

yateks[®] USA



Inspexa Series Industrial Videoscope User Manual



Warning: Please read the instruction manual carefully before using the instrument.

User Notice

Thank you for choosing a Yateks USA Videoscope. We're confident this product will serve your work reliably for years to come.

Please read this User Manual carefully before operating the device. If you have any questions, consult our technical staff before use to prevent equipment damage or personal and property loss.

Should you encounter any issue you're unable to resolve during operation, contact our technicians or your dealer. We are committed to providing prompt, effective after-sales service to keep your work on track.

Danger

1. It is strictly forbidden to use this instrument to detect humans and animals.
2. It is strictly prohibited to use or store it in explosive places, places with strong electromagnetic fields, or places with flammable gases.
3. It is strictly forbidden to work on the observed object when it is energized.

Warnings

1. If the instrument is disassembled or modified without authorization, Yateks will not provide warranty and repair services.
2. Never allow liquids other than water to come into contact with the insertion tube, as this may damage the insertion tube.
3. Before packing the instrument into the carrying case, be sure to turn off the power.
4. Never touch the camera tip of the insertion tube directly during use. Touching the camera tip after use in a high-temperature environment may cause burns.

5. If smoke or abnormal noise is detected, stop using the instrument immediately and turn off the power.
6. Never look directly at the light emitted from the front end of the insertion tube at close range to avoid the strong light affecting your vision.
7. If any abnormality occurs during the angle adjustment operation, stop using the instrument immediately and turn off the power.
8. The touch screen glass is fragile. Do not press the touch screen with sharp objects! The touch pressure should not exceed 120g!

Precautions

1. Do not use beyond the operating temperature range.
2. Do not excessively bend, twist, or fold the insertion tube.
3. Be sure to use the power adapter provided by Yateks.
4. When removing the insertion tube from the object under observation, do not remove it forcibly and pay attention to the following:
 - A) When the angle is locked or partially bent, do not withdraw the insertion tube directly from the observation object. Instead, adjust the insertion tube to a straight position before withdrawing it.
 - B) During the withdrawal process, if the insertion tube is stuck, gently move the joystick and withdraw it when the insertion tube is straight.
5. When the instrument is operated, the bending of the front end should be reset, and the camera tip should not be controlled in a certain direction for a long time, which will put the instrument in a high load state and affect its service life.
6. Please pay attention to the following when operating the front end of the insertion tube:
 - A) Do not subject the tip of the insertion tube to severe impact or strong pulling.

- B) Do not subject the angled portion to severe impact or sharp bending, as this may damage the glass lens and precision components at the front end of the insertion tube and the angled portion.
7. Wipe the lens clean with alcohol or acetone before use to prevent dirt from hardening, corrosion and deformation.
 8. If you feel anything unusual while performing angle bending operations, do not apply force, as this may cause damage to the insertion tube or the observation object.
 9. Never allow metal objects or foreign matter to enter the main unit through the connectors or other openings. This may result in a malfunction or electric shock.
 10. Do not strongly impact, press, or scratch the screen with hard or sharp objects, otherwise cracks or scratches will appear on the screen.
 11. Do not cover the main unit with plastic bags or other objects during use, as this may cause overheating inside the instrument and damage it.
 12. When plugging or unplugging the quick connector, please pay attention to align it in the direction of the red dot and do not use force blindly.
 13. Do not store the instrument in the following environments, otherwise, the instrument may be damaged.
 - In environments with high temperature, high humidity, and large amounts of dust or particles.
 - Places exposed to direct sunlight or radiation.
 - Places containing halide gases.

How to handle batteries

Observe the dangers, warnings, and precautions described below when handling batteries.

Danger

1. Operating with lithium-ion batteries, be sure to use batteries and battery

chargers designed specifically for this instrument.

2. Never use batteries with the electrodes reversed.
3. Never connect the battery terminals to each other with metal objects, and do not carry or store batteries and metal objects together. The battery may short-circuit and generate heat, catch fire, or explode.
4. Never dispose of batteries in fire or heat them. There is a risk of explosion.
5. Never attempt to open or modify the battery. Doing so may cause explosion or fire.
6. Never immerse the battery in liquids such as fresh or salt water, and do not allow the battery to get wet, as this may damage the battery and protective circuit, otherwise it may generate heat, smoke, fire or explosion.
7. Never store or use the battery near open flames or in direct sunlight. Otherwise there is a risk of explosion or fire.
8. Do not puncture the battery or subject it to strong impact or heavy pressure. Do not drop, throw, or subject the battery to severe impact. Doing so creates the risk of fire or explosion.
9. Place the device on a stable surface to remove the battery. If the device is not stable, the battery may fall, causing an explosion and fire.

Warnings

1. Do not use batteries other than those specified for this instrument. The battery model is 18650 with a protective board, 3.6V lithium battery, with a charging limit voltage of 4.2V.
2. Never attempt to recharge batteries not designed for this instrument.
3. Do not use batteries that show any abnormalities, such as leakage, discoloration, deformation, or abnormal condition. Stop use immediately.
4. If battery fluid comes into contact with your skin or clothes, immediately wash them with clean water such as tap water. Failure to observe this

precaution may result in skin injury. If necessary, seek medical attention immediately.

5. Do not deform the battery compartment or place foreign objects inside it.
6. Keep away from flammable objects during charging and do not cover the battery charger with flammable objects.

Precautions

1. Do not use or store the battery in high temperature environments, such as in direct sunlight, in a closed car in the sun, or in front of heating equipment.
2. The battery will become hot after prolonged use of this instrument. Do not remove the battery immediately after use to avoid burns to your hands.
3. Never leave batteries within the reach of children.
4. Do not place the battery in a humid, leaking, or extremely high or low temperature environment.
5. Do not touch the battery terminals with wet hands.
6. Charge the battery before using it for the first time after purchase or before using it again after a long period of non-use .
7. If the instrument is not used for a long time, be sure to remove the batteries from the instrument. Otherwise, battery leakage or heat accumulation may cause fire or personal injury.

Hint

1. Please use the battery correctly, as improper use may cause leakage, excessive heat generation and damage. When replacing the battery, check the insertion direction and insert it correctly.
2. Battery performance generally decreases as the ambient temperature drops. Please note that battery performance that is reduced due to low temperatures can be restored when the temperature rises to normal levels.

3. When the battery reaches the end of its life, be sure to recycle it according to local regulations.
4. Recommended temperature range for lithium-ion battery operation.

Discharge (when using the instrument): 0°C to 40°C

Charging: 0°C to 40°C

Storage: -10 °C to 50°C
5. Using the battery outside the above temperature range will result in reduced performance and service life. When storing the battery, be sure to remove it from the instrument.
6. Batteries are consumables.
7. After using the battery for a period of time, please use the 18650 lithium battery charger to fully charge the battery.
8. The product images and displayed contents in this manual are for illustrative purposes only. The actual product effects (including but not limited to appearance, color, size) and displayed contents (including but not limited to background, UI, and illustrations) may vary. Please refer to the actual product for details.
9. To provide the most accurate product information, parameters, and features possible, Yateks may adjust and revise the text, images, and other content in this manual to ensure it matches the actual product performance, specifications, parameters, and components. Due to real- time changes in product batches, we will not notify you if any of these modifications or adjustments are necessary. Please refer to the official website for real-time information.

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I.Product Overview

This instrument consists of five main components: a camera module, an insertion tube, a main unit, an LCD screen, and an operating handle. It is a new type of nondestructive flaw detection instrument that integrates optics, precision mechanics, electro-mechanics, electronics, and microscopic camera technology. It is commonly used to detect internal surface defects that are inaccessible to the



naked eye.

Figure1-1-1 Industrial video endoscope

8" IPS high-definition LCD touch screen with a resolution of up to 1920*1200 features touchscreen functionality for quick and easy operation. The patented technology of Yateks enables 360° rotation of the probe, enabling long-distance image transmission and deeper pipeline inspections. The use of general-purpose computing graphics processor technology accelerates image and video processing algorithms, resulting in clearer and smoother images. High-brightness LED lighting technology increases the LED brightness to ten adjustable levels compared to the original product, with illumination reaching over 15,000 Lux. Brightness can be adjusted according to on-site needs for optimal observation.

II.Parameter Definition

In order to meet the needs of different environments, users can select insertion tubes according to actual needs. The selection of insertion tubes mainly includes parameters such as tube diameter, length, camera module, depth of field, etc. For specific parameters, please contact our sales staff.

