Solutions to Interactive System

LANOPTIK TECHNOLOGIES LTD | WWW.LANOPTIK.COM | info@lanoptik.com

The content of this promotion catalogue is published by the company's research and review. The contents are subject to change without prior notice.
The company names and product names are the trademarks and registered trademarks of each company.

KoPa®

5G WiFi Digital Microscope Interactive System

What is "5G WiFi Digital Microscope Interactive System"?

With the specially designed 5G WiFi module, the optical microscope, digital camera, PC, smart mobile devices and other equipment are skillfully integrated into a complete digital interactive system.

System Composition :

It consists of Tutor-side equipment and student-side equipment.

Tutor-side: Optical Microscope, Digital Camera, PC, Master ViMatrix, EDU Software.

Student-side: Optical Microscope, All-in-one Smart Displayer Camera and APP.

Build a Highly Efficient Teaching Ecosystem

Unleash the teaching, and unfold it with one click.

Three-foot podium, thousands of miles away. Whether it is a painstaking lesson plan or a real-time image under a microscope, it's transmitted to each student's smart mobile devices in one click, and the knowledge is no longer far away, completely solving the last mile of knowledge transmission.

Help students be more willing to learn and explore.

Smart-phones have changed everyday life and the way you look with a microscope. The microscope is no longer an cold optical device, it will become vivid and intelligent with the teaching system. In order to explore the micro world, have you ever seen the scene that students transmit images and discussions with their mobile phones during and after class?

Accurate color reproduction, showing the finest details.

Don't boast of ingenuity in front of people. What can you do if the image loses its true color. Without accurate color reproduction, resolution is worthless to a microscope. The camera insists on non-interpolation of images and frames, and truly restores each pixel, and makes every technical index of the camera have a lot of reliable data as the basis, which contributes to the sustainable development of microscope teaching activities and shows our respect for users.

Prospective configuration for the future.

This will be a powerful tool for learning with microscopes. The best combination of optoelectronic hardware,software and APP will help you cultivate more pathologists, biologists and botanists ....

Advantage 1: This system is self-built 5G WiFi LAN with high speed data transmission. It's signal can covers a room that up to 10,763 square feet. It can be set up and relocated at any time as long as give it power, no tedious infrastructure. Efficient installation, plug and play.

Advantage 2: This system is synchronous mixing supports three mainstream systems of Windows, iOS and Android. Excellent optical system and epoch-making wireless image transmission system are organically integrated. The overall image has the characteristics of high physical resolution, high frame rate, accurate color restoration and no distortion.

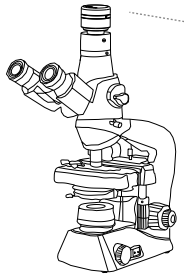
Advantage 3: This system provides student with smart all-in-one displayer camera with 100% color gamut 4K x 2K 15.6-inch UHD displayer , which is easy to use and manage, brings students unprecedented immersive experience.

Advantage 4: Teacher has the highest administrator rights to control the system. The teacher's software has six main interactive function modules and rich auxiliary tools to ensure the improvement of teaching efficiency, and also ensure the order of the classroom.

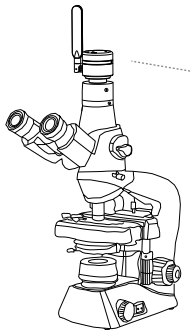
Advantage 5: The software and application provided by this system are original authorized and free to upgrade for product lifetime.

Advantage 6: Integrated structure design, save desk space, only one floor power supply cord for a whole student equipment.Clean and neat, in line with the requirements of environmental protection.

Tutor-side Configuration



Solution ①: Network camera

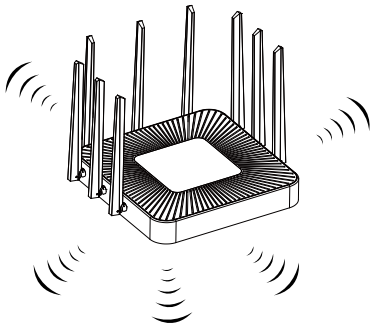


Solution ②: WiFi Camera

+

PC (Supplied by distributors)

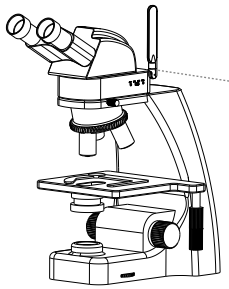
+



Master ViMatrix VM3500

+

EDU Software



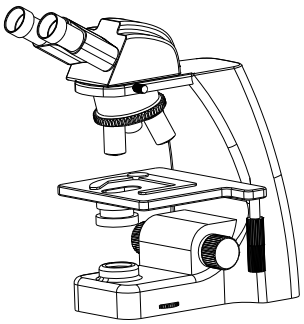
Solution ③: Embedded WiFi Camera

Optical Microscope

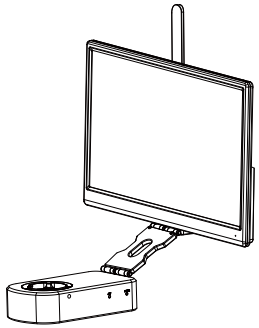
+ Power supply cord, cables, etc.

Camera Physical Resolution Options 8.0MP / 12.0MP

Student-side Solution ①

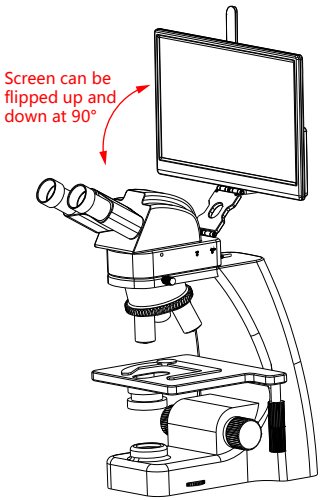


Optical microscope

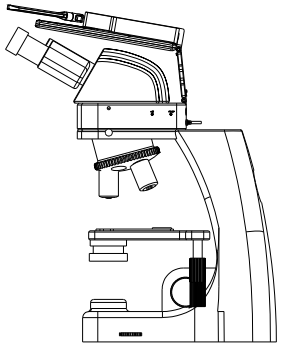


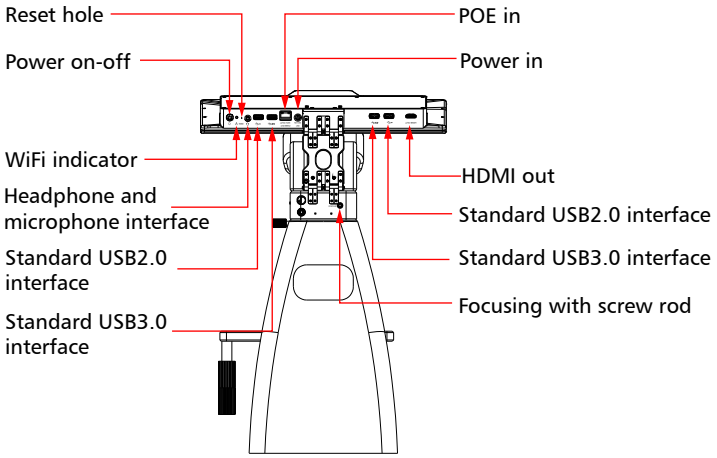
All-in-one Smart Displayer camera
5.0MP / 8.0MP /1 2.0MP

