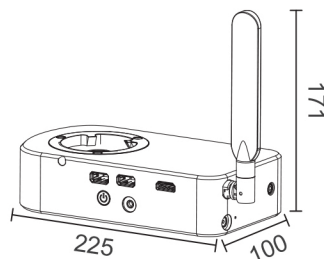
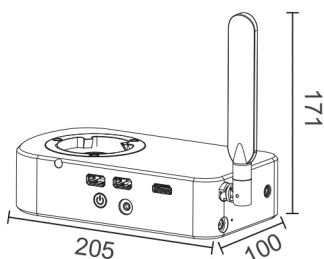


» Embedded smart camera

For Olympus, net weight ≈ 0.9kg

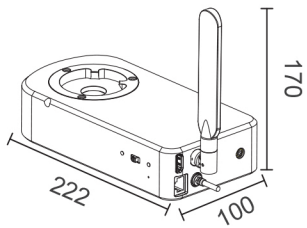
For Nikon and Zeiss, net weight ≈ 0.9kg

For Leica, net weight ≈ 1.8kg

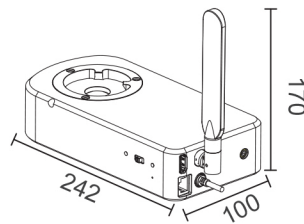


Embedded WiFi camera

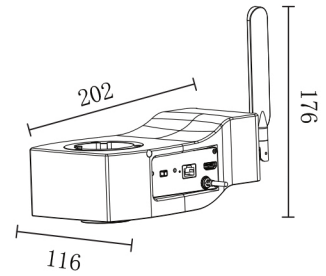
For Olympus, net weight $\approx 1.1\text{kg}$



For Nikon and Zeiss, net weight $\approx 1.1\text{kg}$

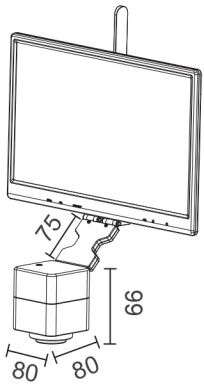


For Leica, net weight $\approx 1.8\text{kg}$

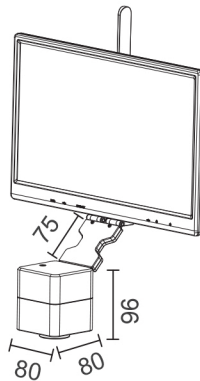


Smart display camera

Dovetail models, net weight $\approx 2\text{kg}$

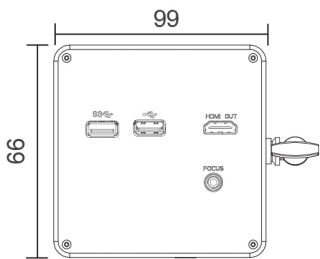


C-mount models, net weight $\approx 1.9\text{kg}$

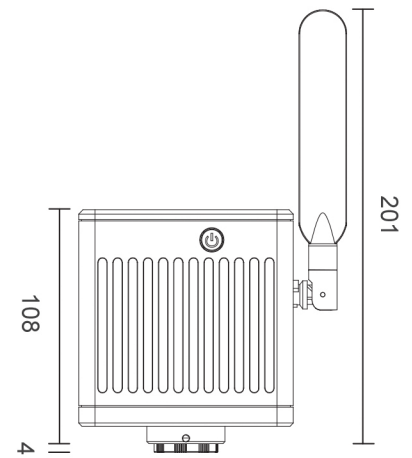
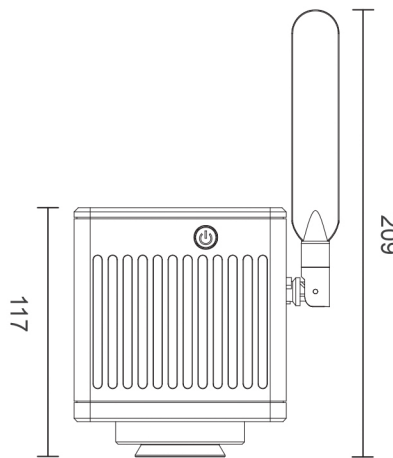


