KoPa®

5G WiFi(11ac)
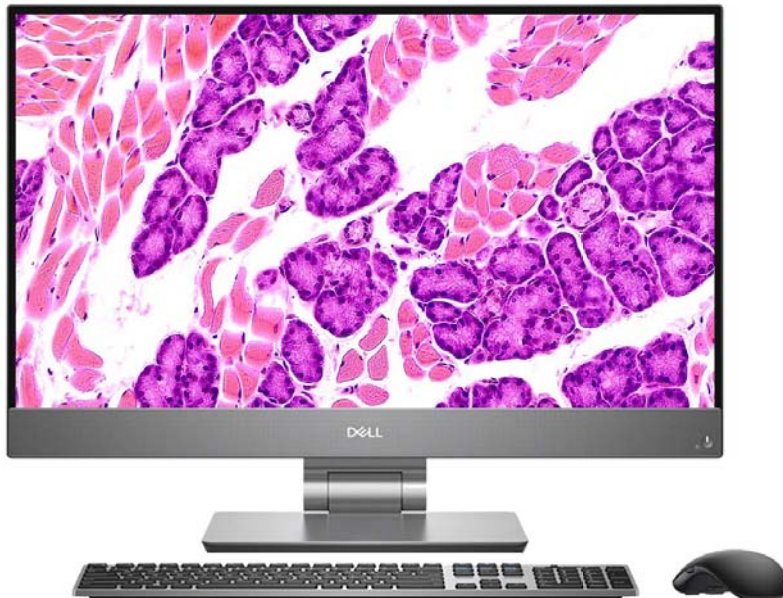
Innovative 5G WiFi (11ac) Interactive Microscope Classroom System

Install in minutes / Multiple operation systems supported / Free of tedious infrastructure

Support rapid digitization of pure optical trinocular microscope

OLYMPUS
CX23

Three interactive system solutions

1 One microscope vs. 1 - 8 smart devices.
Suitable for small laboratory / class / workshop, etc.

**1080P FULL HD** 2.0MP / 5.0MP

4K ULTRA HD 8.0MP / 12.0MP

Solution:
- 5G WiFi (11ac) camera (choose from the following models) :
  MC1210-W, MC810-W, MC510-W, MC210-W(please refer to the specifications
  of corresponding models)
- Windows PC software: Micro WiFi Lab
- Smart devices applications: Micro WiFi Lab
- Smart devices (purchased with a distributor or provide for oneself) : support
  iOS, Android and Windows systems;
- Hardware requires 5G WiFi（11ac）, while laptop or desktop without 5G WiFi（11ac）
  requires an external network card.

2 One microscope vs. 11-50 smart devices.
Suitable for large and medium-sized laboratories / classrooms
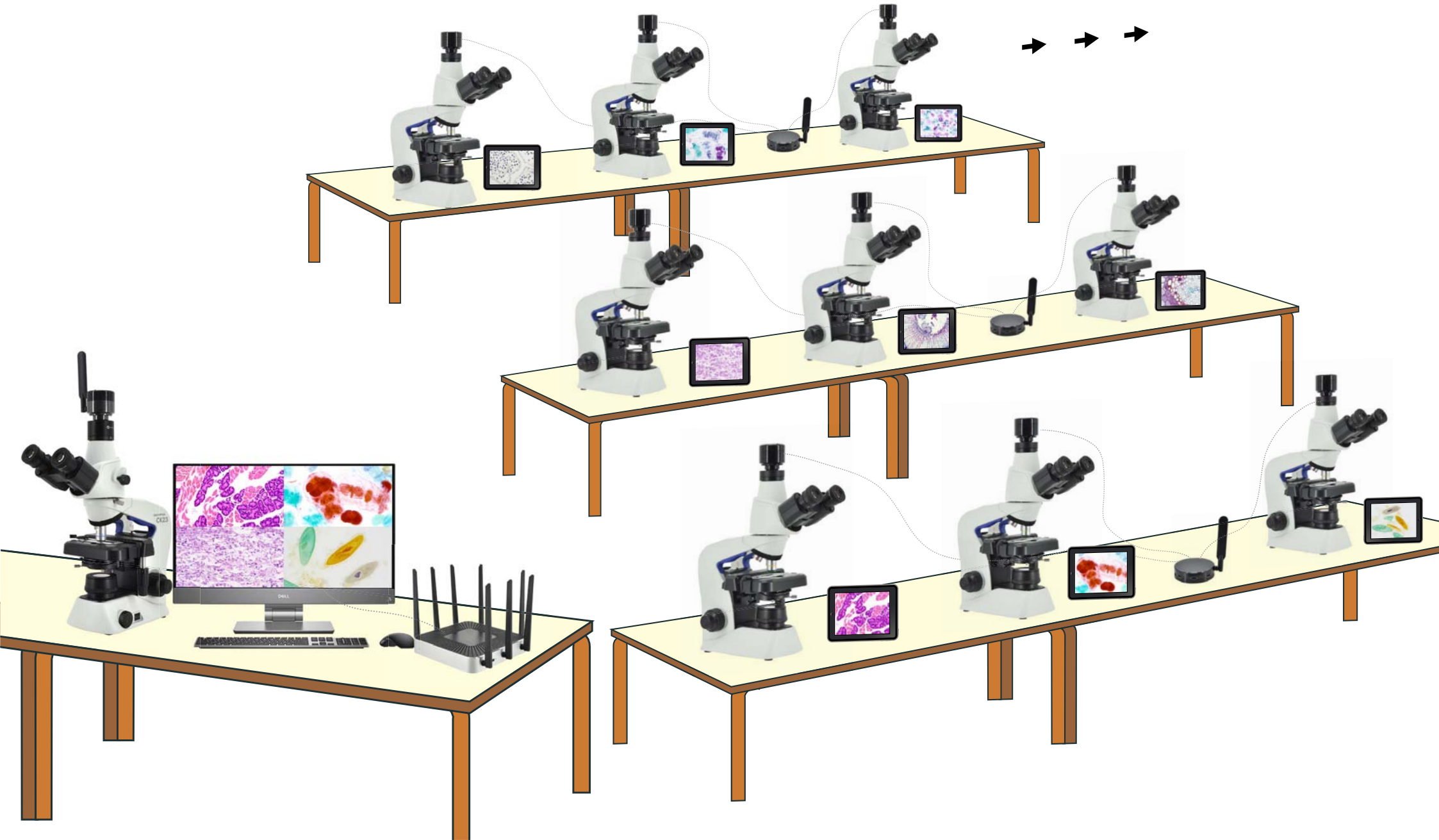/seminars and so on.