III.Main performance parameters

System	Product size	333mm*229.5mm*116.5mm
	weight	2.3kg
	LCD screen	8" IPS industrial high-definition touch LCD screen, resolution 1920*1200
	Joystick control	Electric joystick 360 ° all-round camera guidance
	Probe reset	Automatic reset
	Direction fine-tuning	Fine-tuning steering direction
	Function	Photographing, video recording, brightness adjustment, lock/step
	Memory	Built-in 128G + extended 64G USB flash drive (up to 256GB)
	Data I/O port	SD, HDMI, charging, USB and other interfaces
	Battery	Four 18650 lithium batteries (replaceable)
	Standby time	4h
	Operation	Handheld and portable
	Brightness adjustment	10 levels of brightness adjustment
	Combination	Host + operating handle combination

Front-end probe	Working length	0~1m	1~2m	2~3m	3~8m
	Bending angle	180±10°	150±10°	120±10°	100±10°
	Effective pixels	160,000-2 million			
Software	operating system	Real-time multitasking operating system			
	user interface	Touch screen operation menu			
	File Management	Supporting picture/video playback, deletion, formatting, naming, and annotation			
	Image Control	Zoom, playback			
	Image Format	BMP/JPG/PNG (recording date and time)			
	Video Format	AVI/MP4 (recording date and time)			
	Language	Simplified Chinese, English, French, Spanish, Russian, Japanese, Korean, Traditional Chinese, German, Portuguese			
	Software upgrade	Upgraded via interface			

IV.Purpose and scope of application

This instrument is widely used in production and maintenance across a wide range of modern core industries, including aviation, automotive, marine, electrical, chemical, and power. Its direct visualization allows for direct inspection of defects and abnormalities on the internal surfaces of large devices such as pipelines, turbines, cylinders, and engines. It can also capture real-time photos and videos, providing essential data collection for analyzing equipment status and ensuring production safety.

v.Work Environment

Host operating temperature	-10 °C~50°C
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Insertion tube operating temperature	- 20℃~60℃
Storage temperature	-10 ℃~40℃
Probe IP Grade	IP67

VI.Names and functions of each component of the instrument

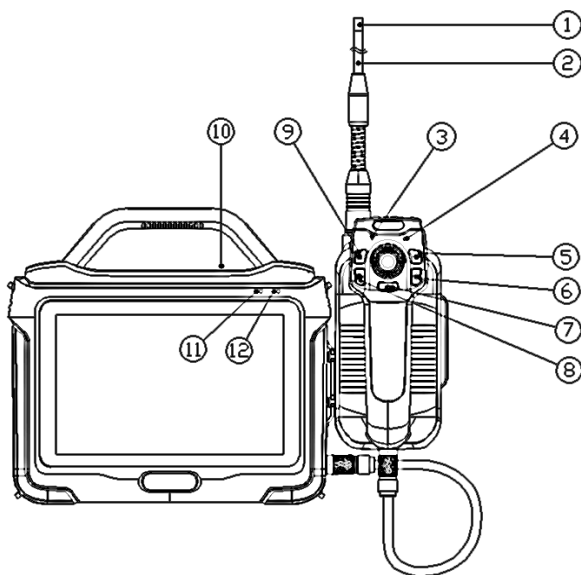


Figure 6-1-1 Host

The names of the numbered components in Figure 6-1-1 are shown in the table below:

No.	Name	No.	Name
①	Camera module	⑦	Photo button/camera switch button

②	Insertion tube	⑧	Video button
③	Lock indicator light	⑨	Setting button
④	Power indicator	⑩	Power button
⑤	Joystick switch button	⑪	Power indicator light
⑥	Brightness adjustment button	⑫	Charging indicator light

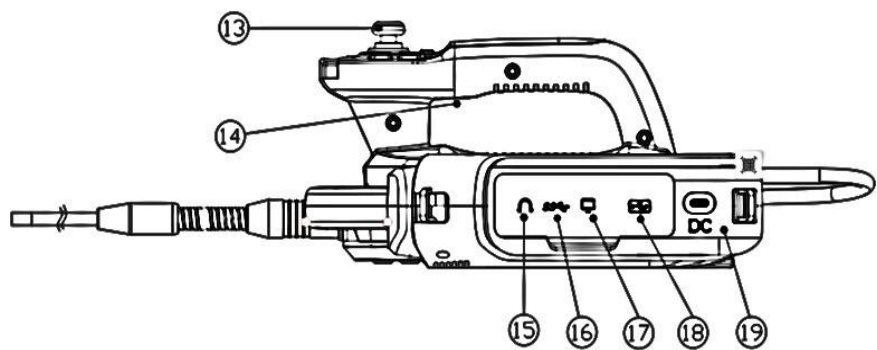


Figure 6-1-2 Operating handle

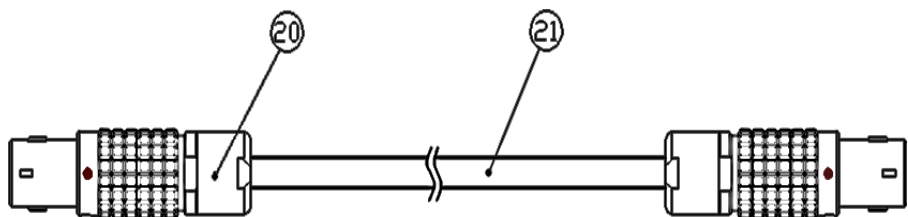


Figure 6-1-3 diagram of signal cable

No.	Name	No.	Name
⑬	Joystick	⑱	USB port
⑭	Photo button/camera switch	⑲	DC port

⑮	Earphone	⑳	Type-C self-locking connector
⑯	Type-C port	㉑	Type-C cable
⑰	HDMI port		

VII.Preparation and testing before observation

7.1 Move boxes

⚠ Notice

- Before moving the box, please check whether there are any abnormalities on the handles, buckles, etc.
- Please use the standard box to prevent damage to the instrument.

■ When using the trolley

- 1) Make sure the clasps are securely closed before lifting the box.
- 2) The rollers can be used to move it on flat areas.

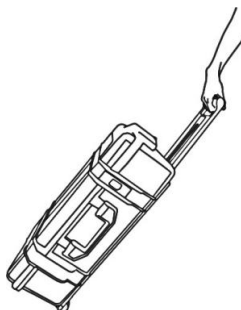


Figure 7-1-1 Box handling

⚠ Notice

- If the clasp is not fully closed, the lid may accidentally open when the box is lifted.
- Do not kick to move the box.

■ Take the instrument out of the box

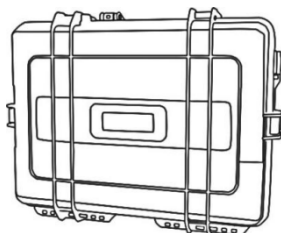


Figure 7-1-2 Taking out the instrument from the box

⚠ Warnings

- The box cover must be fully opened before taking out the instrument to prevent the box cover from closing automatically and causing an accident.
- Do not operate the host in a box to prevent the cover from closing accidentally and pinching your hands or signal cables.

⚠ Notice

- Lay the box horizontally so it remains stable.
- Before opening the lid, please release the latch on the front of the case.
- When removing the insertion tube from the box, be careful to handle it with care. If you use too much force, the insertion tube may be damaged.
- When removing the operating handle or main unit from the packaging, do not use the insertion tube or signal cable to secure it.
- Check that the insertion tube, main unit, and operating handle quick

connector are clean. If there is any foreign matter, wipe it clean with a dust-free cloth.

7.2 Install the host

When using the host, there are two ways to place it: support stand placement and handle hanging placement.



Figure 7-2-1 Host support stand placement

Notice

- Place the host horizontally to keep it stable.
- Do not place the host in a high place to prevent it from slipping and getting damaged.
- If you need to hang the host during use, please fix the handle in a place that can support its weight.

7.3 Prepare power supply

■ Open the battery cover

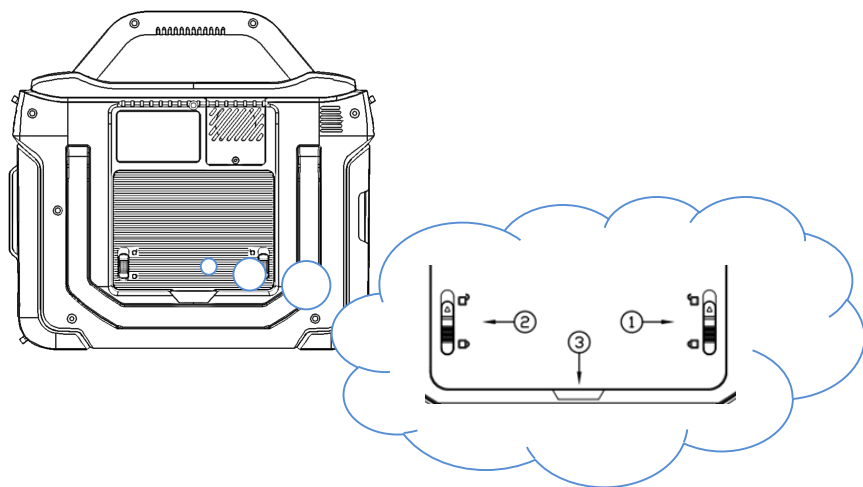


Fig. 7-3-1 Open the battery cover

- 1) As shown in the figure above ①, push the slide button to the unlock position .
- 2) As shown in the figure above, position ②, push the slide button to the unlock position  and hold it there .
- 3) As shown in the figure above, use the finger to click the notch at position ③ to open the battery cover.

■ Insert the battery

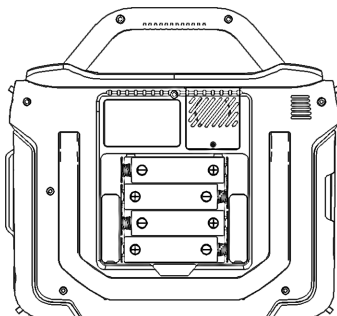


Figure 7-3-2 Inserting the battery

Install the 18650 lithium battery into the instrument in the order of positive and negative (as shown in the figure 7-3-2).

⚠ Notice

- Do not place the batteries with the positive and negative poles reversed.
- The instrument needs to be equipped with four 18650 lithium batteries before it can be used.
- 18650 lithium battery of Yateks is equipped with a protection circuit. If you need to replace the battery, please choose an 18650 lithium battery with a protection circuit.