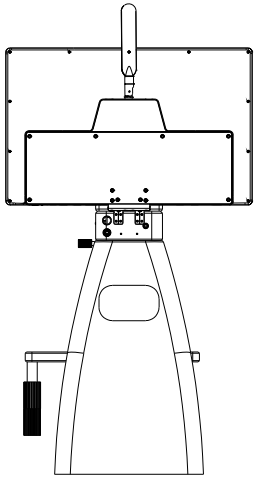
+ Power supply cord, cables, etc.



Two-axis adjustment for optimal vision and worry-free storage



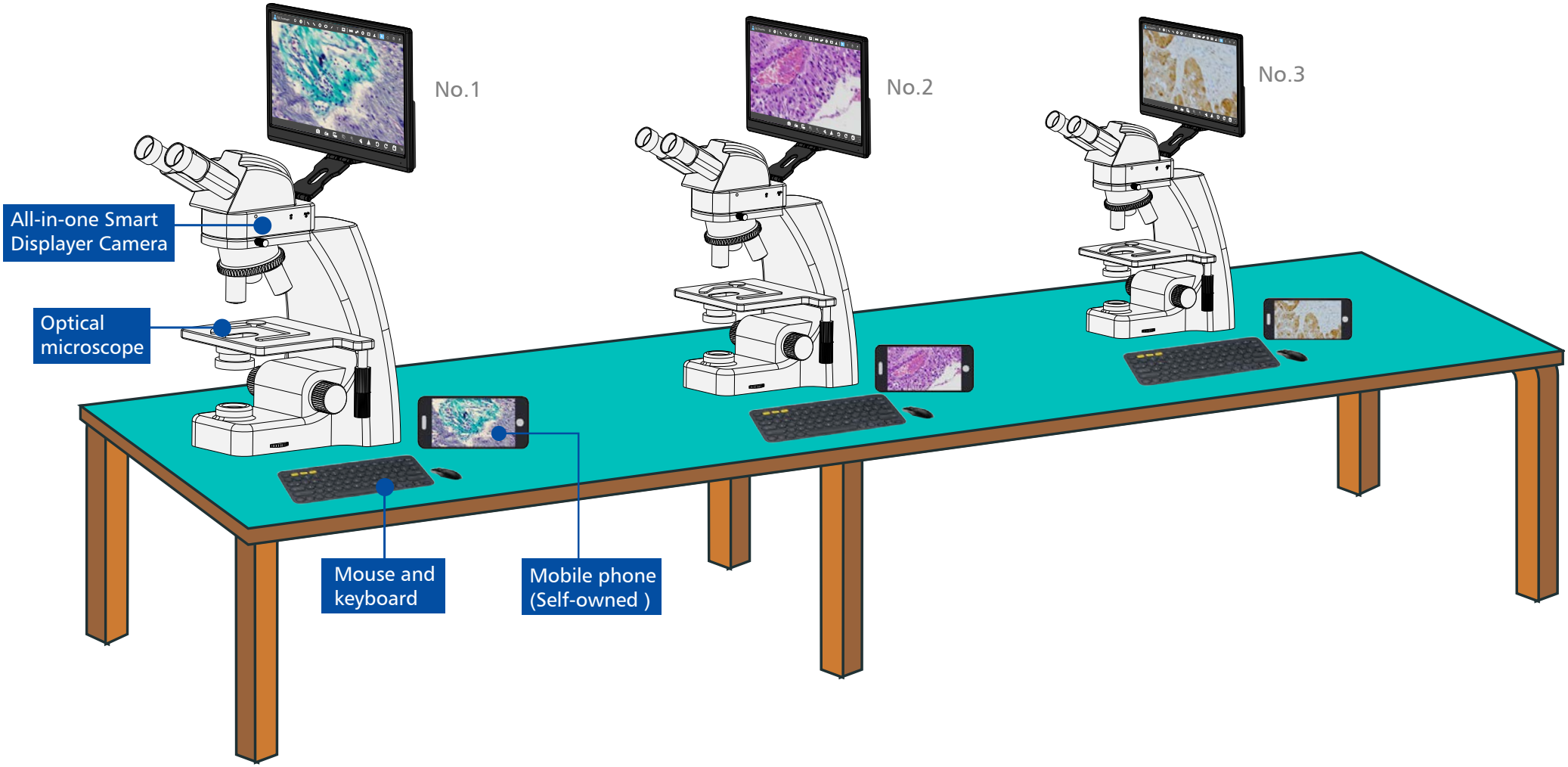




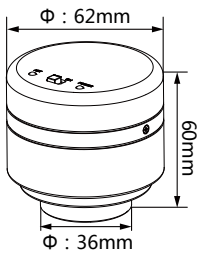
- The device is equipped with an all-in-one 15.6-inch 100% color gamut and ultra-high resolution 4K screen, and with built-in deeply customized operating system. It comes with imaging APP, when starting up , it will connect with microscopic live image instantly and automatically.
- Embedded with 50:50 splitting prism , without destroying the original optical system.
- Built-in high-power reduction lens for large field of view.
- Accurate and simple focusing with screw rod, to realize parfocality.
- 32 GB RAM ,support USB flash disk to export picture, video data.
- Supports HDMI output to monitor, TV, projector.
- The USB ports can connect to mouse and keyboard, convenient for measuring , typing and drawing.
- Allows students to use their mobile phone or tablet to scan the dedicated seat QR code for wireless point-to-point connection to share live imaging.
- The student microscope lighting source is directly powered by the All-in-one Smart Displayer Camera. With only one floor power cord, making the desktop clean and neat.