Solution:
- 5G WiFi (11ac) camera (choose from the following models) :
  MC1210-W, MC810-W, MC510-W, MC210-W(please refer to the specifications of
  corresponding models)
- Master ViMatrix VM3500
- Windows PC software: Micro WiFi EDU
- Smart devices applications: Micro WiFi EDU
- Smart terminal (purchased with the agent or provide for oneself) : support
  iOS, Android and Windows systems;
- Hardware requires 5G WiFi 11ac, while laptop or desktop without 5G WiFi 11ac
requires an external network card
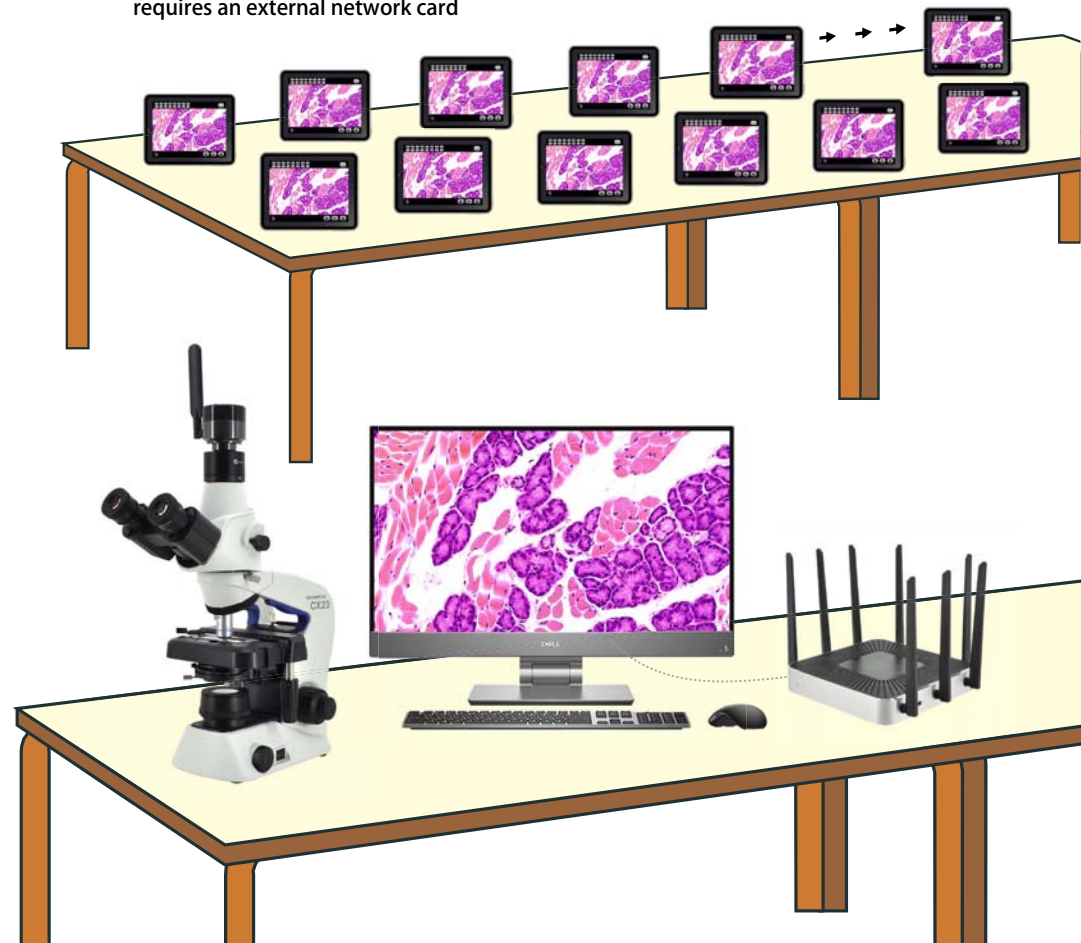
3 12-60 microscope vs. 12-60 smart devices.
It is suitable for the microscope education activities of 12-60 people in universities, research institutes, hospitals and so on.