■ Built-in charging

1. Take out the power adapter and connect it to the DC port of the host.
2. Make sure the power cable is connected to the DC port on the host.
3. Plug the power cord into an electrical outlet.
4. When the red light is on, it means charging is in progress, and when the green light is on, it means charging is complete.

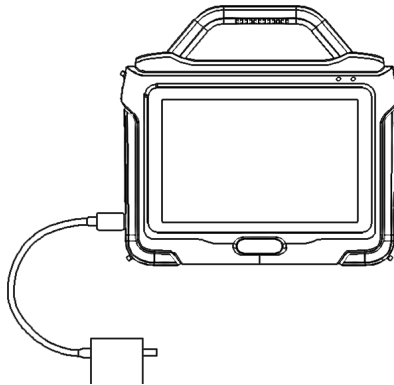


Figure 7-3-3 Host charging

⚠ Warnings

- Please check whether the power cord is intact before use.
- The power adapter's input voltage is 100 - 240 V (50/60 Hz) AC.
Connecting the power adapter to an outlet that does not meet the rated voltage may result in fire or electric shock.
- Do not use a non-dedicated power adapter, as this may cause the instrument to malfunction or be damaged.
- The power adapter is not waterproof and may cause electric shock if it comes into contact with water.
- Charging input voltage: 18V~20V, typical value: 18V; current: 3A~3.42A .

■ External charging

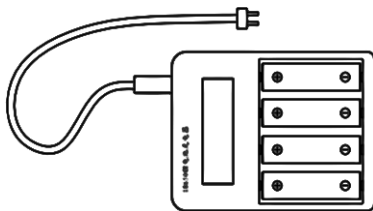


Figure 7-3-4 External charging

- Insert the 18650 lithium battery correctly according to the charger icon and plug in the power cord to charge.
- When the red light is on, it means charging is in progress, and when the green light is on, it means charging is complete.

⚠ Notice

- Make sure the lithium battery is placed in the charger in the correct direction.
- During the charging process, the four batteries are independent and do not

interfere with each other, and have functions such as protection against overload, over-current, and short circuit.

- Do not use the host power adapter to charge the external charger.

7.4 Check the insertion tube

■ Check the appearance of the insertion tube

- 1) Check if the outer material of the entire insertion tube and signal cable is intact.
- 2) Check if the outer covering material of the insertion tube (non-angle bent portion) is loose.

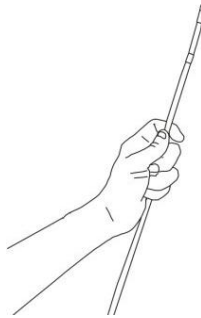


Figure 7-4-1 Checking the appearance of the insertion tube

Notice

- If the insertion tube becomes deformed, it may become impossible to remove it from the observation object.
- If the outer material of the insertion tube is damaged, be cautious to avoid injury.

■ Check the front end of the insertion tube

- 1) Make sure the power is off.
- 2) If you find any foreign matter on the lens, clean it with a dust-free cloth

or cotton swab or soft brush.



Figure 7-4-2 Lens cleaning

⚠ Warnings

- Internal heating caused by electrical components can make the tip of the insertion tube hot. Before wiping the lens, turn off the light source and wait until it cools down before touching it.

⚠ Notice

- If dust or water accumulates on the lens used, the optical adapter or the insertion tube tip may be damaged.
- The angle bending part is composed of precision components. Do not pull the front end of the insertion tube or manually force the front end of the insertion tube to bend, as this may damage the components of the angle bending part.

7.5 Install the operating handle on the host

The operating handle can be installed on the main unit as needed for easy carrying and observation.

- 1) Align the operating handle's I-shaped groove with the host's U-shaped groove, and press the front of the host vertically downward to press the operating handle into the U-shaped groove.
- 2) When removing the operating handle from the main unit, place the main unit vertically and lift the operating handle upwards.



Notice

- If the operating handle is fixed to the side of the host, please hold the handle when carrying the host. If you hold the operating handle to lift the host, the host may fall.
- When carrying the instrument with the operating handle and main unit fixed to each other, do not let the signal cable and insertion tube directly touch the ground; otherwise, people may fall or the instrument may be damaged.
- When installing the operating handle to the main unit, apply force evenly to avoid damaging the I-groove.

7.6 Attach and remove the shoulder strap

If you want to hang the instrument on your shoulder, please install a shoulder strap. Please use the original shoulder strap provided by Yateks.

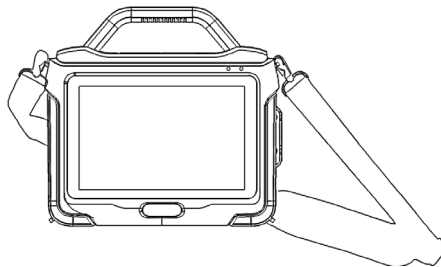


Figure 7-6-1 Shoulder strap installation

⚠ Warnings

- Do not carry any objects other than the instrument on the shoulder strap to prevent the shoulder strap from being damaged and causing the instrument to fall.
- Before use, make sure there are no problems with the shoulder strap, such as worn fibers and damaged metal parts.
- Do not place excessive load on the shoulder strap, such as by shaking

the instrument or placing heavy objects on it.

- When using the shoulder strap, be careful not to bump the instrument against other objects.
- When installing or removing the shoulder strap, be careful to prevent the instrument from falling.
- When installing the shoulder strap, do not place the main unit in the box, as this may damage the LCD display or the shoulder strap.
- Do not store the instrument in a hanging position, as this may damage the shoulder strap.
- Carefully check to ensure that the shoulder strap hook is firmly attached to the host. If you lift the host directly by the shoulder strap, the host may fall.

■ **Attach the shoulder strap**

- 1) While pressing the shoulder strap hook lever, install the hooks to the four buckle positions of the host shoulder strap.
- 2) Adjust the length of the shoulder strap using the length adjuster and wear it on your shoulder.
- 3) If you are walking with the operating handle installed on the right side of the main unit, please insert the signal cable between the handle and the main unit to avoid accidents caused by the signal cable hanging.



Figure 7-6-2 Shoulder strap suspension

- 4) When carrying the main unit and operating handle, the insertion tube can be fixed to the handle with the Velcro strip.



Figure 7-6-3 Handheld Demonstration

■ Remove the shoulder strap

To detach the shoulder strap, press and hold the hook lever of the shoulder strap while removing the shoulder strap from the host's shoulder strap buckle.

VIII. Basic Operations

8.1 Connect the host and the operating handle

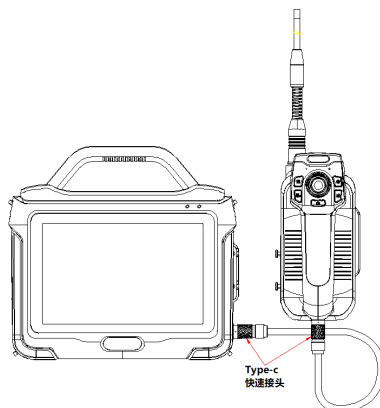


Figure 8-1-1 Schematic diagram of the main unit and operating handle installation

Note: For quick connectors, align the corresponding red dots and insert them so that the protrusion of the plug is aligned with the groove of the socket (as shown in Figure 8-1-2).

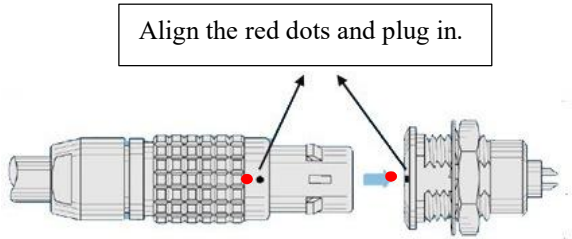


Figure 8-1-2 Quick connector installation diagram

8.2 Host Operation Guide

8.2.1 Host diagram introduction

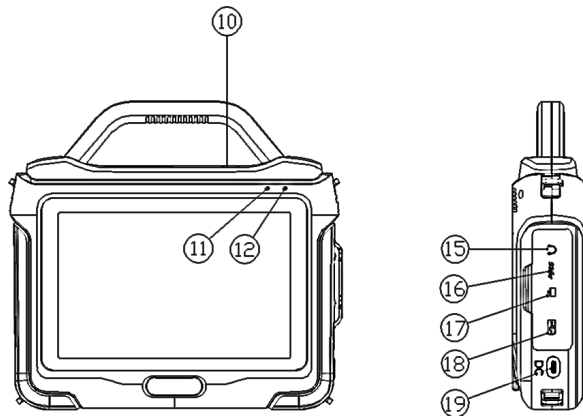


Figure 8-2-1 Host diagram

The functions of the components in Figure 8-2-1 are described in the table below:

No.	Part Name	Function
⑩	Host switch	Control the host's power supply

⑪	Power indicator light	Power-on prompt
⑫	Charging indicator light	Charging reminder
⑮	Headphone jack	Connecting headphones
⑯	Type-C interface	Connect Type-C data cable
⑰	HDMI interface	Connect an external monitor using a HDMI video output cable
⑱	USB interface	Connect external USB devices, such as USB flashdrives, etc.
⑲	DC interface	Connect the adapter to charge the host

8.2.2 Power on and off

- 1) Press the host lightly for 1 second to turn it on. When the red light is on, it means it is starting up.
- 2) After powering on, enter the home screen.
- 3) Press and hold the host power button for 3 seconds and the system will automatically shut down.

