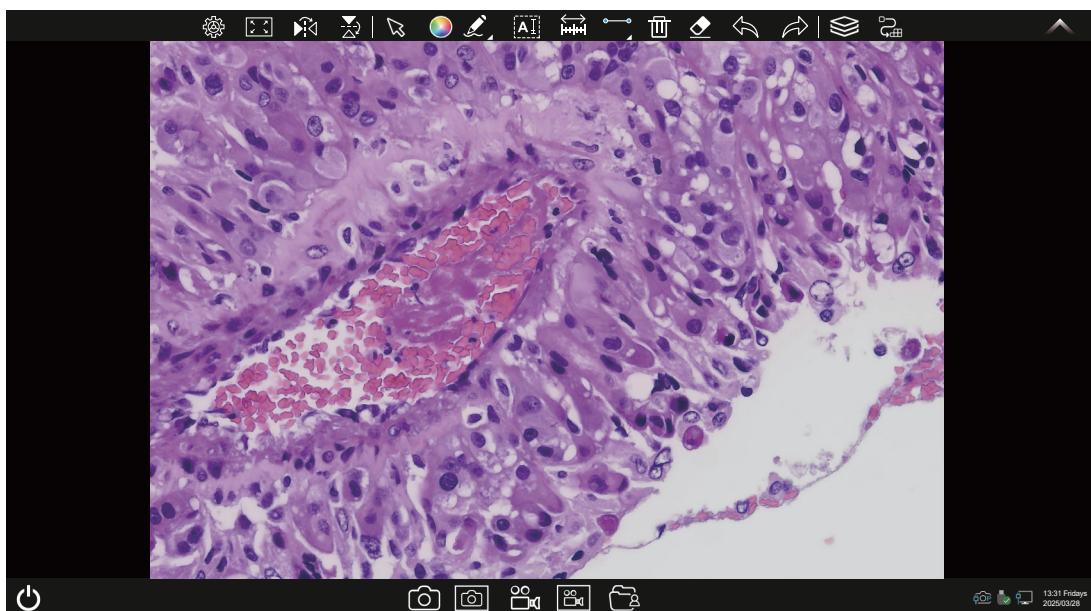


# Embedded APP

## KoPa WiFi Lab AO

### User Manual

**Note:**

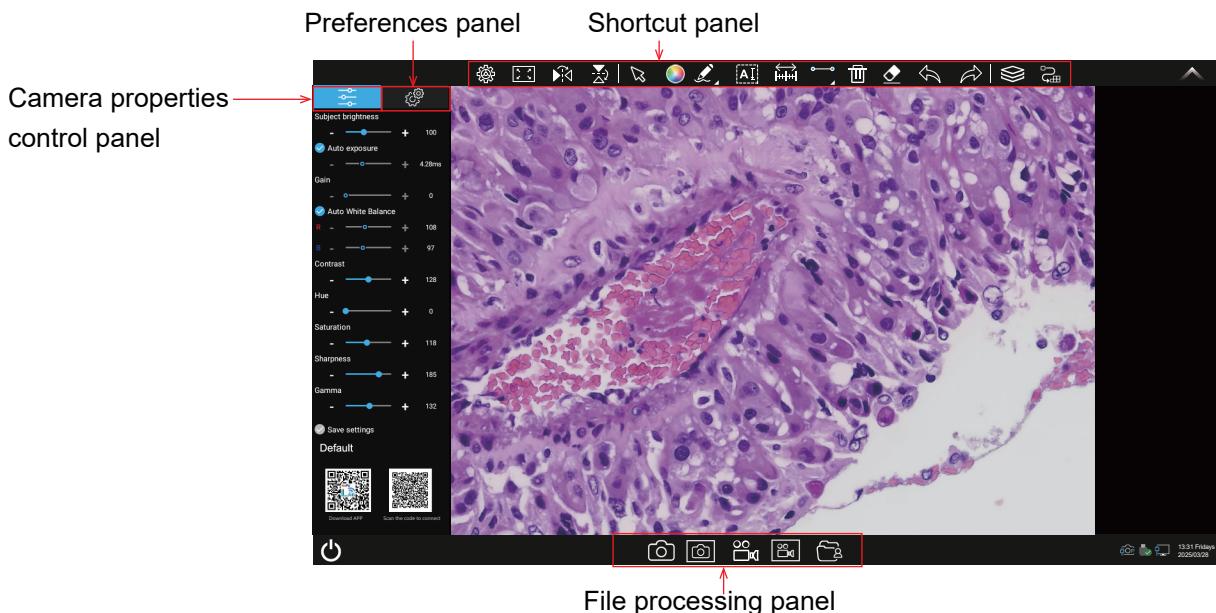
KoPa WiFi Lab AO is pre-installed in the camera before leaving the factory. It does not need to be installed by the user. After starting the hardware, KoPa WiFi AO will automatically enter the main operation interface of APP.