Example of 5G WiFi (11ac) Microscope Classrooms

LOWER COLUMBIA COLLEGE

Training

No.1 Classroom : 49 sets

No.2 Classroom : 25 sets

No.3 Classroom : 25 sets

No.4 Classroom : 17sets

Smartphones, tablets, and laptops are the carriers of modern networked knowledge. 5G WiFi (11ac) Interactive Microscope Classroom System gives us a great sharing platform that liberates you from device or location and give you unlimited access and function to knowledge -making learning fun and engaging us in the 21ist technology. Let's face it, everybody that has a smartphone /tablet are walking computers with access to data on moments notice via text or verbal commands. The future is here. It only takes a microscope, a WiFi camera and an App to let student / teacher collaboration meet anywhere. Where the students take this technology from here is the most exciting part.We have successfully integrated every microscope in the classroom with this new technology.
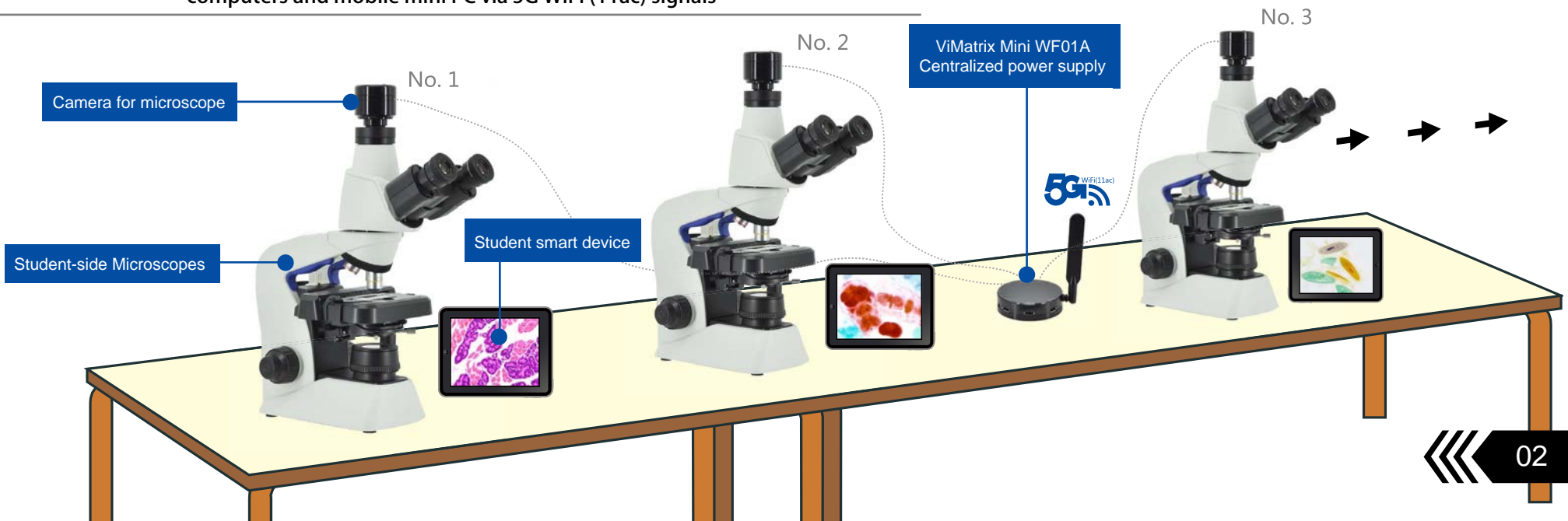
System layout

Master 5G WiFi (11ac) ViMatrix

WiFi(11ac)

Internet

ViMatrix
VM3500

Teacher mobile
mini PC (optional)
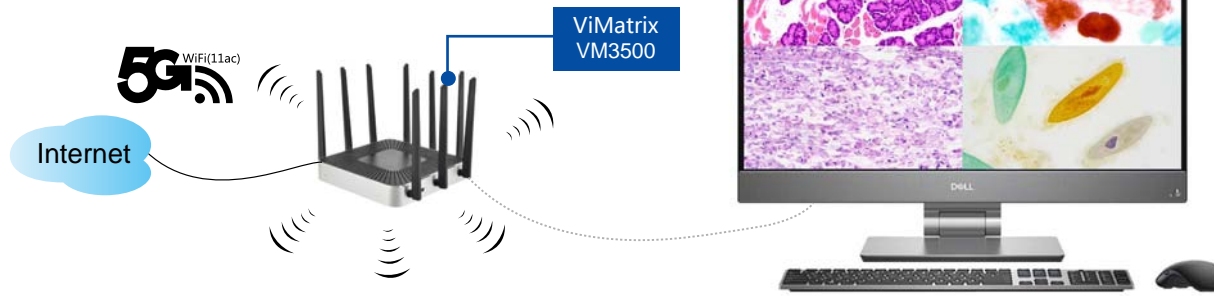
Student-side

Real-time images under microscope are transmitted wirelessly to teacher-side computers and mobile mini PC via 5G WiFi (11ac) signals

No. 1

No. 2

No. 3

Camera for microscope

ViMatrix Mini WF01A
Centralized power supply

WiFi(11ac)

Student smart device

Student-side Microscopes

System composition

✔ No tedious Infrastructure, efficient installation, plug and play.

✔ Individual smart devices are involved into education activities and the efficiency of study is improved exponentially.

✔ Not site restrictions, easy to move the system as you want.

✔ Support four major systems: Windows, Mac, iOS, and Android.

✔ Independent camera desinged for rapid upgrades in the future.

✔ Self-built LAN, high-speed and stable data transmission.

Optical microscope

OLYMPUS
Your Vision, Our Future

Optional 0.5x or 1x adapter

Camera for microscope

KoPa®

Camera for student   Camera for teacher

Master 5G WiFi (11ac) ViMatrix VM3500

KoPa®

5G WiFi(11ac)

Student side Vimatrix Mini

KoPa®

5G WiFi(11ac)

Teacher computer

Recommend

DELL

Software：Micro WiFi EDU

When used on a PC, you need to install the interactive software Micro WiFi EDU which included in this System .

5G WiFi (11ac) supported tablet and smartphone (please bring yours or purchase with distributors)

5G WiFi(11ac)

APP：Micro WiFi EDU

Scan provided QR code to download APP Micro WiFi EDU for iOS and android smart devices

Projection

The teacher side computer can use the projector for large-screen display, but also can use the lecturing mode of this system, real-time stream such as microscopic images, comptuer documents to the smart devices of students, so as to obtain high-quality teaching effect.

Audio system

Teachers and students can do one-to-one voice communication;to ensure audio quality, dedicated high-quality microphone for teachers is provided by designated agents;students can use their own headphones.

Classroom requirements

Student desks requirements: please provide enough physical space to the student microscope and Vimatrix Mini, 3 student microscope cameras share one Vimatrix Mini. It is recommended that three student cameras have a physical distance of less than 2 meters . Two mains outlets should available (rated output voltage is AC 100-240V).

Olympus optical microscope

- Ergonomic grips add safety when retrieving the microscope from high places.
- Colored grips indicate the appropriate places to hold the microscope.
- Smooth, rounded design eliminates sharp edges.
- The CX23 microscope is one of the lightest in its class, with a total weight of approx. 5.9 kg (13.01 lbs).

1

Convenient and easily accessible power cable storage

Locking pin for easy binocular rotation

- A locking pin keeps the observation tube in place.
- Interpupillary adjustments, ranging from 48 to 75 mm, enables individual users to set it to their needs.
- Eyepoint adjustments accommodate the user's height and provide greater comfort.
- Left and right diopter adjustment enable optimal focus for each eye.