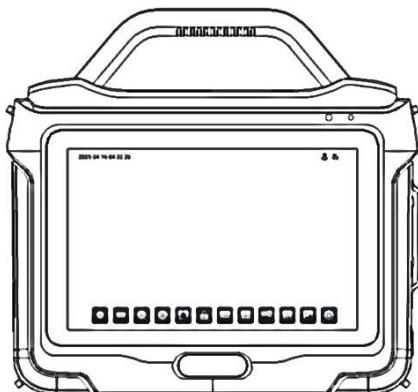


Figure 8-2-2 Main screen interface

△ Hint

Press and hold the host power button for 6 seconds and the system will be forced to shut down.

8.2.3 Install USB disk

Align the USB disk with the host  interface and insert it straight into the interface.

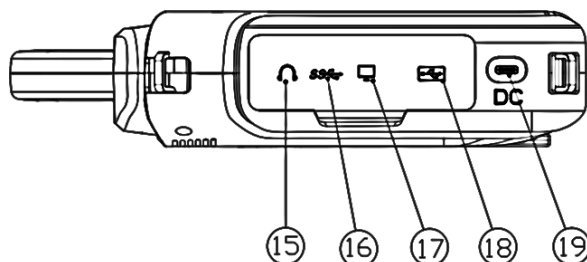


Figure 8-2-3 Installation interface diagram

⚠ Notice

- When the USB disk is unplugged, an icon will appear in the upper right corner of the LCD screen ,  and "External storage has been unplugged" will appear on the screen when taking photos or recording videos.
- When the USB disk is turned on, the icon on the upper right is still . If there is no response after about 15 seconds, the USB disk may not be properly inserted and needs to be re-inserted into the slot. Please format it to FAT32 before use .

8.3 Menu bar

Main menu interface (as shown in Figure 8-3-1):



Figure 8-3-1

If no operation is performed, the menu bar will automatically hide after 20 seconds. Click the screen to display the menu bar again.

8.3.1 Camera brightness adjustment

Touch operation: Click the [Camera Brightness Adjustment] icon on the screen to adjust the camera brightness. The brightness levels are divided into 0-10 levels.

Handle operation: In real-time monitoring mode, you can also select the camera brightness by short pressing the "Brightness" button on the handle.

8.3.2 Screen brightness adjustment

Touch operation: Click the [Screen Brightness Adjustment] icon on the screen to adjust the screen brightness. The brightness levels are divided into 0~10 levels.

8.3.3 Display ratio adjustment

Touch operation: Click the [Display Ratio Adjustment] icon on the screen to change the image display ratio. The display ratios are divided into four types: 16:9, 4:3, 1:1, and original.

8.3.4 Color mode adjustment

Touch operation: Click the [Color Mode Adjustment] icon on the screen to change the color mode. The color modes are divided into four modes: original mode, close mode, long distance mode, and custom mode.

When you select the custom mode of the color mode icon, an edit icon will appear. Click the edit icon to enter the color parameter setting interface.

Select the [Default] button to restore to the factory default settings, and select the [Confirm] button to save the color and return to the main menu.

8.3.5 Grid measurement

Touch operation: Click the [Grid Measurement] icon on the screen to select grids of different sizes. The grids are divided into three multiples of size: 1, 2, 4. The actual distance  of the corresponding square side is 20mm;  the actual distance of the corresponding square side is 10mm; the actual distance of the  corresponding square side is 5mm; users can use the grid to estimate the size of a specific object.

Hint

Grid measurement is related to the actual shooting distance of the camera. If you need to use this function, you need to adjust the camera distance yourself.

8.3.6 Image Browsing

Touch operation: Click the [Image Browsing] icon on the screen to enter the image browsing interface (as shown in Figure 8-3-2) . For detailed instructions, see 8.5 Image Browsing.

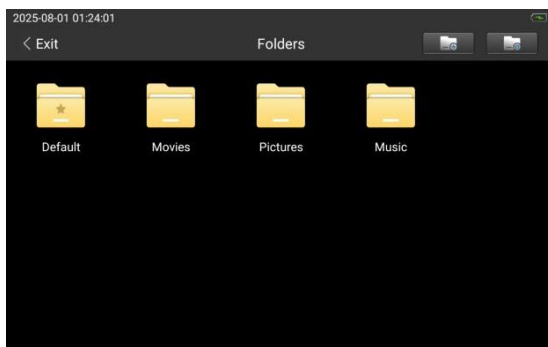


Figure 8-3-2

8.3.7 Zoom function

Touch operation: Click the [Zoom Function] icon on the screen to zoom in and out of the real-time monitoring interface . The zoom multiples are: 1.15, 1.30, 1.45, 1.60, 1.75, 1.90, 2.05, 2.20, 2.35, and 2.50.

8.3.8 Flip adjustment

Touch operation: Click [Flip Adjustment] on the screen to flip the real-time monitoring interface to the following six modes:

-  This is the actual screen, default setting;
-  This is rotated 180° based on the actual image;
-  This is rotated 90° based on the actual image ;
-  This is rotated 270° based on the actual image ;
-  This is to mirror the image left and right based on the actual image;
-  This is to mirror the image up and down based on the actual image.

8.3.9 Invert color function

Touch operation: Click the [Invert Color] icon on the screen to invert the color of the real-time monitoring interface.

8.3.10 Freeze function

Touch operation: Click the [Freeze Function] icon on the screen to freeze  and unfreeze the real-time monitoring interface .

8.3.11 White balance adjustment

Touch operation: Click the [White Balance Adjustment] icon on the screen to adjust the white balance of the real-time monitoring interface. The white balance is divided into two modes:  automatic white balance and  manual white balance.

Note: Some cameras do not have automatic white balance function, please refer to the actual situation.

8.3.12 System Settings

Touch operation: Click the [System Settings] icon on the screen to enter the system settings interface. For detailed instructions, see 8.4 System Settings.

8.4 System Settings

System settings main interface (as shown in Figure 8-4-1):

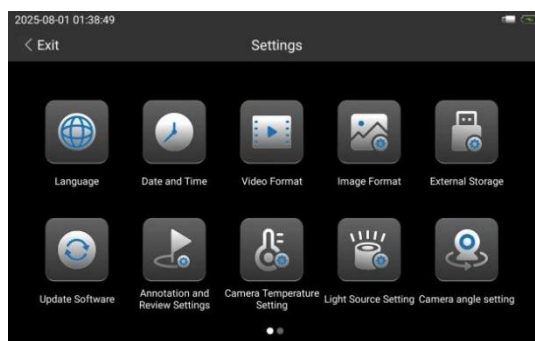


Figure 8-4-1

Swipe left on the menu to switch to the second page (as shown in Figure 8-4-2):

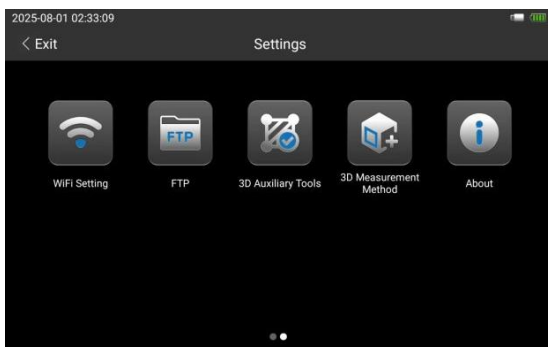


Figure 8-4-2

Swipe right on the menu button to switch to the first page of menu.

8.4.1 Language

Click the [Language] icon on the main interface of the system settings to enter the language settings (as shown in Figure 8-4-3):

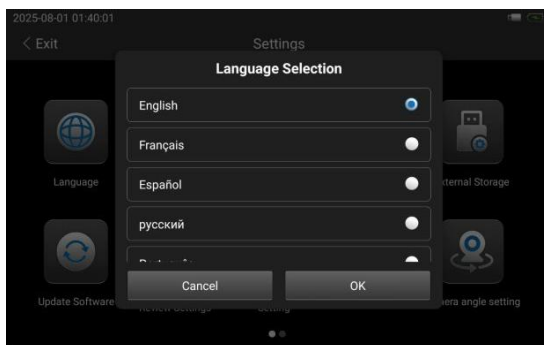


Figure 8-4-3

Ten languages (Chinese, English, French, German, Korean, Portuguese, Russian, Traditional Chinese, Japanese and Spanish) are available. Click the corresponding language button to switch. Click the [Cancel] button to exit the language setting interface.

8.4.2 Time

Click the [Time] icon on the main interface of system settings to enter the time settings (as shown in Figure 8-4-4):

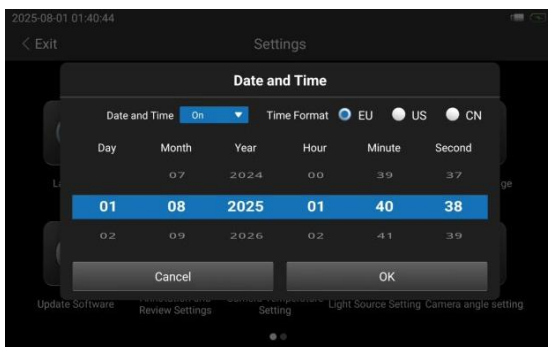


Figure 8-4- 4

The time settings are divided into three formats: European (EU), American (US), and Chinese (CH). Select "On" to display the time on the main interface, and select "Off" if not to display the time. Click [Confirm] to save the settings and exit the time setting. Click [Cancel] to not save the settings and exit the time setting.