(This feature is only available on some microscope models)

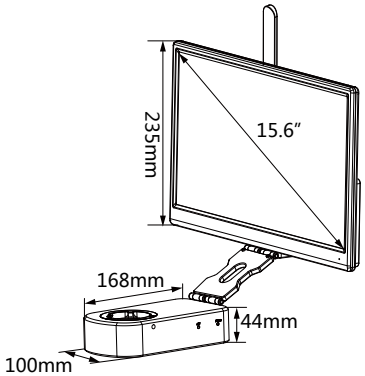
Student-side Solution ① Installation Diagram



Interactive Solution ① Specifications

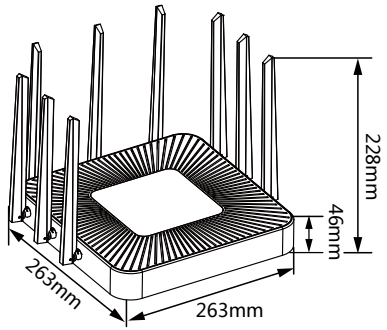


Teacher's Network Camera
Net weight:156g



Student All-in-one Smart Displayer Camera

Student All-in-one Smart Displayer Camera model	HD510-M	HD810-M	HD1210-M
Teacher's network camera model		MC811-T	MC1211-T
Physical resolution	5.0MP	8.0MP	12.0MP
Image sensor	SONY IMX178 CMOS	SONY IMX274 CMOS	SONY IMX226 CMOS
Exposure mode	Rolling exposure	Rolling exposure	Rolling exposure
Maximum resolution	2592×1944	3840×2160	4000×3000
Sensor size	1/1.8"	1/2.5"	1/1.7"
Pixel size	2.4μm×2.4μm	1.62μm×1.62μm	1.85μm×1.85μm
Dynamic range	＞80dB	＞80dB	＞80dB
Signal-to-noise ratio	≥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		
Preview resolution	2592×1944@15 FPS	3840×2160@15 FPS	4000×3000@15 FPS
Record format	Photo Picture format：JPG Resolution：2592×1944 Video Video format：MOV Resolution： 2592×1944@15 FPS	Photo Picture format：JPG Resolution：3840×2160 Video Video format：MOV Resolution： 3840×2160@15 FPS	Photo Picture format：JPG Resolution：4000×3000 Video Video format：MOV Resolution： 4000×3000@15 FPS
HDMI output resolution	Auto-adaptive display, up to 1920 × 1080 P60Hz		

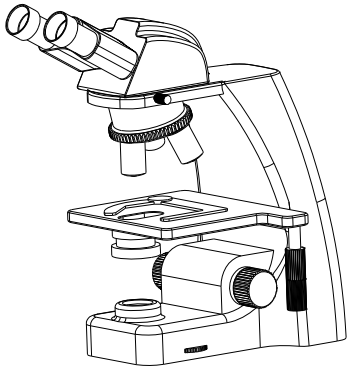


Master ViMatrix VM3500
net weight:1996g

Master ViMatrix Model	VM3500
Interface	LAN:4 x 10/100/1000BASE-T Ethernet RJ45 Interface WAN: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
Power in	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

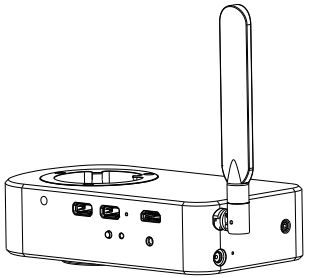
*In order to meet the special needs of customers, the company reserves the right to technical changes.

Student-side Solution ②



Optical microscope

+



Smart embedded camera
5.0MP / 8.0MP / 12.0MP

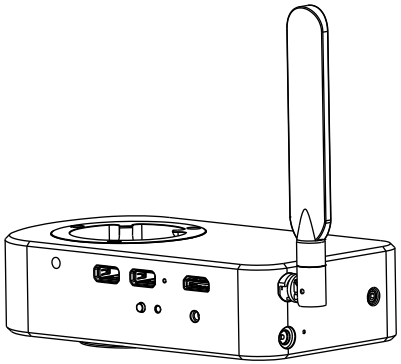
+

HDMI displayer
(Self -owned or supplied by distributor)

+

EDU APP
(for mobile devices)

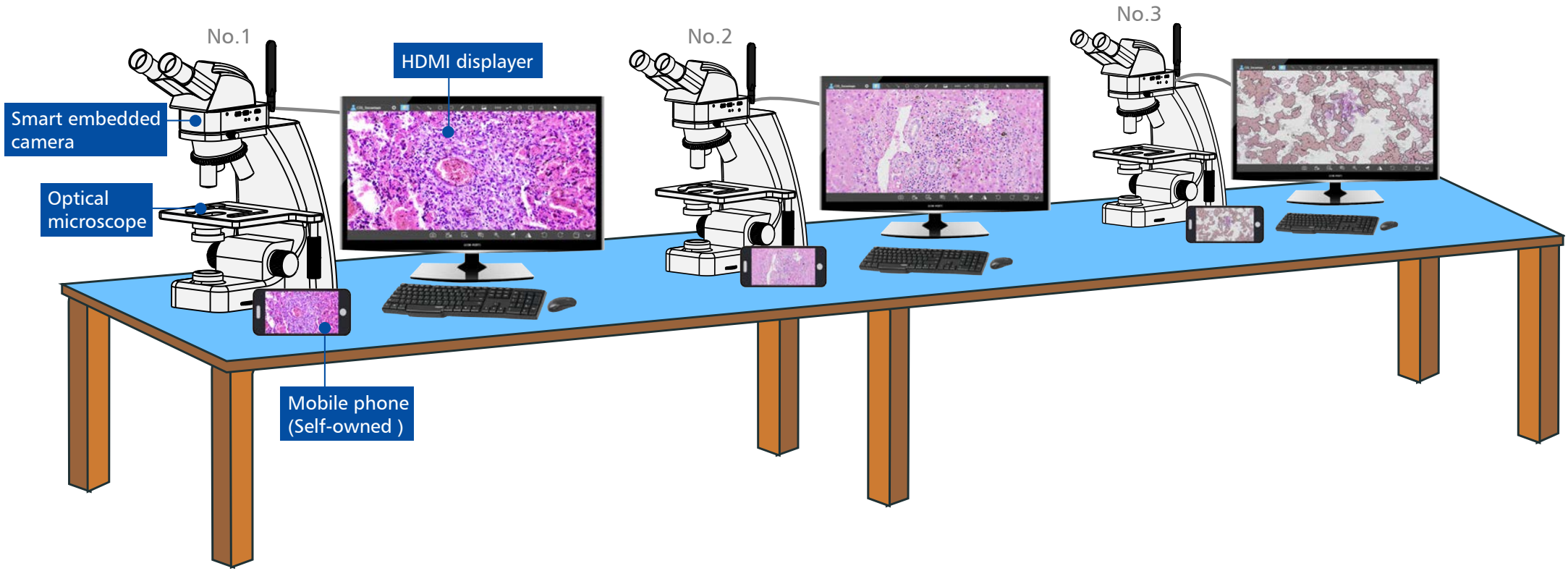
+ Power supply cord, cables, etc.