Minimum: 48 mm

Interpupillary adjustment

Eyepoint height adjustment

3

Focus lock

Wide field of view

FN 18
FN 20
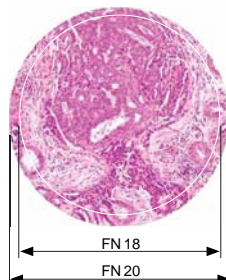
- The focus lock helps prevent the objectives from damaging the specimen.
- Field number (FN) of 20 provides a wide field of view.
- The CX23 microscope features plan achromat objectives that preserve outstanding image flatness throughout the field of view.
- The energy saving LED light source provides a long operation lifetime of 20,000 hours.
- Daylight balanced LED illumination preserves the vivid colors on HE-stained samples.

5

Angled arm enables comfortable carrying

Ergonomic grip for easy carrying

- A locking pin keeps the observation tube in place.
- Interpupillary adjustments, ranging from 48 to 75 mm, enables individual users to set it to their needs.
- Eyepoint adjustments accommodate the user's height and provide greater comfort.
- Left and right diopter adjustment enable optimal focus for each eye.

Fixed eyepieces

Rackless stage and stage cover

2

Fine knob

Coarse knob

Inward-facing revolving nosepiece

Coaxial knobs

- An inward-facing rotating nosepiece facilitates a larger working area above the stage, enabling easier operation and specimen exchange or making it easier to apply oil to immersion objectives.
- Objectives with long working distances provide clearance for thick samples and slides.
- Bring specimens into focus quickly by using the coaxial knobs for fine or coarse adjustments. The microscope is built for durability and precise control, whether accessed from the left or right side.
- A torque release function helps prevent damage if excess force is applied to the coarse focusing knob or stage knob.

4

Cable storage compartment

Built-in security slot

- A storage compartment on the back of the CX23 microscope makes it easy to stow the power cable after use.
- Protect your investment with an optional custom designed wooden case.
- When the CX23 microscope needs to be left unattended, a built-in security slot enables attachment of an anti-theft cable.
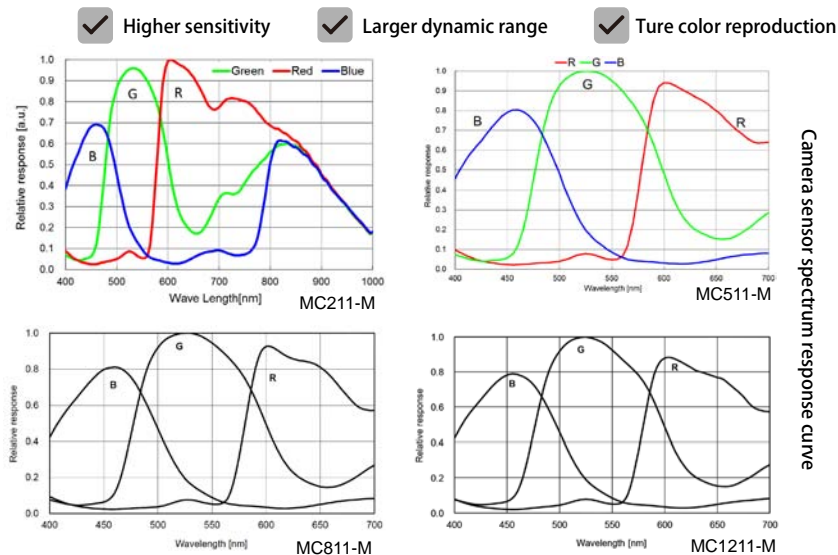
6

Camera for microscope

SONY Color CMOS

Plug and play, powered by the ViMatrix Mini, safe and reliable.Do not change the mechanical structure of the microscope, do not destroy the original optical system of the microscope.Static and dynamic pixel are real synchronized, no pixel interpolation.

The camera only has a power button to prevent students from misoperation. Independent camera designed makes it easy to quickly upgrade a higher resolution camera in the future.When the camera needs to be repaired or replaced, it can be instantly unscrewed without waiting for the after-sales person-nel to be present.

✔ 2.0MP MC211-M   ✔ 5.0MP MC511-M   ✔ 8.0MP MC811-M   ✔ 12.0MP MC1211-M

✔ Higher sensitivity   ✔ Larger dynamic range   ✔ Ture color reproduction

MC211-M

MC511-M

MC811-M

MC1211-M

Camera sensor spectrum response curve

Master 5G WiFi (11ac) ViMatrix VM3500

The unique ViMatrix controls all cameras, and the teacher-side PC has all administrator rights of the system.

9 strong signal antennas, can cover the diameter of up to 50 meters of spherical environment, to meet the requirements of teaching activities.

Ultra-strong core to ensure stable real-time image and data transmission.

Provides 1 WAN to support Internet connection and 4 LAN ports available to connect with teacher's PC.

Multi-terminal data synchronization and transmission, the maximum transmission rate can reach 2600Mbps @ 5G Hz.

Student side 5G WiFi (11ac) ViMatrix Mini

One high gain single frequency external antenna.

Friendly-designed three 5V 2A USB charging interface, availble for students to charge their smart devices in the classroom.

Three power ports for microscope camera .

Three cameras share one ViMatrix Mini.