Note: When Off is selected, there will be no time watermark for photos and videos.

8.4.3 Video Format

Click the [Video Format] icon on the main interface of the system settings to enter the video format settings (as shown in Figure 8-4-5):

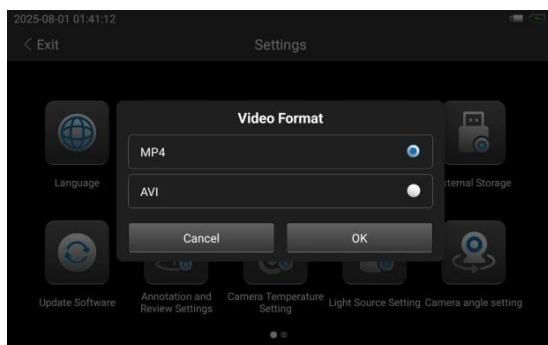


Figure 8-4-5

Video Format: Set the file format for saving the video after recording, which

can be divided into AVI and MP4.

8.4.4 Image Format

Click the [Picture Format] icon on the main interface of the system settings to enter the picture format settings (as shown in Figure 8-4-6):



Figure 8-4-6

Image format: Set the saving format of the picture when taking pictures, which can be divided into three types : JPG, PNG, and BMP.

8.4.5 External storage

Click the [External Storage] icon on the main interface of system settings to format the external storage. Click [Confirm] to format the external storage. Click [Cancel] to exit the external storage format (as shown in Figure 8-4-7):

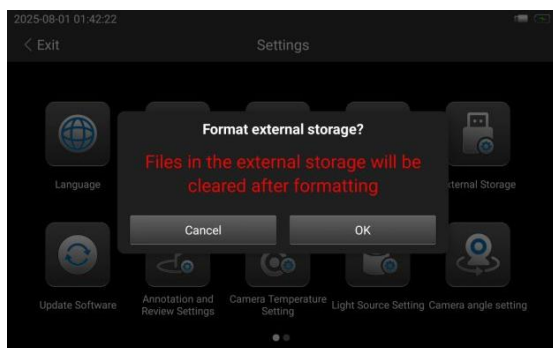


Figure 8-4-7

8.4.6 Software Update

Click the [Software Update] icon on the main interface of the system settings to update the software. First, copy the update file "scope" to a USB disk, insert the USB disk into the instrument, click [Confirm] to update the software, and click [Cancel] to exit. After the software update is completed, the software will restart (as shown in Figure 8-4-8):

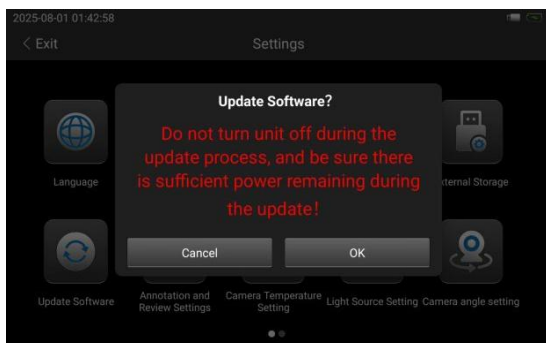


Figure 8-4-8

Hint

The instrument software update requires sufficient power, so please make sure to keep the battery fully charged before the software update.

8.4.7 Annotation Settings

Click the [Annotation Settings] icon on the main interface of the system settings to enter the settings of image annotations, video annotations, and image retention time (as shown in Figure 8-4-9):

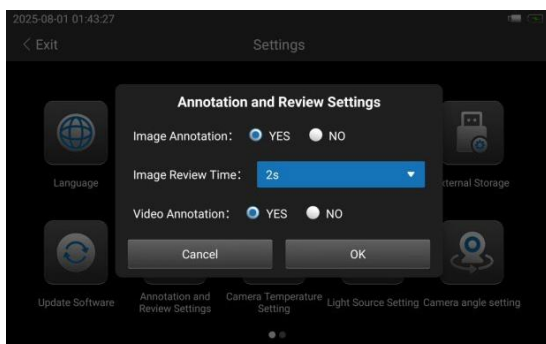


Figure 8-4-9

- **Image annotation:** You can set whether to annotate after taking a photo;

- 1) If it is set to "YES", a dialog box will pop up after taking a photo to ask whether you want to annotate. Select "yes" to annotate, and the annotated photo will be saved; select "NO" to abandon the annotation.
- 2) If set to "NO ", you will not be asked whether to annotate after taking a photo.

- **Video annotation:** You can choose whether to make video annotations before recording;

- 1) If set to "YES", a comment box will pop up before shooting the video. After the annotation is made, the video will be watermarked with the annotation throughout.
- 2) If set to "NO ", the comment box will not pop up before shooting the video.

- **Image Review time:** the time the image will remain when prompted to "Add annotation" after taking a photo.

- 1) The picture retention time can be selected from 2 seconds to 15 seconds. The prompt "Do you want to add annotations?" is displayed. If "NO" is selected for the picture annotation, the picture will not be retained after taking the photo .
- 2) Set to an optional time. If you select "YES" in the image annotation, the photo will stay for the corresponding time after taking the photo so that the user can preview it immediately. When the time is up, it will automatically return to the real-time monitoring interface.

8.4.8 WIFI SETTINGS

On the main interface of system settings, click the [WIFI Settings] icon, select "On" for WIFI settings and confirm (as shown in Figure 8-4-10):



Figure 8-4-10

WIFI function is turned on, it returns to the live image screen. At this time, the endoscope host has turned on WIFI Hotspot and display  icon; The client (mobile phone or computer) to the endoscope host hotspot via WIFI: endoscope, password: 12345678 , after successful connection, open the dedicated APP or video application.

The software enters the live image screen.

Note: Some application software requires entering the network address provided by the endoscope on the APP end (rtsp://192.168.1.43:1234), the instrument pushes the video stream to the mobile phone or computer through this network address.

8.4.9 About

Click the [About] icon on the main interface of system settings to enter the system information to view the software version number, handle version number, and system version number (as shown in Figure 8-4-11):

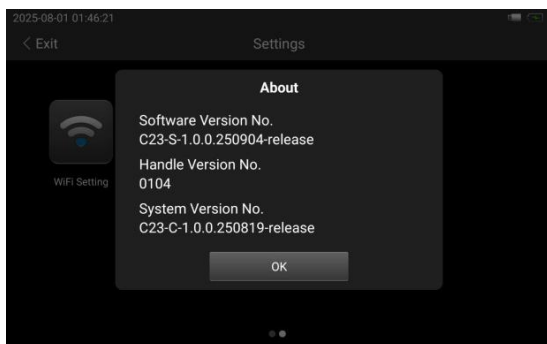


Figure 8-4-11

8.4.10 Camera temperature setting (optional function)

Click the [Camera Temperature Settings] icon on the main system settings interface to set the camera temperature (as shown in Figure 8-4-12):

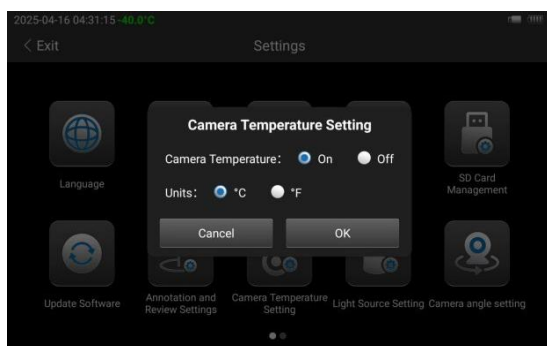


Figure 8-4-12

The camera temperature setting includes whether to display the real-time temperature of the camera and the temperature unit on the main interface. The temperature unit is °C or °F.

Hint

Camera temperature setting requires corresponding camera support, please pay attention to the selection.

8.4.11 Camera angle settings (hidden function)

Click the [Camera Angle Settings] icon on the main system settings interface to set the camera bending angle value (as shown in Figure 8-4-13):

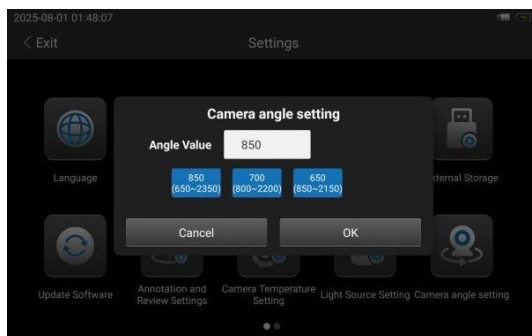


Figure 8-4-13

Enter the camera angle settings, you can choose three angle values: 850, 700, 650, or you can customize the angle value. Click confirm to successfully set it.

Note: [Camera Angle Setting] requires contacting our company for setting.

8.4.12 Light source settings (optional)

On the main interface of system settings, click the [Light Source Settings] icon to set the light source (as shown in the figure 8-4-14):

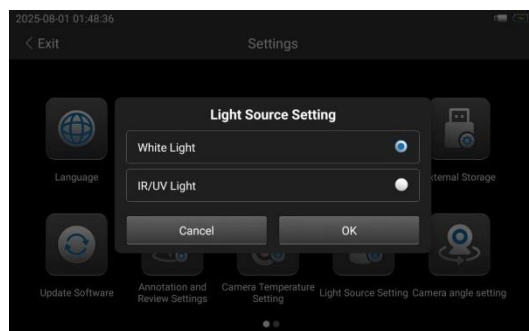


Figure 8-4-14

The current camera light source can be set to white light source or IR/UV light source.