KoPa WiFi Lab AO is a necessary application for teaching. Users cannot uninstall it by themselves.

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## 1.1 Operation interface



## 1.2 Shortcut toolbar

### 1.2.2 Shortcut tools



	Settings	Click on Settings to bring up the Camera Properties panel or the Preferences panel
	Adapt screen	Preview screen quickly adapts to the screen
	Flip	Flip the current image
	Mirror	Mirror the current image
	Select	Select objects such as annotations, text, measurements, etc., support single selection or box selection.
	Color settings	Open the color palette to set the colors for drawing tools and text; you can adjust font size, line style, and line width
	Annotation tools	Annotate the current image
	Add text	Add text to the current image
	Calibration	Calling up the calibration function
	Measuring Tools	Calling up the measuring function
	Undo	Undo the last operation on "Object".
	Redo	Restore the last operation on "Object".

	Delete	Delete the selected "object".
	Erase	Erase "object".
	EDOF function	Combine multiple images taken from different depths to produce a final image that captures more detail and improved depth information
	Image stitching	Combine multiple images into a single panoramic image
	Snapshot	Snapshot the image on the currently selected screen.
	Screen capture	Screen capture on the entire computer desktop.
	Record	Record on the currently selected screen.
	Screen record	Screen record on the entire computer desktop.
	File management	File management

### 1.2.3 Annotation



Pencil



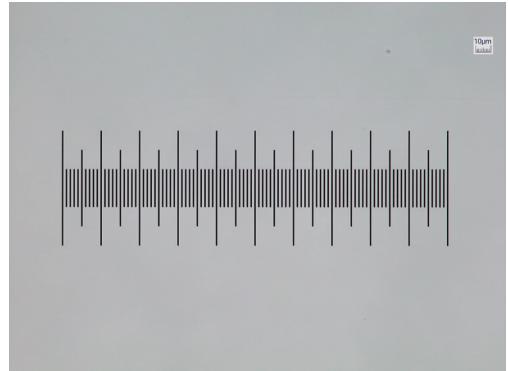
Single arrow straight line



Oval

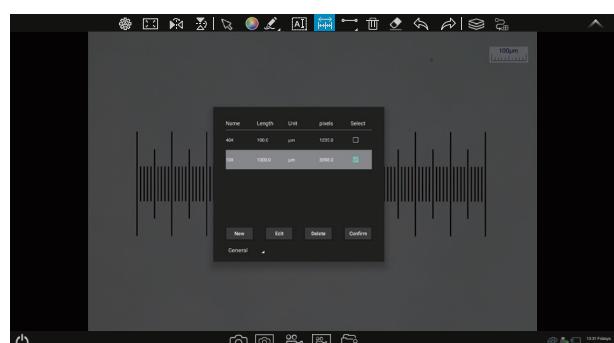
### 1.2.4 Methods of calibration and measurement

Step 1: Please place the micrometer under the microscope, uses a micrometer with  $1\text{DV} = 0.01\text{mm}$ .

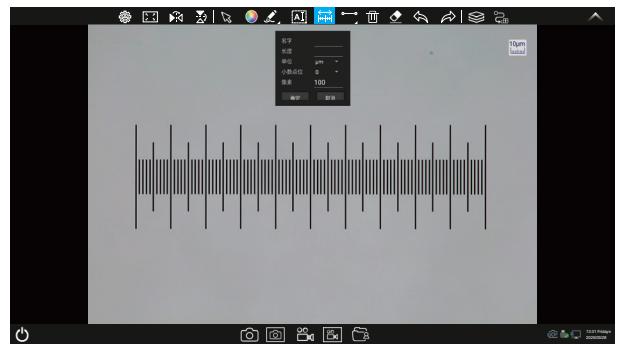


Step 2: Click on "  " to bring up the calibration table as shown below.