# Teacher Interactive software Micro WiFi EDU
Six main interactive teaching methods allows arbitrary composition of use
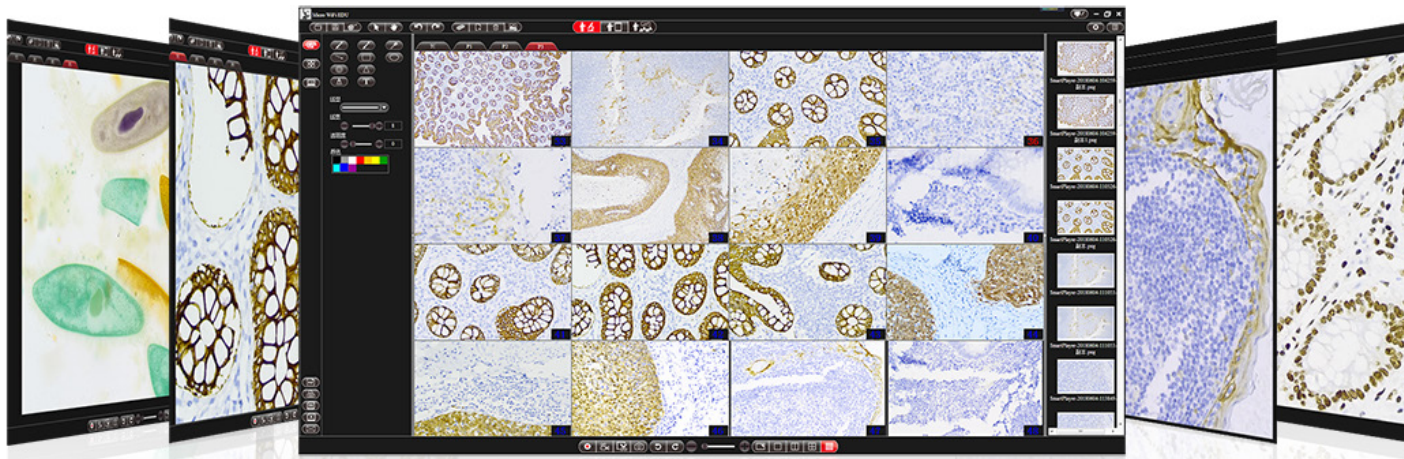
• User-friendly interface with icons, easy to identify and quickly use.

• Each function has been designed to be very accessible and helpful to education and research.

• Unique black background, eliminate miscellaneous light interference, improve microscope image recognition.

Scope of applications:

- ☑ Education teaching
- ☑ Cell Lab
- ☑ Pathological Studies
- ☑ Blood Science
- ☑ Parasite Science
- ☑ Microbiology
- ☑ Material analysis
- ☑ Environmental studies
- ☑ Food/Beverage Control
- ☑ General cytology such as agriculture, forestry, livestock

Install Teacher PC software from supplied CD

Micro WiFi EDU
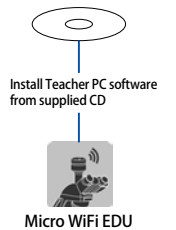
Lecturing mode

The teacher PC screen or the selected student smart device screen is streamed to all student smart devices synchronously.

Lecture materials such as PPT/ WORD/ EXCEL are displayed on the smart device of students in real time to enrich the teaching content.

The operation process of the teacher PC or the selected student smart device is displayed to all student smart devices synchronously.
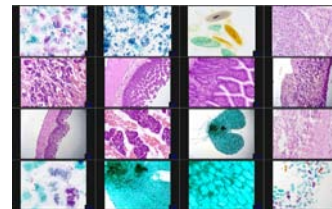
Demonstrate student works

Live-demo the selected camera video to the entire student smart devices.

Monitor live-image under microscope camera

Teachers can easily capture all camera live-image, confirming that all cameras are connected successfully.


Annotate student works

Annotate and edit selected images and documents, and send the operation process to all student smart devices in real time.

Annotation tools:

Curve pen	Linear pen	Light stick	Arrow	Undo	Redo
Delete selected object	Delete all objects	Add text	Line width	Linear	Color selection
Select font	Rectangular	Elliptic	Concentric circle		

Monitor smart devices screen

Real-time monitoring of all student smart devices screen to ensure that all students participate in learning. The students' annotations, measurements, and other operations in the APP are displayed on teacher's PC. The progress of the study can be checked at any time. The teacher can show the selected student smart devices screen to all students.

Non-participated

Participated

Participated

No connection to camera
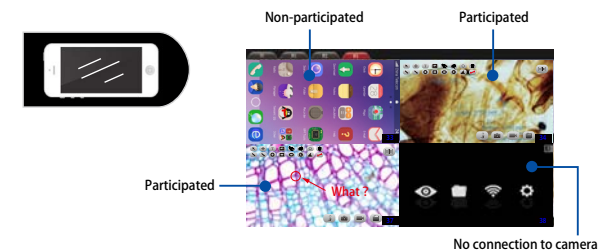
Multi-screen comparison teaching

- ☑ Static picture comparison
- ☑ Dynamic Video comparison
- ☑ Static vs. dynamic mixing comparison
- ☑ Support for cross-window annotating
- ☑ Support teacher-to-peer comparison with selected students

Teacher interactive software Micro WiFi EDU Interactive shortcuts

Multi-page camera monitoring window, capturing the teacher-side image and all student-side real-time image simultaneously.

Take picture, record, screen-capture, screen-record for single or multiple student-side images.

Smart settings for camera : restore all camera default parameters;
Restore all camera default names;
Disable parameters adjustment on all smart devices.
Modify the camera name; restore the current camera default name.

The teacher receives students ' voice and answers one-on-one questions.

Delete all documents with one click and reset the system with one click (convenient for next class teachers and students).

Smart devices black and white list management: delete all white list and blacklist; allow Smart devices authorization message popup;The smart device is authorized to join into the system in order. Check all authorized samart devices list.

23 measurement tools to meet basic teaching requirements.

|											
Linear	Parallel	Double parallel line	Stitch	Rectangular	Polygon	Arc	Three-point vertical	Four-point angle	Three-point angle	Ellipse	Round
Center radius	Three-point draw circle	Concentric circle	Concentric radius circle	Three-point draw circle	Ring	Protractor	qХОТМ R X	q ХОТМ R X	Ruler	Compass	

Teacher-side mobile Mini PC (optional)

The mobile Mini PC has the same control and functions as the teacher-side PC, enabling easy mobile teaching in the classroom.