When the light source is IR/UV, there will be a prompt of IR/UV light source on the main interface.

Hint

Light source settings require corresponding camera support. Please pay attention to the selection. [Light source settings] requires quickly clicking [WIFI settings] 10 times to display or hide this function.

8.4.13 3D Auxiliary tools

Click the [3D Auxiliary Tools]  icon on the main system settings interface to enter the 3D Auxiliary Tools settings (as shown in Figure 8-4-15):

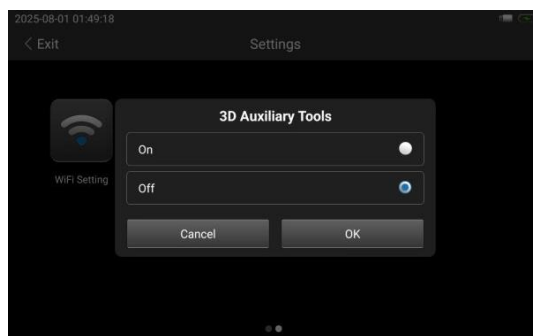


Figure 8-4-15

Click "On" or "Off" to turn on or off the rectangular mark of the 3D measurement effective area.

8.4.14 3D algorithm selection

Click [3D Algorithm Selection] on the main interface of the system settings  to enter the 3D algorithm selection pop-up window (as shown in Figure 8-4-16):

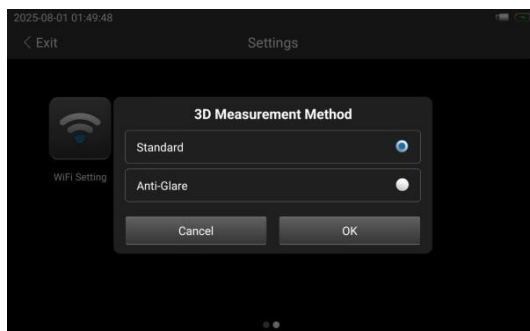


Figure 8-4-16

You can choose between standard algorithm and anti-glare algorithm. The standard algorithm is selected by default.

8.4.15 FTP function

Click the [FTP] icon on the main interface of system settings, select "On" for FTP and confirm (as shown in



Figure 8-4-17

The prerequisite for enabling the FTP function is to enable the WIFI function. If the FTP function is successfully enabled, a prompt will be displayed indicating that it is enabled

successfully. Clicking it again will display the FTP address and account password (as shown in Figure 8-4-18):

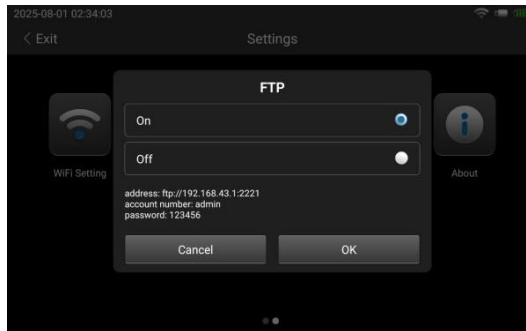


Figure 8-4-18

At this time FTP It has been successfully opened. After connecting to the device's hotspot, you can access the device's files on your computer or mobile phone . The mobile phone needs to have FTP installed. If you are using the software, on a computer, you can directly enter the address in the address bar of the "File Explorer" and enter the corresponding account password (as shown in Figure 8-4-19):

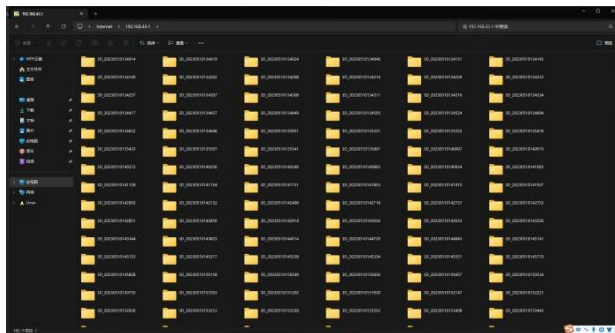


Figure 8-4-19

Mobile phone operation steps:

Android phone:

- 1) Download and install the "ES File Explorer " app from the App Store
- 2) Connecting to Wi-Fi , open the ES File Explorer app.
- 3) Click the "upper left corner" icon, click the "Network" icon, click

the "FTP" icon (as shown in Figure 8-4-20), click "New", select FTP, enter as shown in the figure below, click Enter, and wait for connection (as shown in Figure 8-4-21).

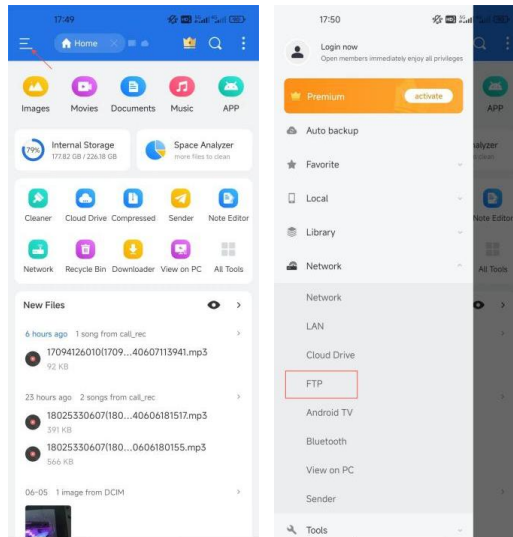


Figure 8-4-20

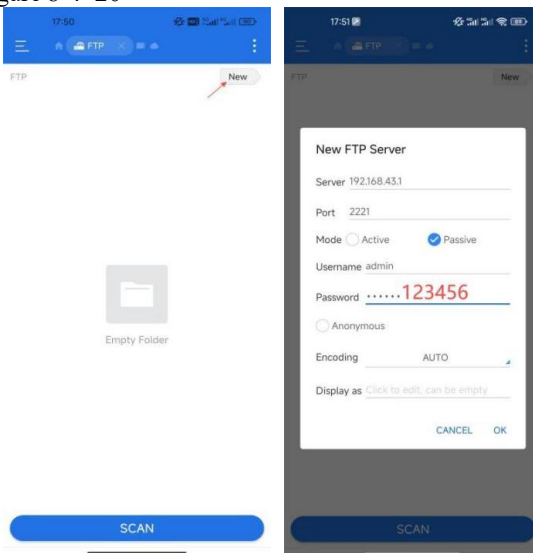


Figure 8-4-21

iPhone:

- 1) Download and install the "ES File Explorer " app from the App Store
- 2) Connecting to Wi-Fi , open the ES File Explorer app.
- 3) Click the "Service" icon in sequence, select FTP, enter the information as shown below, click Connect, and wait for the connection.

8.5 Image Browsing

Image browsing interface (as shown in Figure 8-5-1):

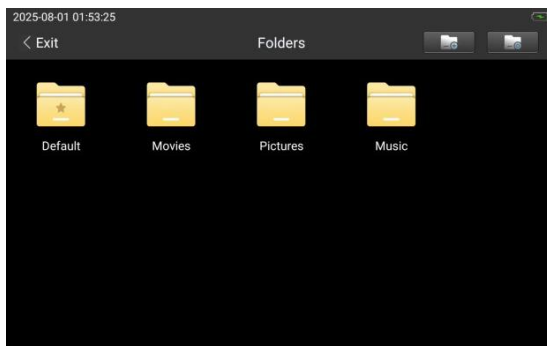


Figure 8-5-1

Click the [Create Folder] icon to create a new folder, enter the folder name, and click Save to complete the creation of the new folder (as shown in Figure 8-5-2):

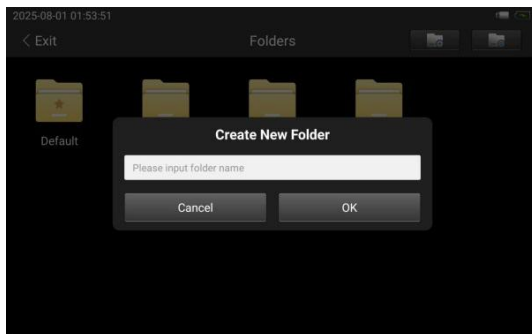


Figure 8-5-2

8.5.1 Folder Management

Click the [Folder Management] icon to enter the management mode, and click [Done] to exit the folder management mode (as shown in Figure 8-5-3):

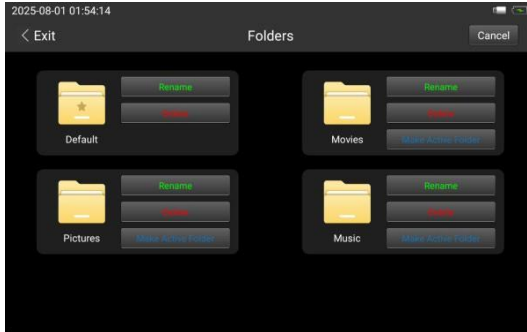


Figure 8-5-3

Click [Rename] to rename the folder (as shown in Figure 8-5-4):

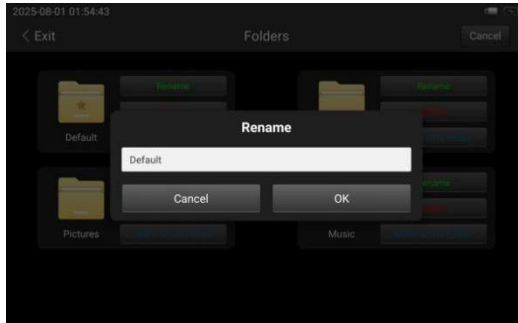


Figure 8-5-4

Click [OK] to complete the folder renaming.