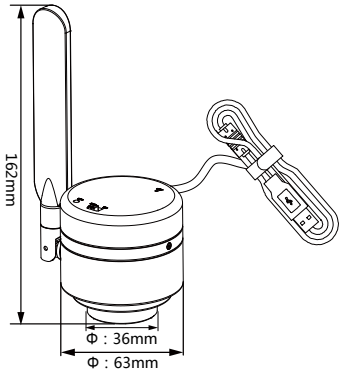
Embedded Smart Camera

- Built-in deeply customized operating system. It comes with imaging APP ,when starting up , it will connect with microscopic live image instantly and automatically.
- Embedded with 50:50 splitting prism , without destroying the original optical system。
- Built-in high-power reduction lens for large field of view.
- Accurate and simple focusing with screw rod, to realize parfocality.
- The USB ports can connect to mouse and keyboard, convenient for measuring , typing and drawing.
- HDMI out to monitor, TV, projector.
- The USB ports can connect to mouse,keyboard, convenient for measuring , typing and drawing.
- Allows students to use their mobile phone or tablet to scan the dedicated seat QR code for wireless point-to-point connection to share live imaging.

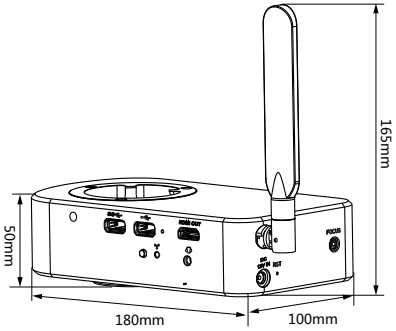
Student-side Solution ② Installation Diagram



Interactive Solution ② Specifications

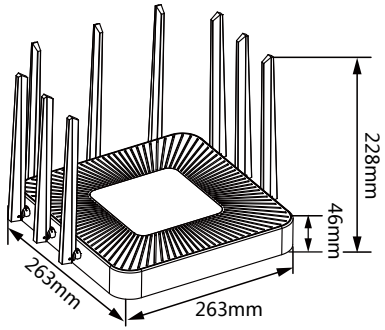


Teacher's WiFi Camera
Net weight: 260g



Student Embedded Smart camera

Student smart embedded camera model	HW500-M	HW800-M	HW1200-M
Teacher's WiFi camera model		MC811-W	MC1211-W
Physical resolution	5.0MP	8.0MP	12.0MP
Image sensor	SONY IMX178 CMOS	SONY IMX274 CMOS	SONY IMX226 CMOS
Exposure mode	Rolling exposure	Rolling exposure	Rolling exposure
Maximum resolution	2592×1944	3840×2160	4000×3000
Sensor size	1/1.8"	1/2.5"	1/1.7"
Pixel size	2.4μm×2.4μm	1.62μm×1.62μm	1.85μm×1.85μm
Dynamic range	＞80dB	＞80dB	＞80dB
Signal-to-noise ratio	≥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		
Preview resolution	2592×1944@15 FPS	3840×2160@15 FPS	4000×3000@15 FPS
Record format	Photo Picture format：JPG Resolution：2592×1944 Video Video format：MOV Resolution： 2592×1944@15 FPS	Photo Picture format：JPG Resolution：3840×2160 Video Video format：MOV Resolution： 3840×2160@15 FPS	Photo Picture format：JPG Resolution：4000×3000 Video Video format：MOV Resolution： 4000×3000@15 FPS
HDMI output resolution	Auto-adaptive display, up to 3840×2160 P60Hz		

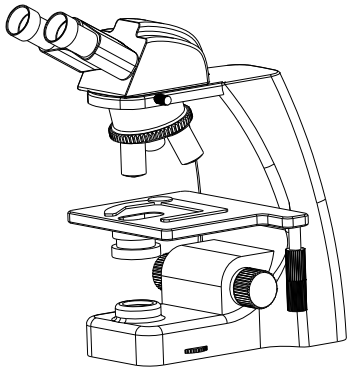


Master ViMatrix VM3500
Net weight:1996g

Master ViMatrix Model	VM3500
Interface	LAN:4 x 10/100/1000BASE-T Ethernet RJ45 Interface WAN: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
Power in	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

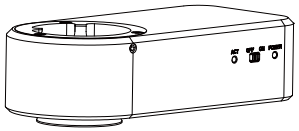
*In order to meet the special needs of customers, the company reserves the right to technical changes.

Student-side Solution ③



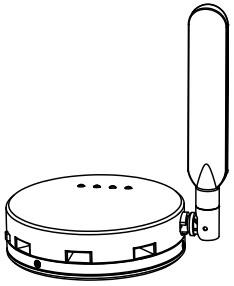
Optical microscope

+



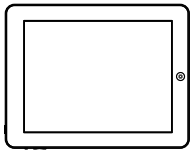
Embedded camera
2.0MP / 5.0MP / 8.0MP / 12.0MP

+



ViMatrix Mini

+



Smart mobile device
(Self -owned or supplied by distributor)

+

EDU APP
(for mobile devices)

\+ Power supply cord, cables, etc.