Windows tablet
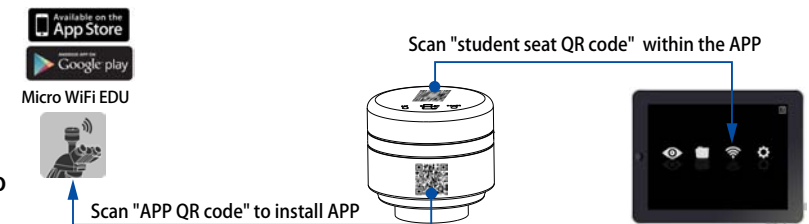
Student smart device APP Micro WiFi EDU
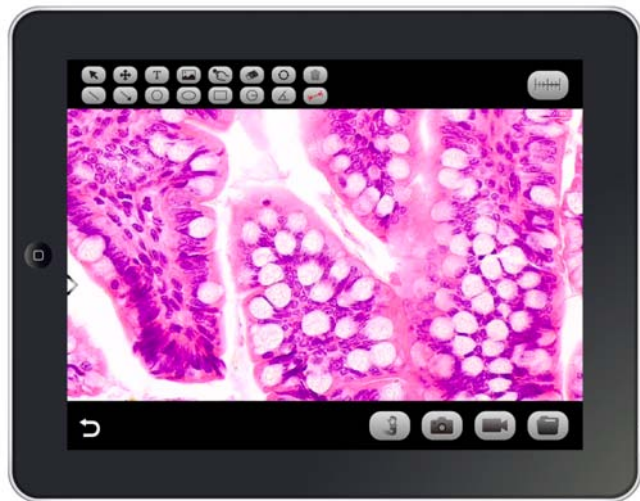
Scan supplied "student seat QR code" to access micro image directly.

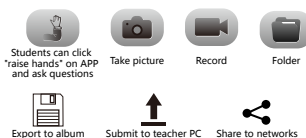Take photos / videos and record important content in real time.

Annotate, measure, doodle, add pictures, improve learning efficiency.

The student smart devices and the teacher-side PC can send each other voice realizes individual counseling.

Generates learning / research reports within student APP easily and can sent to teacher's email immediately.

Available on the App Store
Google play
Micro WiFi EDU
Scan "APP QR code" to install APP
Scan "student seat QR code" within the APP

Tool bar

Students can click "raise hands" on APP and ask questions	Take picture	Record	Folder
Export to album	Submit to teacher PC	Share to networks	

Annotation tools

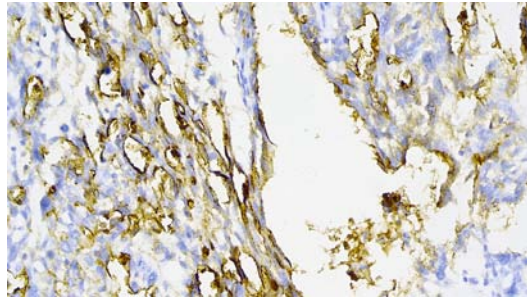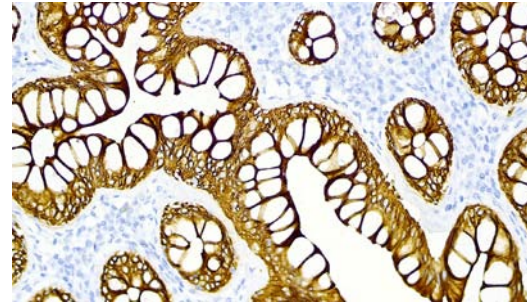|								
Select	Move	Add text	Add a picture	Hand-draw	Eraser	Rotate	Delete	Line
Single-arrow	Round	Oval	Rectangular	Rounded radius	Protractor	Linear measurement	Calibration	

System Image Samples
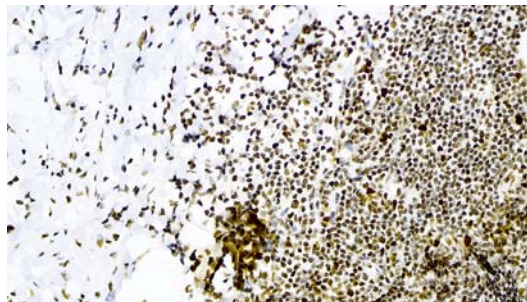
Taken by CX23 and camera MC811-M
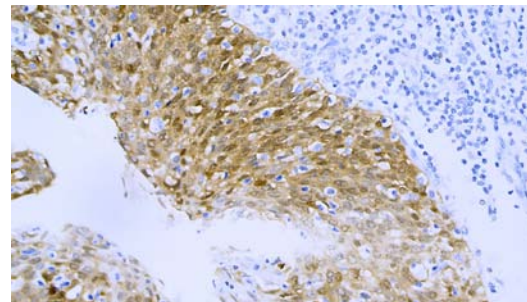
Immunohistochemistry
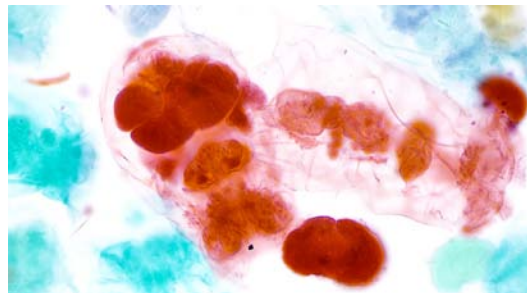

Ovarian cancer membranes 40X
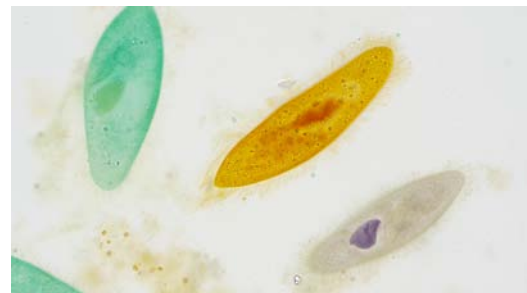

Colon pulp 40X

Appendix nucleus 40X
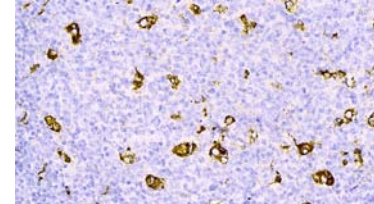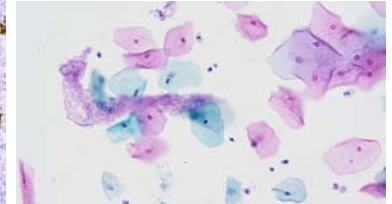

Cervical cancer nuclear slurry 40X
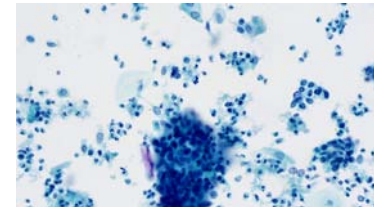
Insect