Click [Delete] to delete the current folder (as shown in Figure 8-5-5):

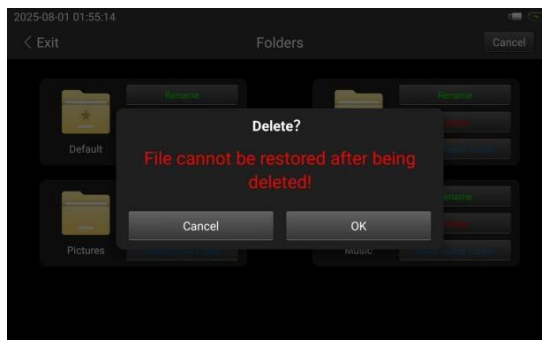


Figure 8-5-5

Click [Make Active Folder] to set the current folder as the default folder. After setting it as the default folder, photos and videos taken will be saved in this folder.

Hint:

- The default folder image is different from normal folders.
- The contents of the USB flash drive folder can be deleted, copied, and other operations can be performed on the computer.

8.5.2 Photo and video browsing

When the file is not in folder management mode, click [Folder] to browse the photos and videos in the folder (as shown in Figure 8-5-6):

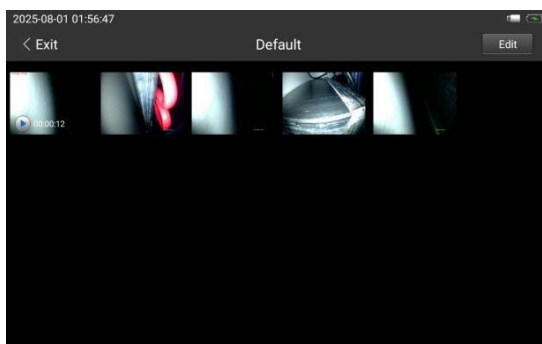


Figure 8-5-6

Click [Edit] to enter the multi-select mode and select multiple photos or videos to delete(as shown in Figure 8-5-7):

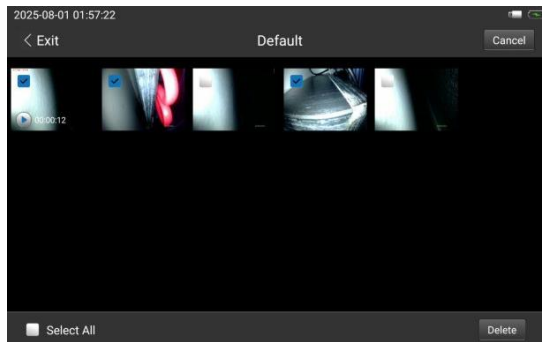


Figure 8-5-7

Without entering the [Edit] mode, click on the photo to enter the photo browsing mode (as shown in the figure 8-5-8):



Figure 8-5-8

Click the [Zoom in] icon to enlarge the image;

Click the [Zoom out] icon to zoom out of the enlarged image;

Click the [Forward and back] icons to browse the previous and next photos;

Click the [Delete] icon to delete the current photo;

Click the [Rename] icon to rename the current photo;

Click the [Edit] icon to enter the photo editing mode;

After entering the photo editing mode, click the curve icon to draw lines on the photo(as shown in the figure8-5-9):



Figure 8-5-9

Click the arrow icon to draw an arrow on the image (as shown in Figure 8-5-10):



Figure 8-5-10

Click the text editing icon to add a text watermark to the image (as shown in Figure 8-5-11):



Figure 8-5-11

Click the measurement icon to measure the image (as shown in Figure 8-5-12):

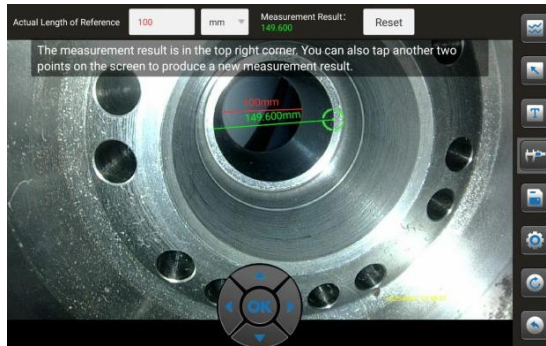


Figure 8-5-12

- 1) First, tap two points to select the reference line in the image (as shown by the red line in the middle of Figure 8-5-12);
- 2) Input the real length of the reference line;
- 3) Finally, tap another two points to measure (the green line in the middle of Figure 8-5-12), it will work out the actual length of the measured line;
- 4) Click the [Reset] icon to re-measure.

Click the [Save] icon to save the currently edited image.

Click the [Setting] icon to set the line color or font size of each function (as shown in Figure 8-5-13):

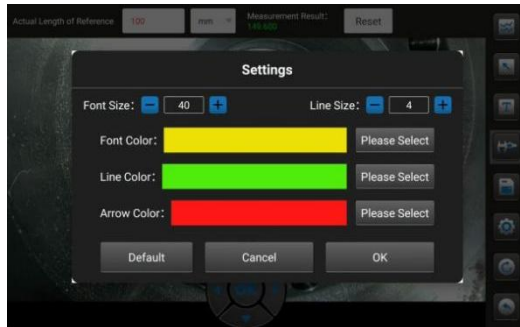


Figure 8-5-13

Click the [Undo] icon to undo the last step of the current editing. Select any of the line, arrow, and watermark icons and click the [Undo] icon to undo the line, arrow, and watermark operations in sequence. Select the [Re-measure] icon and click the [Undo] icon to undo the secondary measurement operations in sequence. The two cannot be undone at the same time.

Click the [Exit] icon to exit image editing mode.

Click the thumbnail of a video file to browse the video (as shown in Figure 8-5-14):



Figure 8-5-14

Click the middle play button to start playing the video.

8.6 3D measurement

Click the 3D measurement icon on the main interface to enter the 3D

measurement interface and perform 3D measurement. Note: During 3D measurement, the zoom function and flip adjustment must remain in their initial state.

How to enter 3D measurement:

- 1) Aim the camera at the object to be measured and try not to shake the camera too much;
- 2) Click the 3D measurement icon  to enter the 3D measurement interface ;
- 3) After clicking the icon, the camera must be kept in position for about 1 second to prevent the image and 3D point cloud generation from failing or having poor results;
- 4) After entering the 3D measurement interface, you need to wait about 5 seconds to generate the measurement image and 3D points Cloud Atlas.

The 3D measurement interface is as follows:



Figure 8-6-1

Before measuring, select the measurement method type: point-to-point distance, point-to-line distance, point-to-plane (depth), multi-line length, area, and profile. Click the corresponding icon to make a selection.

Point selection operation method:

Screen touch	Click on the effective position of the measurement image on the left, the cursor  will be displayed at the corresponding position, and the coordinate point of the 3D cloud on the right will also be displayed at the corresponding position. You can also select a point directly on the 3D cloud map and adjust the position by moving the virtual joystick up, down, left and right. Click the "OK" button on the virtual joystick to confirm the point selection. After confirmation, a yellow dot mark will be displayed on the image.
When adjusting the position, the cursor will move along. An enlarged interface is displayed above the middle, which is the magnified area of the image at the cursor's location. This function enables the operator to select the measurement point more accurately. When the selected point is invalid, the interface will prompt the operator that the point is invalid. As the cursor moves, the depth value (z value) of the measurement point will be displayed in real time. The left image has a zoom bar, making it easier to select points by zooming in on the left image. The 3D point cloud on the right can also be clicked to zoom in. Clicking on the screenshot will capture the current screen and save it to the default folder.	

8.6.1 Point /3D

Click [Point/3D] above the right image to further calculate and generate a three-

dimensional image with better display effect. After successful generation, click again to switch to the initial three-dimensional image effect.