Smart camera

Dovetail models, net weight $\approx 1.3\text{kg}$

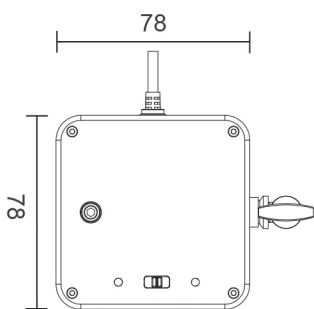


C-mount models, net weight $\approx 1.2\text{kg}$

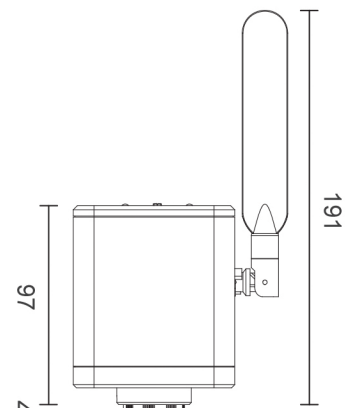
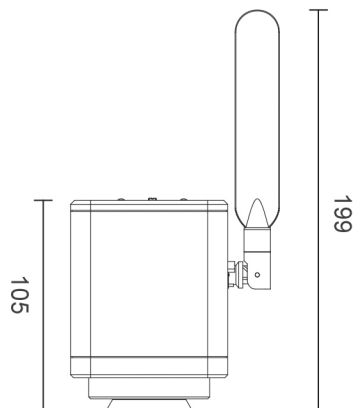


WiFi camera

Dovetail models, net weight $\approx 0.9\text{kg}$



C-mount models, net weight $\approx 0.8\text{kg}$



Special applications

» Cloud-based Interactive System

Using a third-party audio and video server, such as commercial version of Tencent VooV Meeting, the remote and local area interactive systems can be carried out simultaneously.

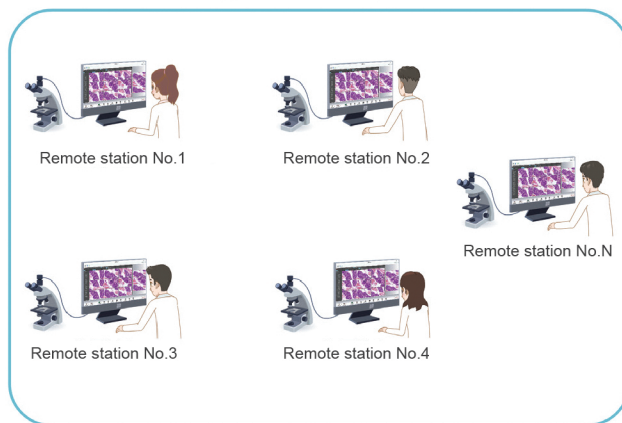
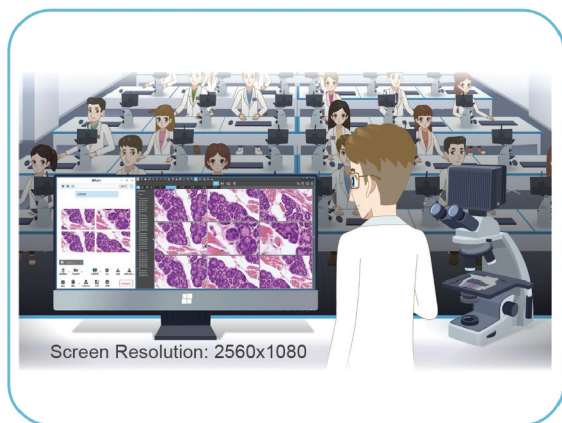
Cameras that want to join the interactive system through remote conferences need to support the standard UVC protocol and free of driver, so it is recommended to use the student solution ③ cameras. In this way, efficient sharing and collaboration with the 5G WiFi digital interactive system in the local area network can be realized.

Third-party audio and video server
(Supports Tencent VooV Meeting, Microsoft Teams, Zoom, etc.)