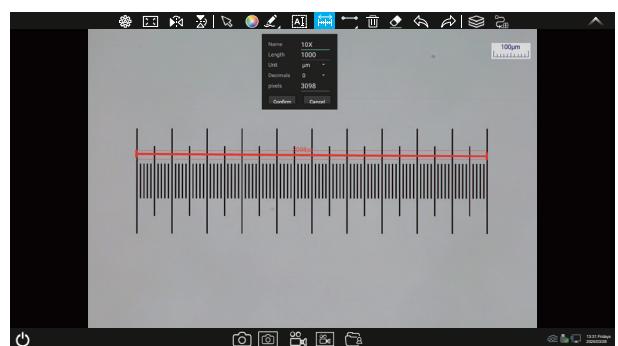
Step 3: Click on 'New' ;



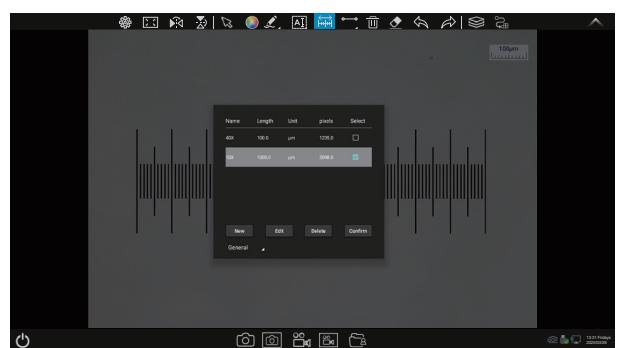
Step 4: When using the mouse to draw a straight line on the micrometer image and setting the scale length, selecting a longer scale length will give more accurate results. For example, selecting 10 small scale lengths will give you more accuracy than selecting only 1 scale length. After releasing the mouse, the image value of the line drawn with the mouse will be automatically updated in the "pixels" of the calibration table, as shown in the following figure:



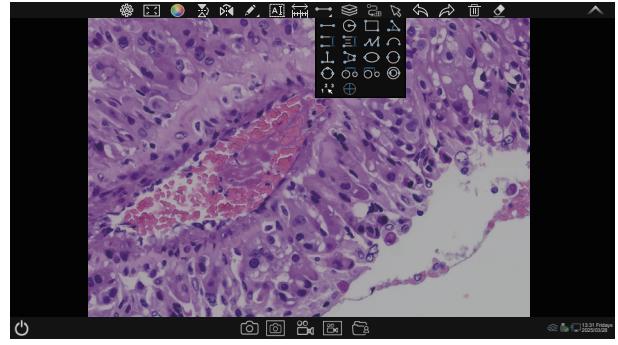
Step 5: Enter a name in the calibration table, such as 10X. In the calibration table, enter the actual length that just drawn on the micrometer, for example, the sample figure is drawn 100 DV, that is, 1mm, or 1000 µm, then enter the "actual length" box to fill in the specified 1000, "unit" select "µm". Then click "Add" to add this calibration value to the calibration table to be used. Add the calibration value for other objectives of different magnifications in this way.



Step 6: Select the measurement tool to measure First in the calibration table according to the actual use of the objective lens to select the calibration value, selected after clicking "confirm", as shown in the figure:



Step 7: Click " " to bring up the measurement tool table, as shown in the figure:



## 1.2.5 Measurement tools

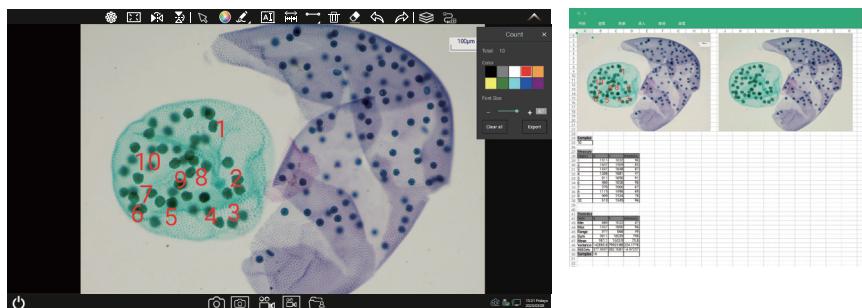


Straight line measurement	Circular measurement	Rectangular measurement	Angle measurement	Parallel line distance	Double parallel line center distance	Folding line measurement	Curvature measurement
Four-point angle measurement	Ellipse measurement	Drawing a circle with radius	Three-point drawing circle measurement	Circle center distance and circle measurement (specify diameter)	Circle center distance and circle measurement (specify radius)	Concentric circle measurement	Manual counting

## 1.2.6 Manual counting function



Select the manual counting tool to mark manually, display the number of current counts and export the report; you can change the marking color, font size and clear operations.