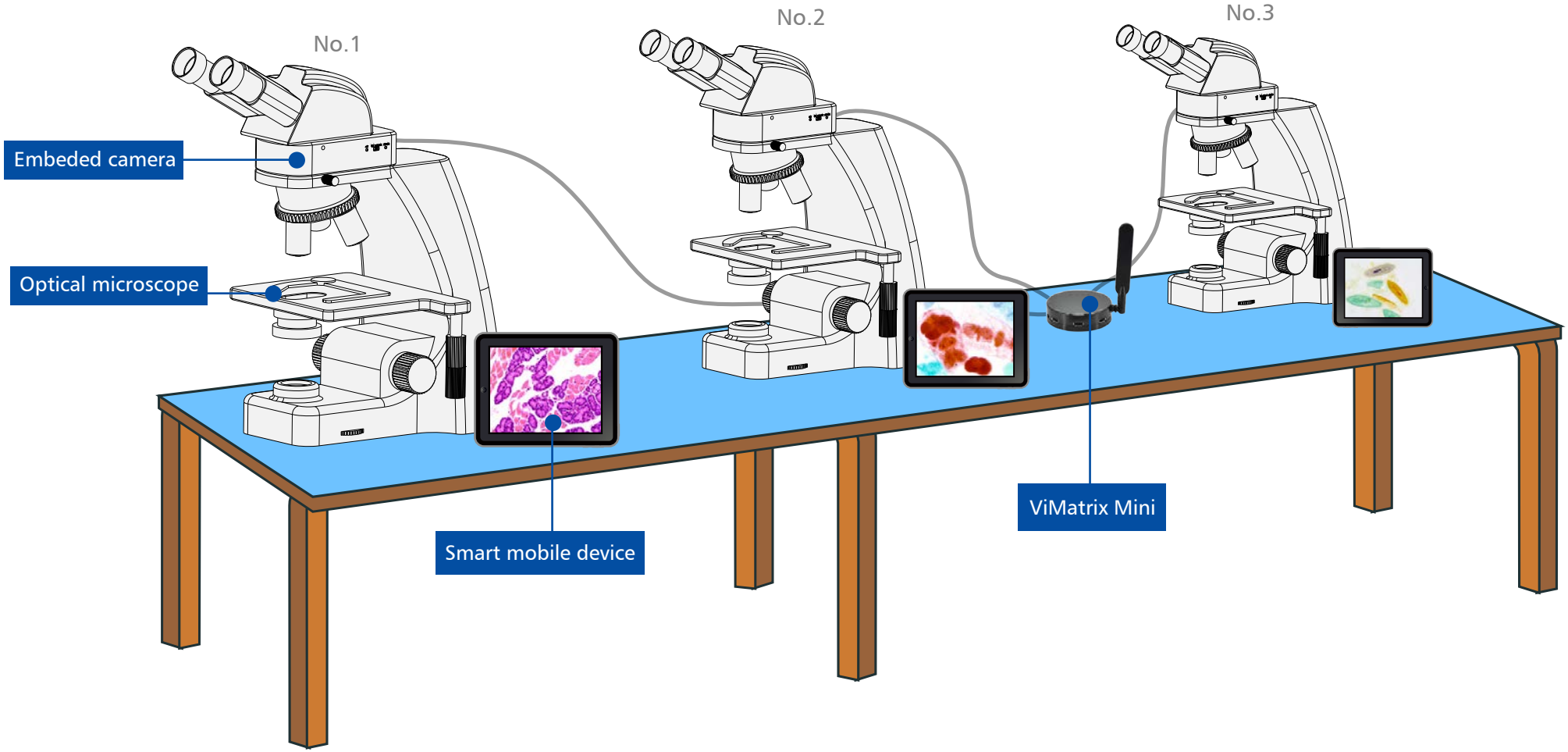
Embedded Camera

- Embedded with 50:50 splitting prism , without destroying the original optical system
- Built-in high-power reduction lens for large field of view.
- Accurate and simple focusing with screw rod, to realize parfocality.
- Powered by POE of ViMatrix Mini, plug and play, safe and reliable.

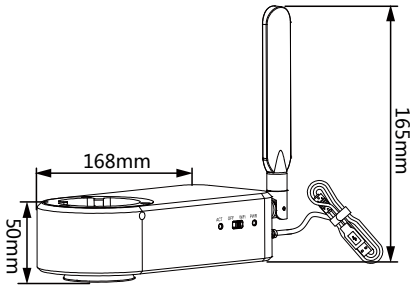
ViMatrix Mini

- With high-gain, high-sensitivity external antenna.
- With three DC5.0V 2A USB. charging interfaces
- Automatically connect to the Master ViMatrix VM3500.

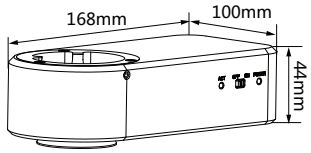
Student-side Solution ③ Installation Diagram



Interactive Solution ③ Specifications

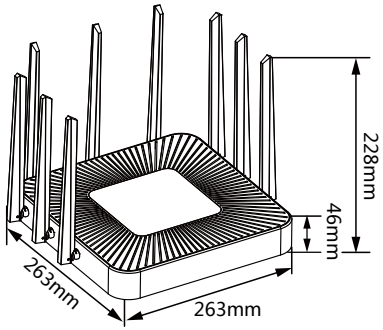


Teacher's WiFi Embedded Camera



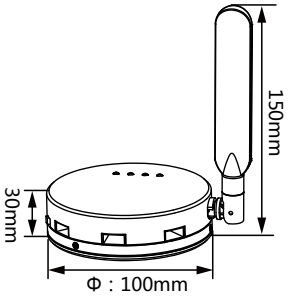
Student Embedded camera
Net weight:590g

Student embeded camera model	MF211-M	MF511-M	MF811-M	MF1211-M
Teacher's WiFi Embedded Camera model			MF811-W	MF1211-W
Physical 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	1920×1080	2592×1944	3840×2160	4000×3000
Sensor size	1/2.8"	1/1.8"	1/2.5"	1/1.7"
Pixel size	2.9μm×2.9μm	2.4μm×2.4μm	1.62μm×1.62μm	1.85μm×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			
Preview resolution	1920×1080@15 FPS	2592×1944@15 FPS	3840×2160@15 FPS	4000×3000@15 FPS
Record format	Photo Picture format：JPG Resolution：1920×1080 Video Video format：MOV Resolution： 1920×1080@15 FPS	Photo Picture format：JPG Resolution：2592×1944 Video Video format：MOV Resolution： 2592×1944@15 FPS	Photo Picture format：JPG Resolution：3840×2160 Video Video format：MOV Resolution： 3840×2160@15 FPS	Photo Picture format：JPG Resolution：4000×3000 Video Video format：MOV Resolution： 4000×3000@15 FPS



Master ViMatrix VM3500
Net weight:1996g

Master ViMatrix Model	VM3500
Interface	LAN:4 x 10/100/1000BASE-T Ethernet RJ45 Interface WAN: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
Power in	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

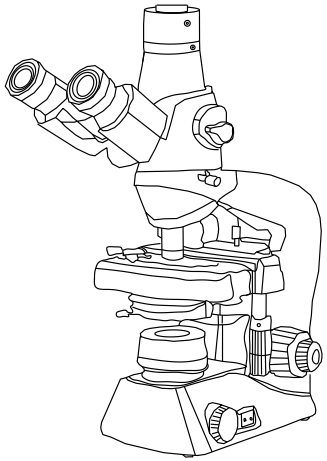


ViMatrix Mini
Net weight: 280g

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
Power in	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

*In order to meet the special needs of customers, the company reserves the right to technical changes.

Student-side Solution ④

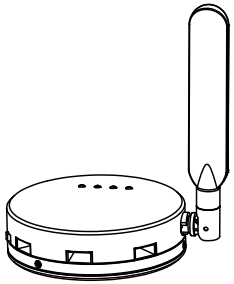


Optical Microscope

+

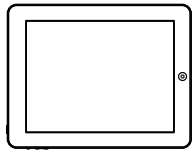
Network Camera
2.0MP / 5.0MP / 8.0MP / 12.0MP

+



ViMatrix Mini

+



Smart Mobile Device
(Self -owned or supplied by distributor)

+

EDU APP
(for mobile devices)

\+ Power supply cord, cables, etc.