Local area interactive system stations



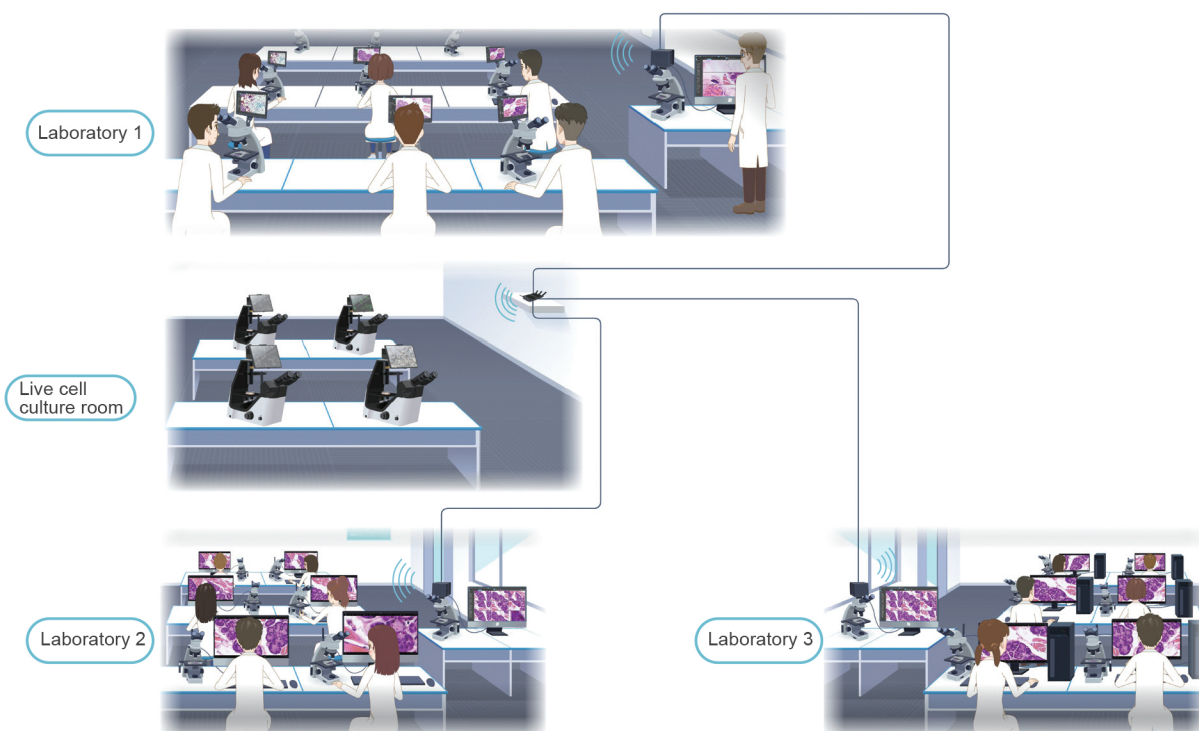
Remote stations

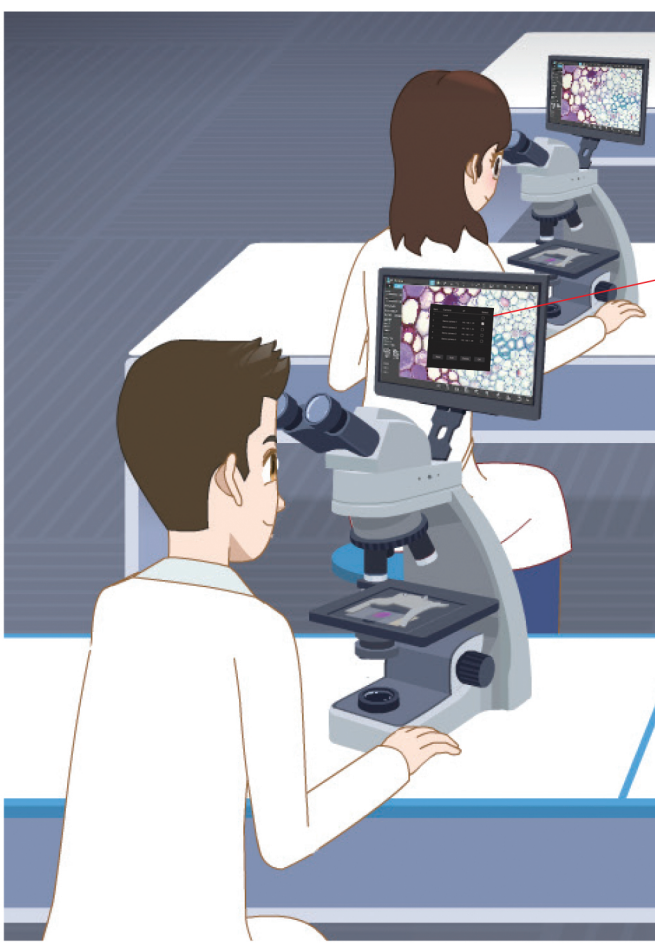


» Demonstration Classroom

Independent 5G WiFi microscope digital interactive systems are installed in different classrooms. When you need to live stream image under microscopes in other classrooms, our "Demonstration" function can easily help you achieve this goal, by using a ViMmatrix to connect the tutor interactive workstations in each classroom through network cables.

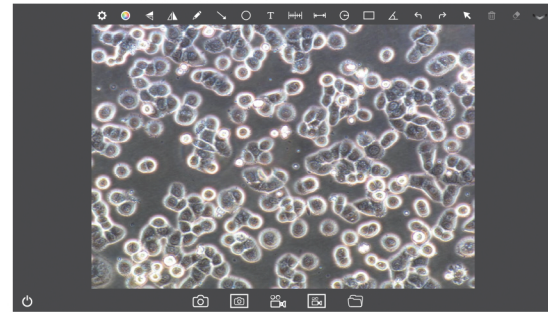