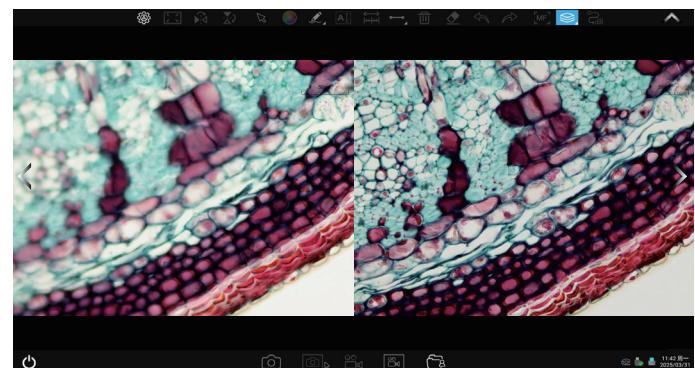


## 1.2.7 EDOF function



Steps:

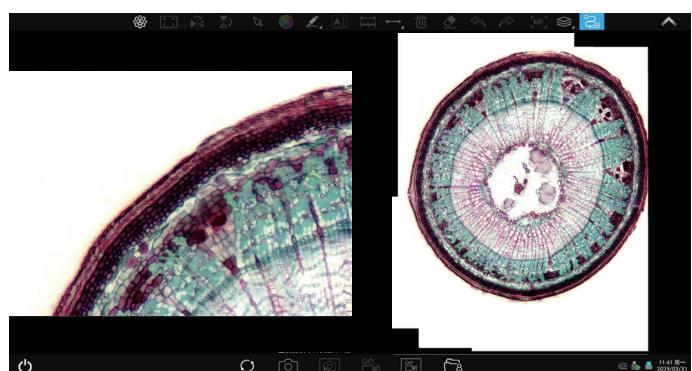
- (1) Click the button to display a dual-screen interface. The left screen will be aligned with the focal plane under the microscope, while the right screen will show the merged result.
- (2) Adjust the coarse/fine focus knobs of the microscope. The right screen will continuously merge the depth of field in real time. If you need to switch the field of view in the process, you can click the button to refresh.
- (3) To capture images, click the camera icon . The system will automatically save two images, one from each screen. After that, close the current window to exit the function.
- (4) To export the images, click the button to enter the file explorer, where you can easily access and export your saved images.



## 1.2.8 Image stitching



- (1) Click button to activate the dual screen display. The left screen will be aligned with the focal plane of the microscope, while the right screen will show the stitched result.
- (2) Adjust the X/Y knobs on the microscope. The right screen will stitch the images in real time. If you switch the field of view midway, click button to update the display.
- (3) To capture the stitched image, click button. This will automatically save the image displayed on the right screen. Close the current window to exit the function. To access your saved images, click button, where you can export the pictures.



## 1.2.9 Folder management



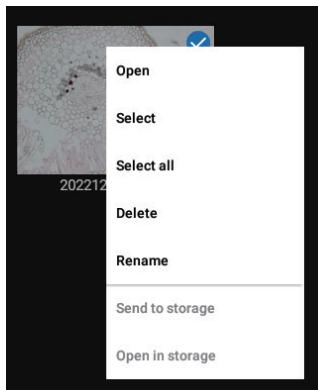
Click the button to enter the folder management, the interface can be switched to browse the image, video, homework three modules



### (2) Image and video modules



Right-clicking on a single image or single video will display the following menu:



Open: Enlarge the currently selected image / play the current video.

Select: Select the current image / video.

Select all: Select all images / videos in the folder.

Delete: Delete the current image / video.

Rename : Rename the current image / video.

Send to storage: Copies the currently selected image / video to a mobile storage device. After successful copying, a small icon of USB flash drive will appear in the upper right corner of the image / video thumbnail. The USB flash drive format only supports FAT32 or NTFS format.

Note: This menu will only take effect if the "Backup file to Storage Device" has been checked in the Settings panel.

Open in storage : Open the location of the currently selected picture/video on the USB flash disk.