Wheel-worm 40X
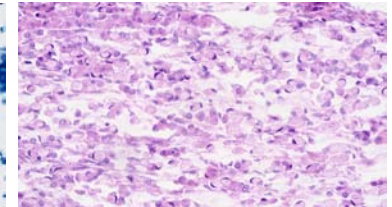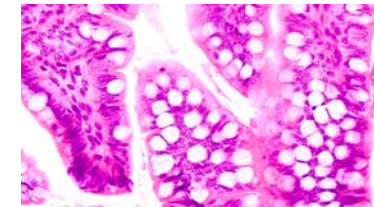

Paramecium stons 40X

Pathological samples

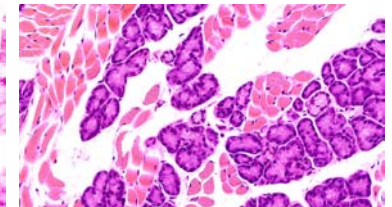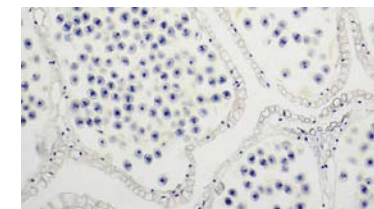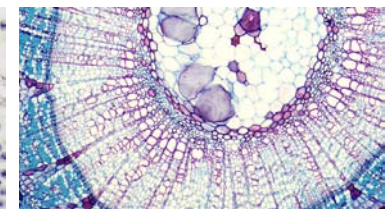40X

40X

40X

40X

Animals samples

Canine ileum 40X

Dog taste buds 40X

Plant

Pine young male cone longitudinal 10X

Lime tree stem cross 10X

Technical specifications

Microscope model	CX23
Body	gnirevoc citsalp evitcetorp ,emarf latem tsac-eid munimulA
Optical system	UIS2 optical system（Infinity optical system）
Illumination system	Built-in transmited illumination system, LED power consumption: 0.5 W (nominal value)
Focusing	Stage height movement（Coarse movement stroke:15mm）,Coarse adjustment limit stopper ・Torque adjustment for coarse adjustment knob ・Fine focus knob (minimum adjutsment gradations: 2.5 μm)
Revolving nosepiece	Fixed quadruple nosepiece with inward tilt
Stage	egats dexif lacinahcem tnemevom eriW Traveling range (X × Y): 76 mm × 30 mm, Specimen holder, Specimen position scale
Observation tube	Tube inclinatio 30° Interpupillary distance adjusting range：48 - 75mm, Eyepoint adjustment: 370.0 - 432.9mm
Objectives	Plan Achromat, anti-fungal 4x　　　　NA: 0.10　　W.D.:　　27.8　mm 10x　　　NA: 0.25　　W.D.:　　8.0　mm 40x　　　NA: 0.65　　W.D.:　　0.6　mm 100xOil　　NA: 1.25　　W.D.: 0.13 mm (CX23LEDRFS1 built-in)
Eyepiece(10x)	Field of view (FN): 20 (mildew-proof treatment)
Optional accessories	Reflector (CH20-mm), 15 X eyepiece (WHSZ15X-H：FN12, mildew-resistance treatment), Special wooden box, eyepiece micrometer, dark field diaphragm (CH2-DS+ CH2-FH)
Weight	Approximately 5.9 kg
Rated voltage/Electric current	AC100－240 V 50/60 Hz 0.4 A
Power consumption	Less than 2W

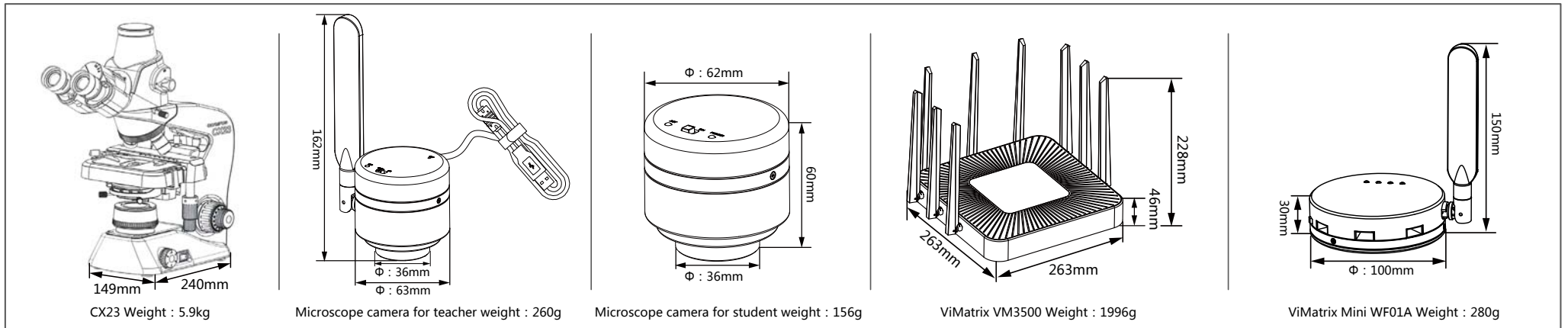| Student camera	MC211-M	MC511-M	MC811-M	MC1211-M
Teacher camera	MC211-W	MC511-W	MC811-W	MC1211-W
Resolution	2.0MP	5.0MP	8.0MP	12.0MP
Image sensor	SONY IMX291 CMOS	SONY IMX178 CMOS	SONY IMX274 CMOS	SONY IMX226 CMOS
Exposure mode	Rolling exposure	Rolling exposure	Rolling exposure	Rolling exposure
Maximum resolution	1920 x 1080 (2,073,600 Resolution)	2592 x 1944 (5,038,848 Resolution)	3840 x 2160 (8,294,400 Resolution)	4000x 3000 (12,000,000 Resolution)
Sensor size	1/2.8″	1/1.8″	1/2.5″	1/1.7″
Pixel size	2.9μm x 2.9μm	2.4μm x 2.4μm	1.62μm x 1.62μm	1.85μm x 1.85μm
Dynamic range	128dB	＞80dB	＞80dB	＞80dB
Signal-to-noise ratio	30dB	≥50dB	≥50dB	≥50dB
Spectral response	380-650nm			
Exposure capability	Real-time automatic, single-time automatic, manual adjustment			
White balance	Real-time automatic, single-time automatic, manual R B separately adjusted			
Record format	Photo Picture format：JPG Resolution：1920x1080 Video Video format：MOV Resolution： 1920X1080@50FPS(50Hz), 1920X1080@60FPS(60Hz), 1280x720@50FPS(50Hz), 1280x720@60FPS(60Hz)	Photo Picture format：JPG Resolution：2592x1944 Video Video format：MOV Resolution： 2592X1944@30 FPS, 2560X1920@30 FPS, 2048x1536@30 FPS, 1920x1080@30 FPS	Photo Picture format：JPG Resolution：3840x2160 Video Video format：MOV Resolution： 3840X2160@25 FPS, 2592X1944@25 FPS, 2048x1536@25 FPS	Photo Picture format：JPG Resolution：4000x3000 Video Video format：MOV Resolution： 4000X3000@15 FPS, 4096X2160@25 FPS, 3840x2160@25 FPS, 2592x1944@25 FPS