For example as follows, the student stations in the laboratory only needs to select camera from list to call the real-time image of live cell culture under the inverted microscope, or switch back to the local real-time image of biological microscope.





Item	Camera	IP	Select
1	Local		<input type="checkbox"/>
2	Demo camera 1	192.168.1.25	<input checked="" type="checkbox"/>
3	Demo camera 2	192.168.1.26	<input type="checkbox"/>
4	Demo camera 3	192.168.1.27	<input type="checkbox"/>
5	Demo camera 4	192.168.1.28	<input type="checkbox"/>

New Edit Delete OK



Interactive System Layout

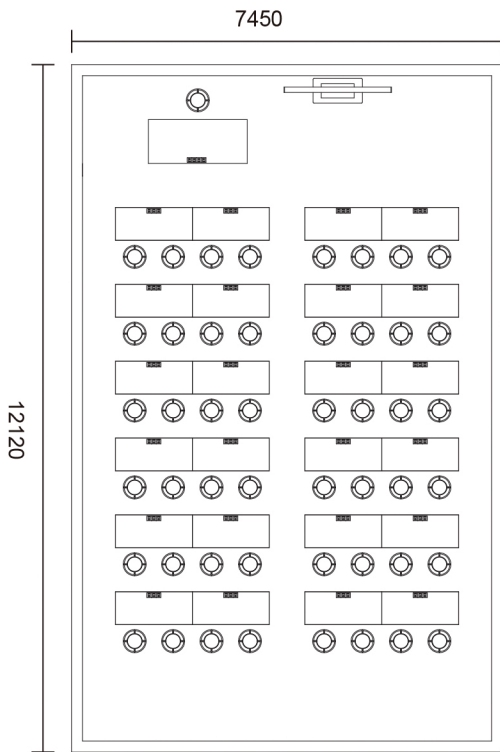
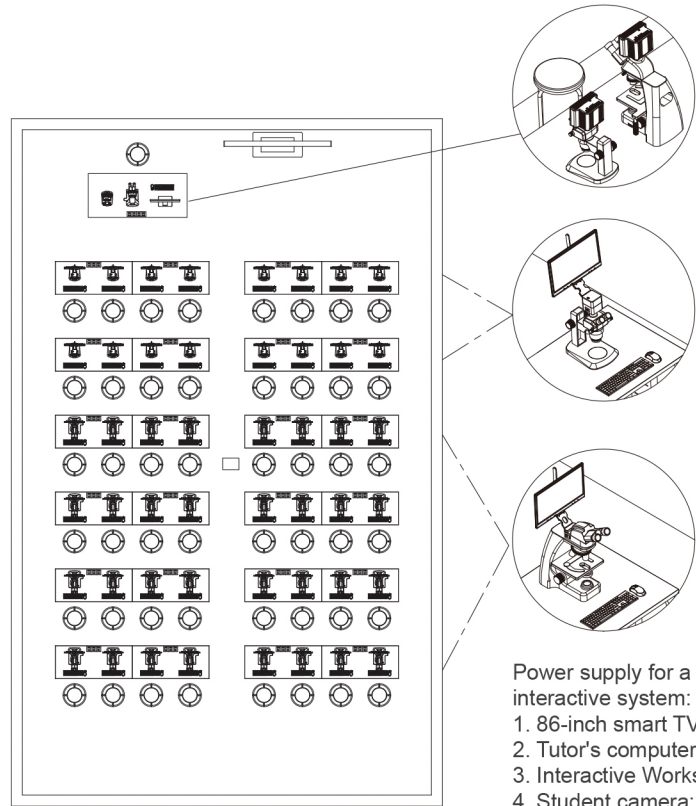