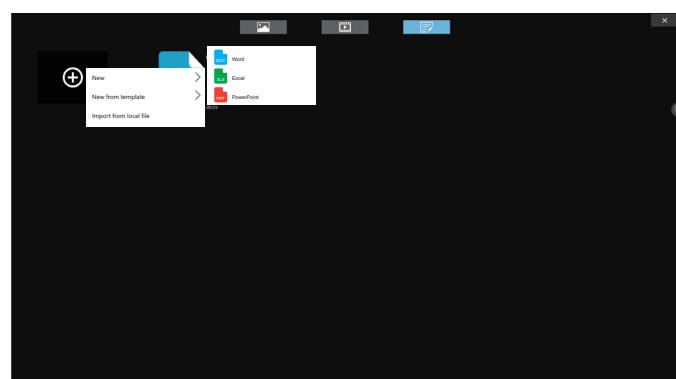
Note: This menu will take effect only when the camera has been connected to a USB flash drive and "Backup files to external storage" has been checked in the "Preference settings panel".

### (3) Document module



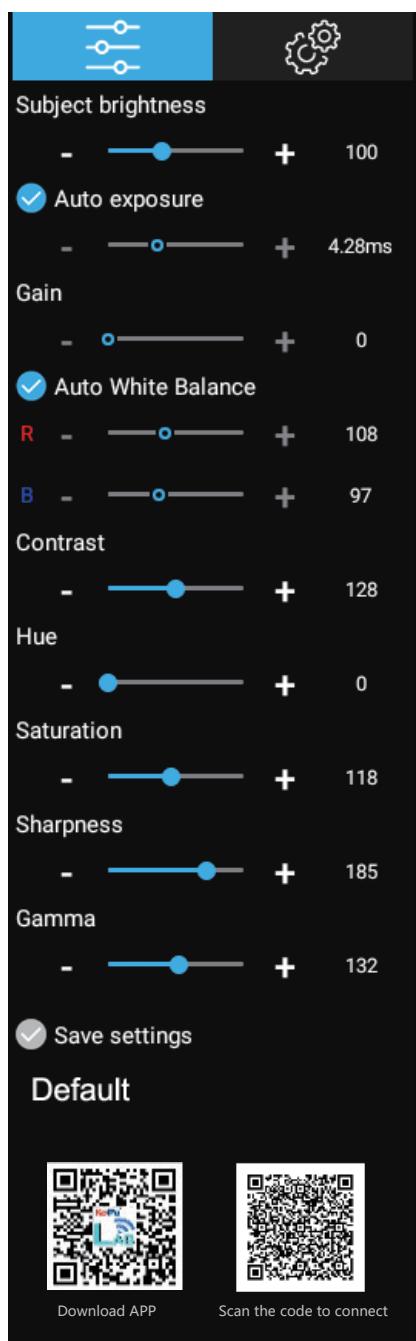
Click the button to create a document:

- (1) New: Create Word, Excel, or PowerPoint documents.
- (2) New from template: Generate a Word document based on the built-in standard templates provided by the software.
- (3) Import from local file: Import documents from the camera's internal storage space into the software for re-editing or other modifications.



## 1.3 Setting panel

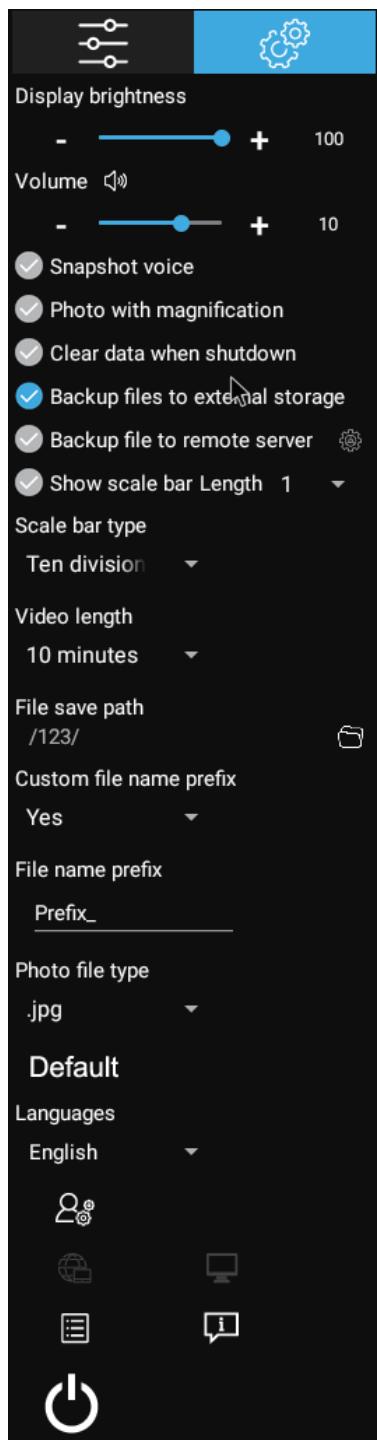
### 1.3.1 Camera properties control panel