Software operating requirements	
System requirements	Microsoft® Windows® 7 / 8 /8.1/10(32 & 64 bit)
	CPU: i7 eight generation quad core or higher
	Memory: 8G or above
	Hard disk: at least 50 GB free space
	Graphics card: discrete graphics (NVIDIA display chip)
	Network card: 10/100/1000M adaptive
iOS requirements	iPhone X/ 8/ 8 Plus/7/ 7 Plus/6s/6s Plus/ 6/6 Plus iPad Pro(12.9 inches,2nd Generation)/(12.9 inches,1st Generation)/(10.5 inches)/(9.7 inches) iPad Air 2/iPad mini 4 and other new devices that support the 5G WiFi (11ac) protocol
	iOS11.0 and later system
Android requirements	Android 5.0 and later system
	CPU: Dual core 1.7GHz and later
	Memory RAM:3G or more
	Storage ROM: 8G or more recommended
	Support 5G WiFi (11ac) protocol

Master 5G WiFi (11ac) ViMatrix model	VM3500
Interface	4 x 10/100/1000BASE-T Ethernet RJ45 Interface 1 x 10/100/1000BASE-T Ethernet RJ45 Interface
Button	Power on/Off
Lights	Power Light, Status light
Antenna	9 high-gain single-band antennas
External power supply	AC100~240V/1.5A (Max)
Wireless parameters	
Protocol supported	5G WiFi IEE802.11ac
Frequency	5.180-5.825GHz
Signal rate	2600Mbps
Transport security	WPA/WPA2, WPA-PSK/WPA-PSK2 encryption
WAN type	Dynamic IP
Protocol	Supports IPV4 and IPV6

| Student - side 5G WiFi (11ac) ViMatrix Mini model	WF01A
Interface	3 x 10/100BASE -T Ethernet RJ45 Interface
Button	Power on/Off
Lights	Power Light, Status light
Antenna	1 high-gain single-band antennas
External power supply	DC12V 5A
Wireless parameters	
Protocol supported	5G WiFi IEE802.11ac
Frequency	5.180-5.825GHz
Signal rate	450Mbps
Transport security	WPA/WPA2, WPA-PSK/WPA-PSK2 encryption
Protocol	Supports IPV4 and IPV6

Dimensions

162mm
Φ : 36mm
Φ : 63mm
CX23 Weight : 5.9kg
149mm 240mm

Φ : 62mm
60mm
Φ : 36mm
Microscope camera for teacher weight : 260g

Microscope camera for student weight : 156g

228mm
46mm
263mm
263mm
ViMatrix VM3500 Weight : 1996g

150mm
30mm
Φ : 100mm
ViMatrix Mini WF01A Weight : 280g

About 5G WiFi (11ac)

5G WiFi (11ac) advantages over 2.4G WiFi

2.4G	5G WiFi(11ac)
Slow network speed, easy to be congested 1. Less channels: The 11n protocol supports a maximum of 14 channels. 2. Channel bandwidth is narrow: The transmission bandwidth of each channel reaches to only 20M. 3. Ttransmission speed is slow: Through the existing technology is difficult to achieve high transmission speed. Current normal maximum transfer speed is only 300Mbps.	Have a faster network and solve congestion 1. More channels: The 11ac protocol supports more than 100 channels. 2. Larger channel bandwidth: The transmission bandwidth of each channel reaches up to 80M. 3. Higher transmission speed: MU-MIMO technology is very convenient to achieve a transmission speed of 2600Mbps, or even higher.
Poor signal quality and heavy interference At present, the 2.4GHz band WiFi network is not only used on mobile phones, tablets, laptops, etc., but also various mobile devices such as handheld game consoles, bluetooth mouse/keyboard, bluetooth headsets, and microwave ovens. A large number of devices accumulated in a small frequency band and easily interfere with each other.	Better signal quality, less interference The 5G WiFi (11ac) band is less used and radio interference is greatly reduced, signal quality is greatly improved.

5G WiFi (11ac) supports more channel bands and has a faster network. The 5GWiFi (11ac)ViMatrix has a maximum transmission rate of 2,600 Mbps, easily covering a spherical range of 50 meters in diameter, and is suitable for teaching activities.

Φ : 50m
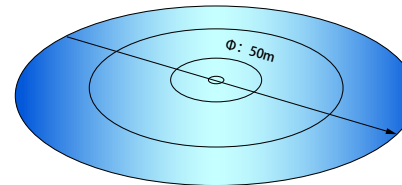
Difference between 5G communication and 5G WiFi (11ac)

5G communication refers to the fifth generation mobile communication technology, referred to as: 5G, which is an extension after 4G, and its working frequency is 3.5GHz. 5G WiFi (11ac) refers to the fifth generation WiFi transmission technology, referred to as: 5G WiFi. WiFi technology working in the 5.180-5.825 GHz band. The way they are implemented is completely different from the purpose. 5G communication is used for telephone calls, SMS communication, and mobile Internet access. The 5G WiFi (11ac) is used for large-scale and high-speed video and image transmission in small areas.