Table and Chair Layout



Classroom with Interactive System Layout

Power supply for a 48+1 interactive system:

1. 86-inch smart TV: 880W
2. Tutor's computer: 800W
3. Interactive Workstation: 60W
4. Student camera: 60W x 48=2880W

Total power needed: 4680W

Note: The above is only the electric power required by the interactive system, and does not include other equipment (such as air conditioner, lighting, etc.)

Table for tutor
Unit:mm

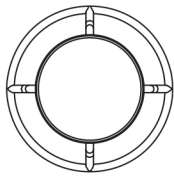
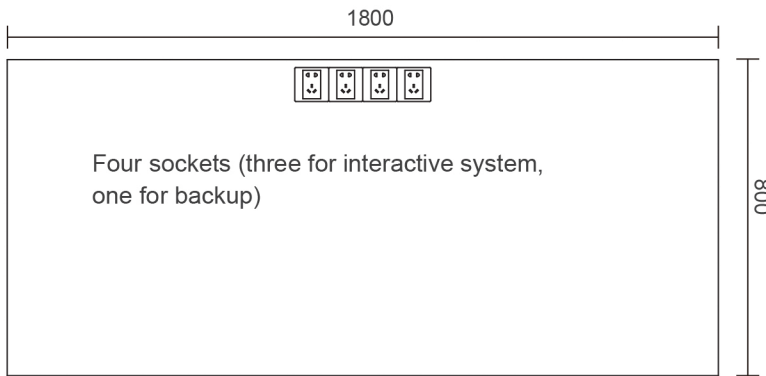
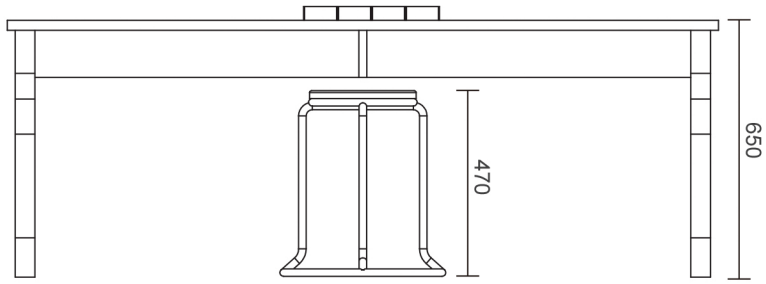
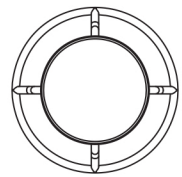
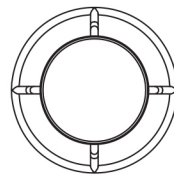
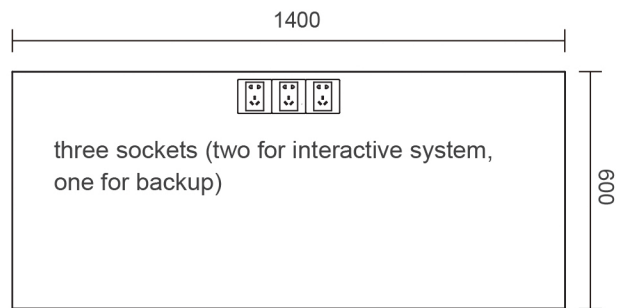
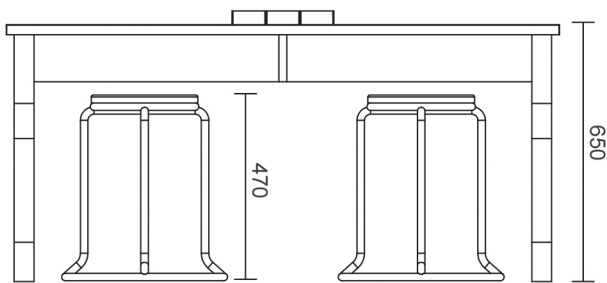