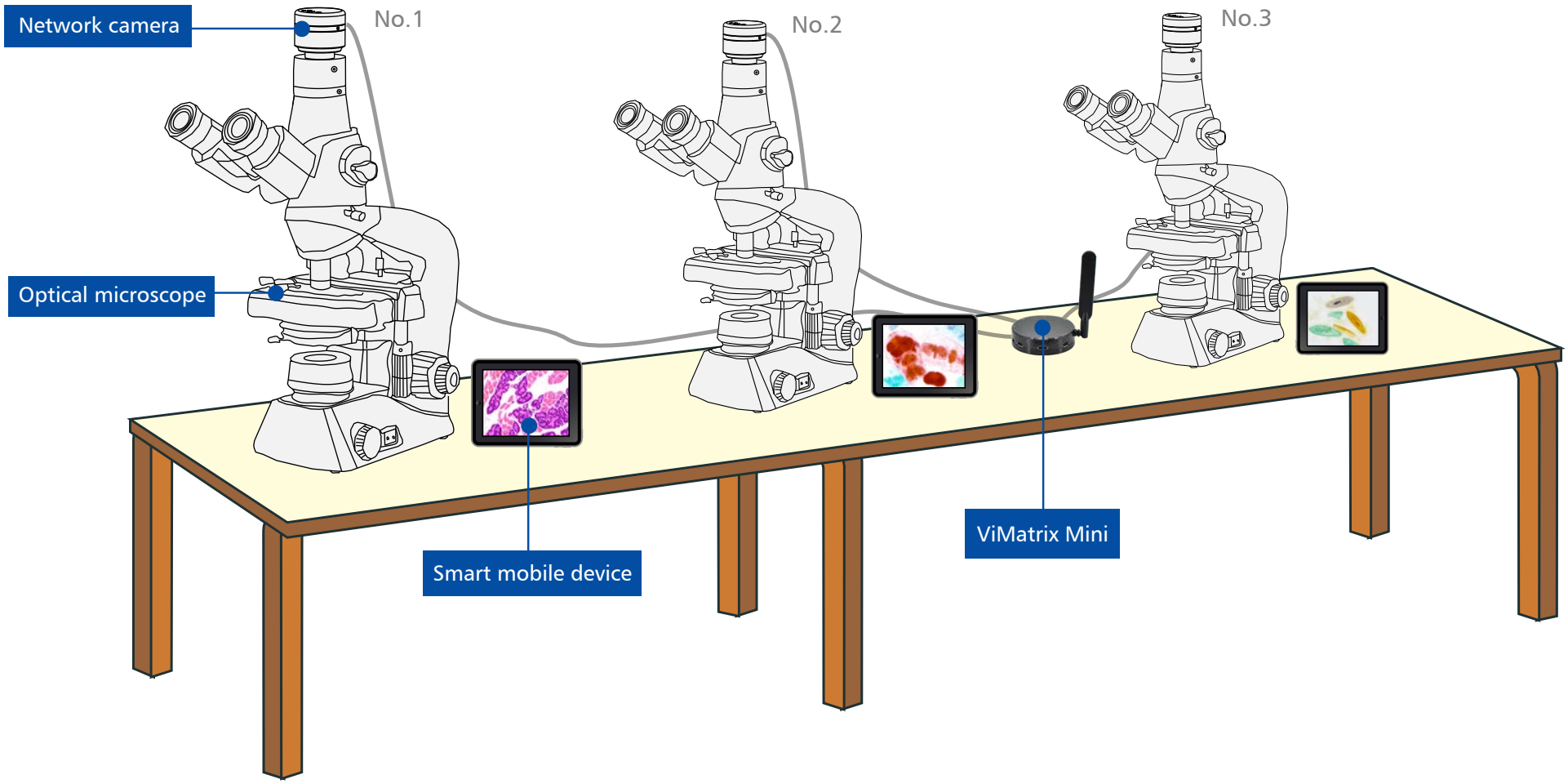
Network Camera

Powered by POE of ViMatrix Mini, plug and play, safe and reliable.

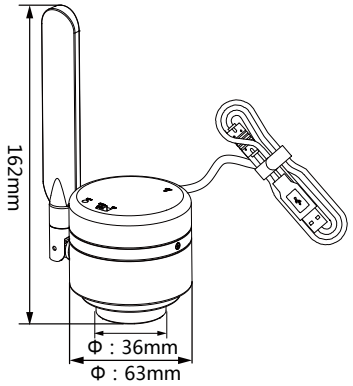
ViMatrix Mini

- With high-gain, high-sensitivity external antenna.
- With three DC5.0V 2A USB charging interfaces.
- Automatically connect to the Master ViMatrix VM3500.

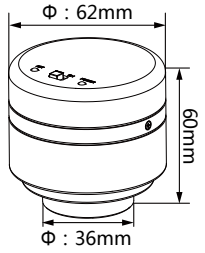
Student-side Solution ④ Installation Diagram



Interactive Solution ④ Specifications

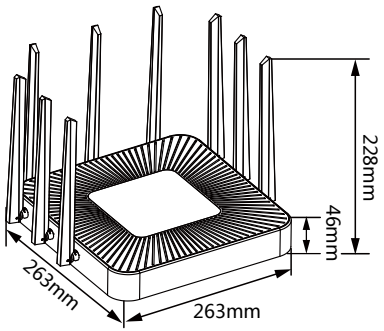


Teacher's Camera
Net weight: 260g



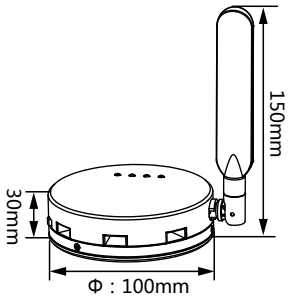
Student Network Camera
Net weight:156g

Student network camera model	MFC11-M	MC511-M	MC811-M	MC1211-M
Teacher's Camera model			MC811-W	MC1211-W
Physical 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	1920×1080	2592×1944	3840×2160	4000×3000
Sensor size	1/2.8"	1/1.8"	1/2.5"	1/1.7"
Pixel size	2.9μm×2.9μm	2.4μm×2.4μm	1.62μm×1.62μm	1.85μm×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			
Preview resolution	1920×1080@15 FPS	2592×1944@15 FPS	3840×2160@15 FPS	4000×3000@15 FPS
Record format	Photo Picture format：JPG Resolution：1920×1080 Video Video format：MOV Resolution： 1920×1080@15 FPS	Photo Picture format：JPG Resolution：2592×1944 Video Video format：MOV Resolution： 2592×1944@15 FPS	Photo Picture format：JPG Resolution：3840×2160 Video Video format：MOV Resolution： 3840×2160@15 FPS	Photo Picture format：JPG Resolution：4000×3000 Video Video format：MOV Resolution： 4000×3000@15 FPS



Master ViMatrix VM3500
Net weight:1996g

Master ViMatrix Model	VM3500
Interface	LAN:4 x 10/100/1000BASE-T Ethernet RJ45 Interface WAN: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
Power in	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