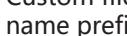


Subject brightness	Manually drag the adjustment bar to adjust the image brightness
Exposure	When ticked, the preview image will be exposed automatically according to the current environment; When unchecked, the current exposure time and gain value will be read and displayed when switching from auto exposure to manual exposure, and the exposure time and gain value can be adjusted by dragging or clicking “-” or “+” respectively; Exposure time adjustment range: the exposure time of different pixels is not consistent
Gain	Drag to adjust the gain, or click “-” or “+” to adjust, or directly enter the value in the box, mouse click “Gain” to restore the default value(Invalid for automatic exposure state)
White balance	When ticked, the preview image will be automatically white balanced according to the current environment; When unchecked, when switching from auto white balance to manual white balance, the current white balance R and B values will be read and displayed, and the R and B values can be adjusted by dragging or clicking “-” or “+” respectively
Contrast	Drag to adjust the contrast, or click “-” or “+” to adjust, or enter the value directly in the box. Click “Contrast” to restore the default value
Hue	Drag to adjust the hue, or click “-” or “+” to adjust, or enter the value directly in the box. Click “hue” to restore the default value
Saturation	Drag to adjust the saturation, or click “-” or “+” to adjust, or enter the value directly in the box. Click on “Saturation” to restore the default value
Sharpness	Drag to adjust the sharpness, or click “-” or “+” to adjust, or enter the value directly in the box. Click on “Sharpness” to restore the default value
Gamma	Drag to adjust the gamma, or click “-” or “+” to adjust, or enter the value directly in the box. Click on “Gamma” to restore the default value
Export image properties	Exporting image properties to local disk
Import image properties	Import image properties from local disk
Restore default values	Restore all image property parameters to their default values
Downloading the App and Connecting via QR Code	Scan the QR code on the left to download and install the app as guided. Once installed, open the app and use its built-in scanner to scan the QR code on the right. This will establish a direct wireless peer-to-peer connection with the camera, allowing you to preview the live image instantly.

### 1.3.2 Preferences settings panel

Click "  " to bring up the preferences panel



	Brightness	Manually drag the adjustment bar to adjust the overall brightness of the screen (this function is only available for the smart display camera)
	Volume	Adjust the volume of audio playback on the display (this function is only available for the smart display camera)
	Snapshot voice	When it is ticked, there is a prompt sound when you click to take a picture; When unchecked, there is no sound when clicking to take a picture (This function is only available for Smartphone products)
	Photo with magnification	When ticked, the multiplier is displayed When unchecked, no display
	Clear data when shutdown	When ticked, images, videos and other data of the application will be cleared after powering off the camera; When unchecked, images, videos and other data will be saved locally after powering off the camera
	Backup files to storage devices	When ticked, the captured pictures and videos will be synchronously saved to the external USB memory stick. (This function is invalid when there is no storage device connected to the USB memory stick) When unchecked, the captured images and videos will not be synchronously saved to the external USB flash drive and need to be copied manually.
	Show scale bar length	When ticked, the scale of the currently selected length displayed in the upper right corner of the preview window; when unchecked, the scale will be hidden
	Scale bar type	Optional three fixed scale lengths;
	Video length	Set the time limit for each video recording, optional: 15 minutes, 30 minutes, 60 minutes, 120 minutes; a single video can not exceed 3.8GB, when the video size exceeds 3.8GB the video automatically stops and is saved
	File save path	Changing the save path for images, videos and assignments;
	Custom file name prefix	Changing the file name prefix;
	Photo file type	Changing the default photo format, supporting JPG,PNG,TIF,PDF formats;
	Default	Restoring the default parameters;
	Languages	APP interface language switching;
		Advanced mode: microscope type selection; optional: biological microscope, industrial microscope, fluorescence microscope;
	Restore to factory default	When ticked, the system will restore the factory default settings; Note: It takes about 4 minutes to restore the factory settings, do not power off during the restoration process, otherwise the system will be unable to start abnormally
		Connection to the Internet
		System desktop: access to the system desktop
		User Guide
		About