Table for student
Unit:mm



Certifications

1. Comply with FCC certification of The US Federal Communication Commission.
2. Comply with European (standard) safety CE certification.
3. Comply with the MIC certification issued by the Ministry of Internal Affairs and Communications of Japan (Electric Wave Method and Electro-Optical Communication Business Law).
4. Comply with JATE certification of Japanese telecommunications law directive.
5. Comply with the "Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment" (RoHS) Directives in accordance with EU legislation.

Evaluation object	Certification	Certificate File Name & Report	Certificate number & corresponding report number
WF01A (5G WiFi 11ac)module	US FCC Report	SZEM180100024801-5G wifi RPT-WF01A FCC Report	SZEM180100024801
		SZEM180100024802-RT-WF01A FCC Report	SZEM180100024802
		Appendix A-Photographs of EUT Constructional Details for SZEM1801000248CR-FCC	SZEM1801000248CR
	US FCC ID Certification	2AFO3WF01A_NII-WF01A FCC ID	2AFO3WF01A
	EU CE report	SZEM180100024901 EN301489 RPT-WF01A CE Report	SZEM180100024901
		SZEM180100024902 WIFI5G RPT-WF01A CE Report	SZEM180100024902
	Japanese MIC Certification	CSRT180084-WF01A Japanese MIC Certification	CSRT180084
Japanese JATE Certification	CSTT180018-WF01A Japanese JATE Certification	CSTT180018	
The interactive system	US FCC Report	GZEM1904012105-MC500W-G1 FCC Certification	GZEM1904012105CRV
	US FCC ID Certification	GZEM1904011889CRV-MC500W-G1 CE Certification	GZEM1904011889CRV

Patented

Patent category	Patent name	Patent number
Invention patent	A distributed mobile teaching system	ZL 2019 1 0537803.3
Design patent	Electronic eyepiece	ZL 2015 3 0193227.8
	Wireless electronic eyepiece	ZL 2015 3 0193223.X
	Electronic eyepiece with spectroscopic system	ZL 2019 3 0331144.9
	Microscope (with splitting prism camera)	ZL 2019 3 0717439.X
	Microscope with camera	ZL 2019 3 0717442.1
Utility model patents	WiFi microscope eyepiece	ZL 2015 2 0296469.4
	Electronic eyepiece	ZL 2015 2 0426409.X
	Wireless electronic eyepiece	ZL 2015 2 0426313.3
	Microscope with displayer	ZL 2019 2 0928962.1
	Electronic eyepiece with splitting prism system	ZL 2019 2 1022863.3

Software copyright

Category	Name of software	Platform	License number
Computer software copyright registration certificate	PrimeCam Edu	Windows	2018SR637994
		iOS	2019SR0117929
		Android	2019SR0133580
	PrimeCam Edu AO	Android	2021SR1287731



High-Tech Enterprise certificate number:
GR202044010599



ISO9001 Verification No:00220Q26395R2S

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