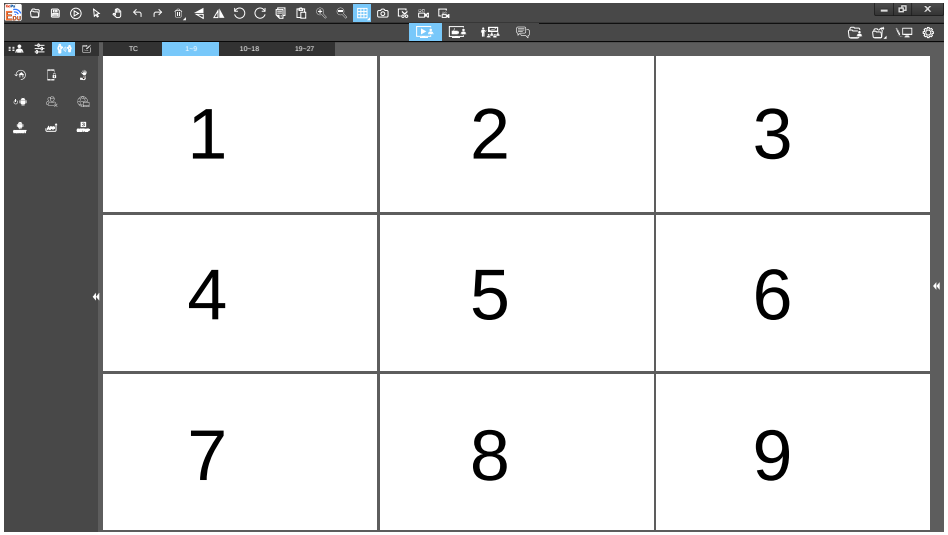
ViMatrix Mini
Net weight: 280g

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
Power in	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

*In order to meet the special needs of customers, the company reserves the right to technical changes.

EDU Software for Teacher

KoPa WiFi EDU

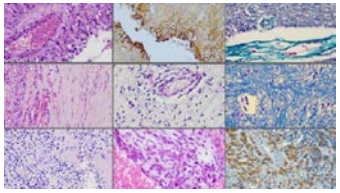


Software operating environment requirements

System	CPU	RAM	ROM	Graphics card	Network card
Microsoft® Windows® 7 / 8 /8.1/10 (32 & 64 bit)	i7 8th-generation quad-core or later version	50 GB or more	8G or more	Discrete graphics (NVIDIA graphics)	10/100/1000M Self-adaptive

Monitor live-image under microscope section

All student images are automatically displayed on the PC software of the teacher. Teachers can confirm whether the students correctly understand the experimental intentions through the images. Teachers can even control the attributes of student images, to guide students correctly, and even take pictures and videos of the instruction process.



Lecturing section

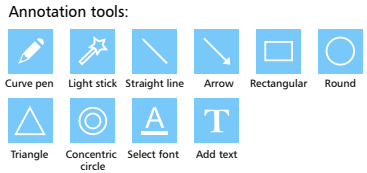
The teacher PC screen or the selected student smart device screen is streamed to all student smart devices synchronously.

Lecture materials in Word\Excel\PPT 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.

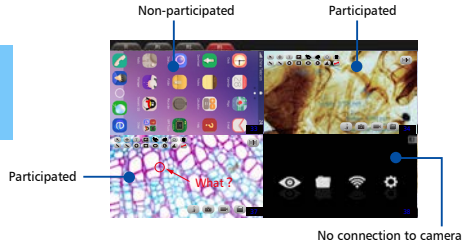
Annotate section

Excellent students' works can be sent to other students as a demonstration together with teachers' annotations.



Monitor smart devices screen section

Real-time monitoring of all student smart devices screen to ensure that all students participate in learning Without the teacher's permission, the students' All-in-one Smart Displayer Camera cannot install any App, nor can it exit the current teaching App.



Messenger section

Teacher can communicate with students with text or picture; and one click to collect all students' images under microscopes. Teacher can can choose any or all students within the system network to distribute home-work (support word, Excel, PPT, picture file etc.)

The messenger can be used for voice-based chat between teacher and students to achieve one-to-one guid-ance.

Comparison section

- Comparison between two images
- Comparison among four images
- Comparison with static images
- Comparison with dynamic images
- Mixed comparison between static and dynamic
- Images Comparison between teacher and student's images

Rich Auxiliary Tools

12 commonly-used tools

Open a file | Save | Select | Move | Return | Undo | Delete | Flip

Mirror | Zoom in | Zoom out | Multi-screen comparison

4 kinds of capture and record tools

Take photo | Screen capture | Record | Screen record

Multi-pagination window

TC | 1~9 | 10~18 | 19~27

18 measurement tools

Straight line | Parallel lines | Double parallel | Polyline | Rectangle | Polygon | Arc | Three-point vertical line | Four-point angle

Three-point angle | Oval | Ring | Center radius | Three-point circle | Circular measurement | Concentric radius circle | Three-point draw circle | Concentric circles

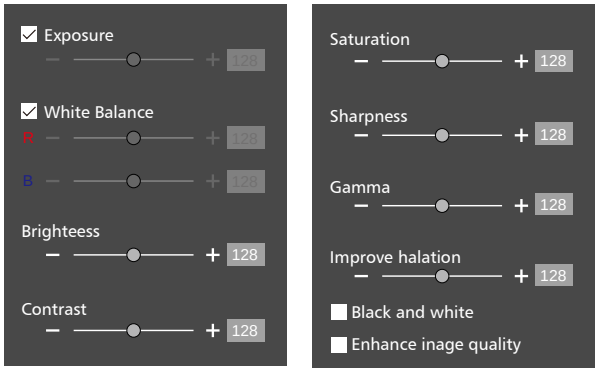
Scale bar | Calibration

9 interactive setting tools

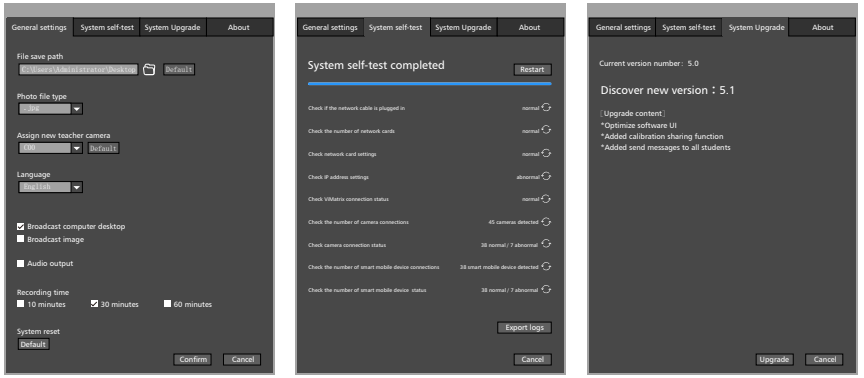
Restore student image attributes | Lock student image attribute adjustment | Enable raise hand on APP | Turn off all the All-in-one Smart Displayer Cameras | Clear All-in-one Smart Displayer Cameras users

Allow All-in-one Smart Displayer Cameras to go online | Resetting the All-in-one Smart Displayer Cameras | Update the All-in-one Smart Displayer Cameras student APP | Install third-party software

Image attribute adjustment



3 system setting tools

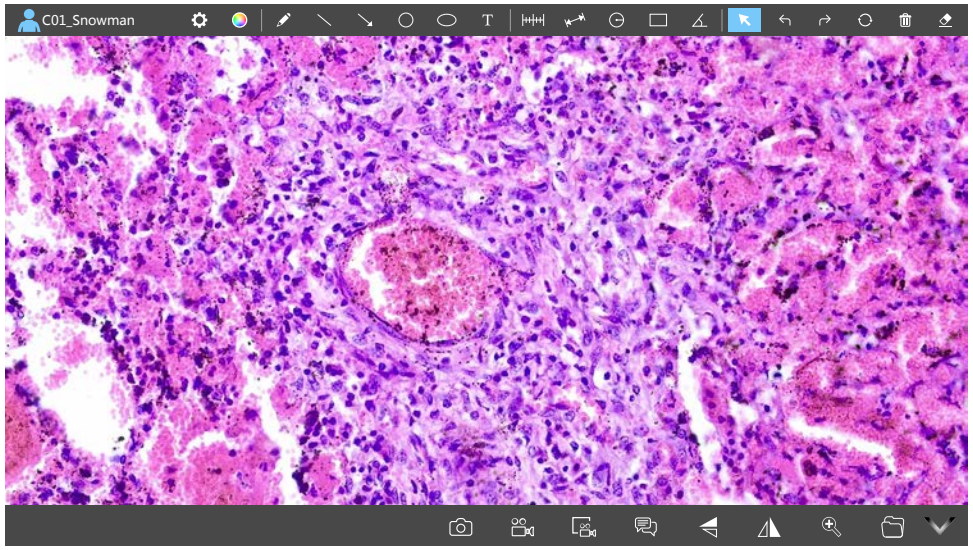


5 export tools

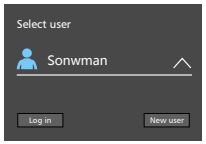
Export to PDF | Export to Word | Export to Excel | Print | E-mail

Imaging APP - Pre-installed on Student All-in-one Smart Displayer Camera and Embedded Smart Camera

KoPa WiFi EDU A0

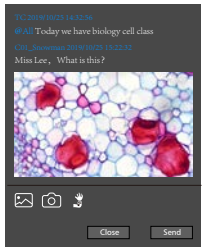


User login



When using for the first time, you need to log in user information. You can switch or create new users during use.

Messenger section



Teacher can communicate with students with text , picture and voice

Annotation section

Annotate and edit on live image.

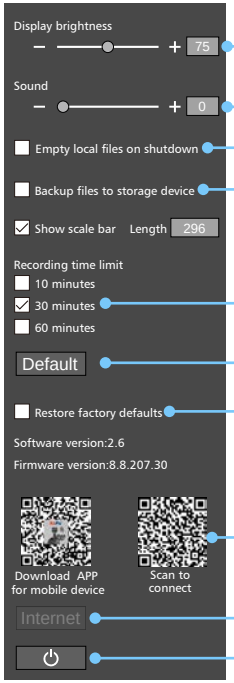
Pencil | Arrow | Round | Oval | Straight line | Annotate

Measuring tools

For specific microscope models, 4x, 10x, 40x, 100x have been calibrated. No addi-tional calibration is required.

Calibration | Linear | Circular | Rectangle | Triangular

Personality settings



Screen brightness setting

Volume setting

Empty local files on shutdown

Save to local and USB flash drive

Recording time setting

Restore default settings

Requires teacher's s oftware authorization

Scan for point to point connection

Requires teacher's software authorization

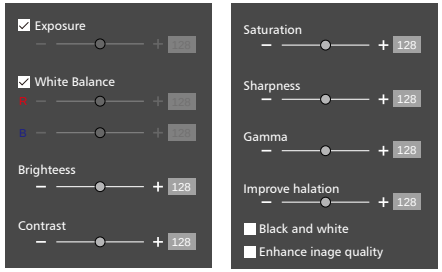
Shut down

Assignment tools

Pictures, videos, and assignments can be transmitted to the teacher's PC in one click, and the Word \ Excel \ PPT format assignment can be edited and uploaded to teach-er's PC.

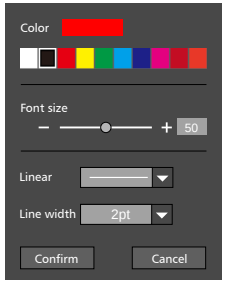
Pictures | Videos | Assignments

Image attribute adjustment



Color tools

Line, font color, font size, line style, line width settings.



Capture and record tools

3 tools

Take photo | Record | Screen record

Commonly-used tools

9 tools

Flip | Mirror | 1.5x zoom in | Select | Return | Undo | Spin | Delete | Erase

Imaging APP - Free download for Student Mobile Device

KoPa WiFi EDU

Software operating environment requirements

System	system version	CPU	RAM	ROM	Protocol
Android	5.0 or later version	Dual-core 1.7GHz or later version	at least 3GB	at least 32GB	5G WiFi IEEE 802.11(ac)
iOS	11.0 or later version	Dual-core 1.4GHz or later version	at least 2GB	at least 32GB	

Annotation and Measuring tools

17 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

Scan to connect

Scan "student seat QR code" within the APP

Image attribute adjustment

Exposure

White Balance

R

B

Brighteess:128

Contrast:128

Saturation:128

Sharpness:128

Gamma:128

Improve halation:128

Black and white

Enhance inage quality

Capture and record tools

Take photo, Record

Assignment tools

Pictures, videos, and assignments can be transmitted to the teacher's PC in one click, and the Word \ Excel \ PPT format assignment can be edited and uploaded to teacher's PC.

Pictures | Videos | Assignments

Text message

Text message

Raise hand and ask for voice communication with teacher

Successful Cases ①

Successful Cases ②

①

②

① Seminar of Diagnostic Pathology

② Conference of Frontiers in Reproductive Biology

③ National College Students Aquatic Skills Competition

④ Class of Pathology in college Life Science & Medicine

⑤ National Cervical Cell Symposium

⑥ Digital Microscope Classroom 1

⑦ Digital Microscope Classroom 2

⑧ Digital Microscope Classroom 3

③

④

⑤

⑥

⑦

⑧