8.6.2 View Selection

Click [View] to pop up three modes to choose from. The default is on the left. 2D The other two modes are to display 2D and 3D image in full screen respectively (see Figure 8-6-2):

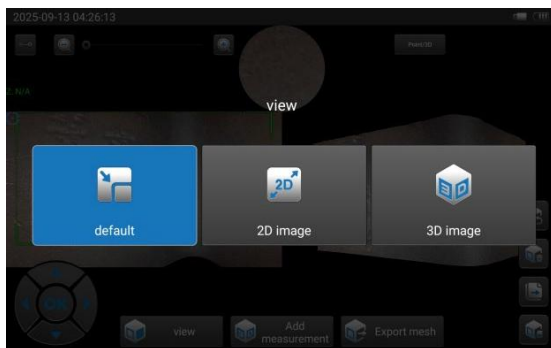


Figure 8-6-2

8.6.3 Add Measurement

Click [Add Measurement] and a pop-up window will pop up. 10 Measurement mode selection (see figure 8-6-3):

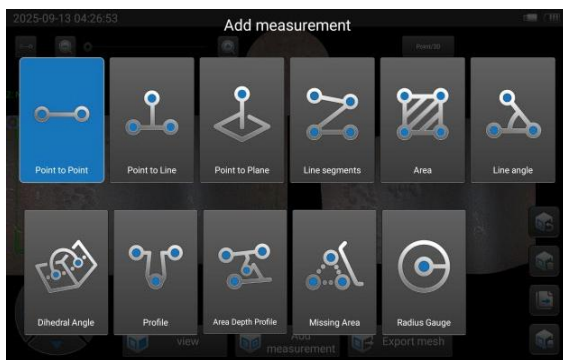


Figure 8-6-3

8.6.4 Export PLY

Click [Export PLY] to export the 3D image file in .ply format to the PLY folder (as shown in Figure 8-6-4):

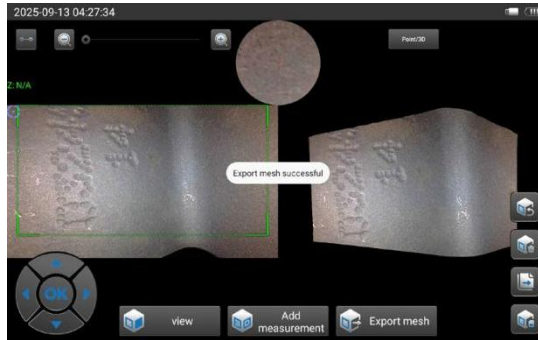


Figure 8-6-4

8.6.5 Point to Point

This mode measures the distance between two specified measuring points. After selecting two measuring points in the image on the left through the point selection operation, the distance between the two points will be automatically generated and displayed on the image (as shown in the figure 8-6-5) :



Figure 8-6-5

8.6.6 Point to line distance

This mode measures the distance between a point and a line. After selecting

three measurement points in the image on the left, the distance between the point and the line will be automatically generated and displayed on the image. The first and second points are two points on the straight line, and the third point is the measurement point (as shown in the figure 8-6-6) :

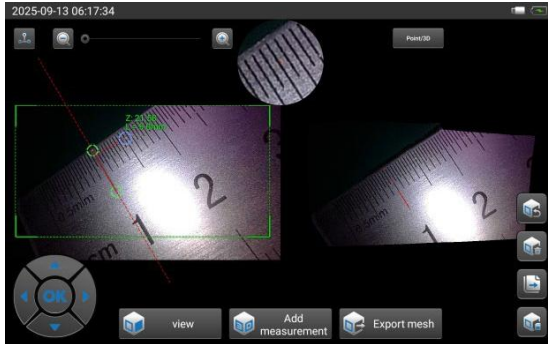


Figure 8-6-6

8.6.7 Point-to-plane distance (depth)

After measuring the points, the distance between the point and the surface will be automatically generated and displayed on the image.

The fourth point is the measurement point, and the first, second, and third points are three points on the plane (as shown in Figure 8-6-7):

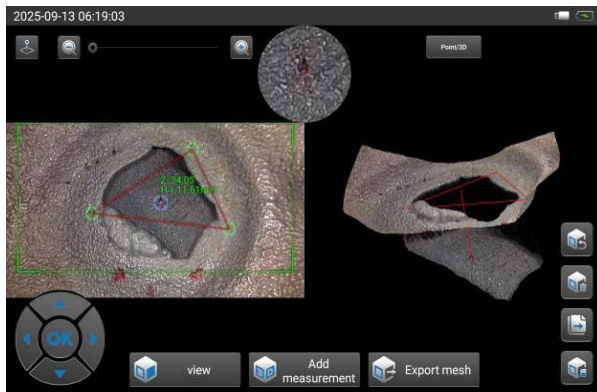


Figure 8-6-7

8.6.8 Multi-line length

This mode is used to measure the length of line segments composed of multiple points. Select the measurement points in the left image by selecting the points. When the number of points is greater than 1, the total length of the line segments composed of these points will be automatically updated and displayed on the interface each time a point is selected (as shown in Figure 8-6-8):

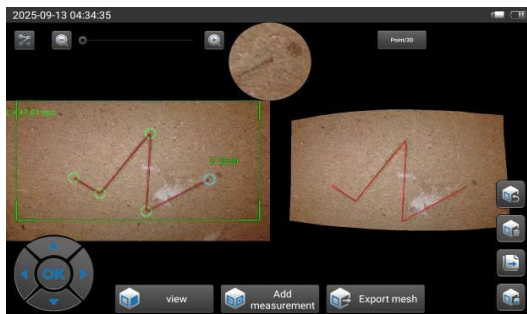


Figure 8-6-8

8.6.9 Area

This mode measures the area of a polygon composed of multiple points. Select the measurement points in the left image by selecting the points. When the number of points is greater than 2, the area of the polygon composed of these points will be automatically updated and displayed on the interface each time a point is selected (Figure 8-6-9):



Figure 8-6-9

8.6.10 Profile

This mode is used to obtain a depth trend graph relative to a point on the measured object on a cross section. By selecting three measurement points to form a surface, a cross section is cut out based on the first two points and displayed as a trend graph (8-6-10):

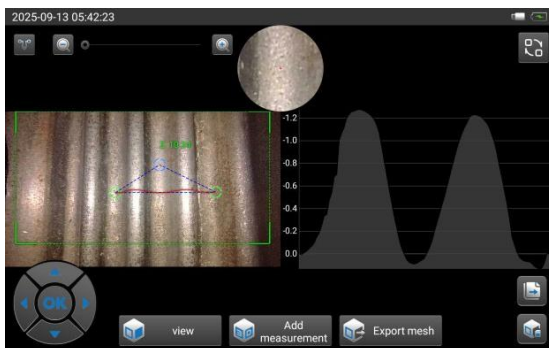


Figure 8-6-10

8.6.11 Regional profile

This mode is also used to obtain a depth trend diagram relative to a point on the measured object on a cross section. The 3 measurement points form a surface. The difference from the profile mode is that the profile of the vertical line from the third point to the straight line formed by the first two points is measured and displayed in the form of a trend graph (Figure 8-6-11):

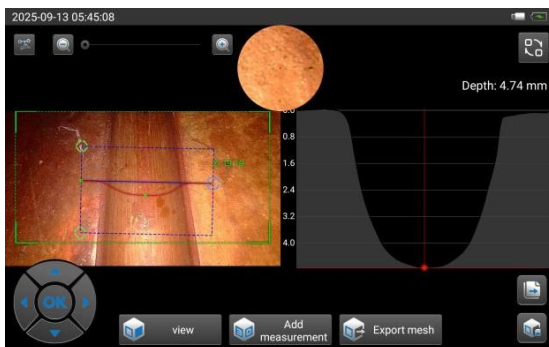


Figure 8-6-11

8.6.12 Regional compensation

- 1) Select three points to define a plane;
- 2) Select points along the edge of the missing corner in sequence, multiple points can be selected;
- 3) The last point determines the position of the virtual notch tip;
- 4) Click to select the point to complete, then move the tip until the dotted line coincides with the edge of the missing corner.

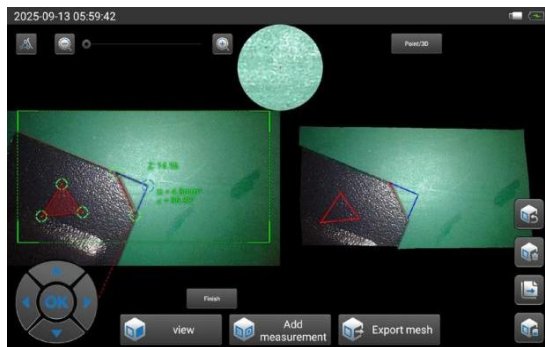


Figure 8-6-12

8.6.13 Radius gauge

- 1) Select three points to define a plane;
- 2) Click [Add Circle] and enter the radius to generate a circle;
- 3) Generate up to four circles. Click the list on the left to select the corresponding circle to move and modify the radius.

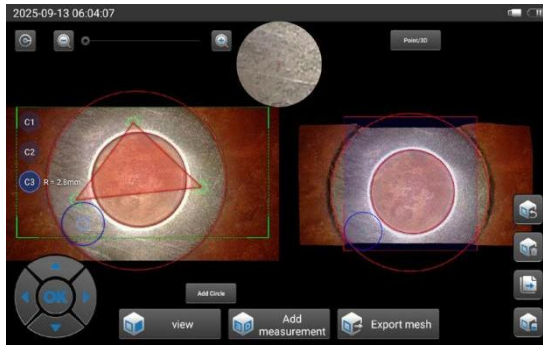


Figure 8-6-13

8.6.14 Plane angle

- 1) Select three points to define a plane (red area)
- 2) Select three more points to determine another plane (blue area)
- 3) Calculate the angle between two planes.

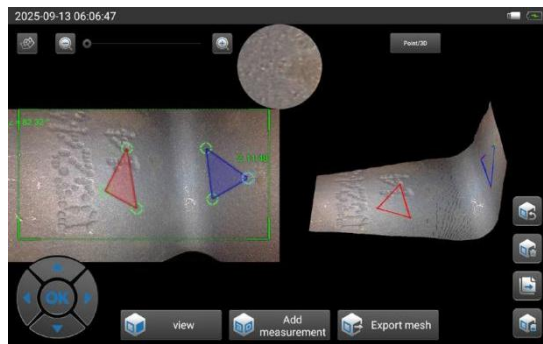


Figure 8-6-14

8.6.15 Line angle

- Select ABC three points in sequence
- Calculate the angle $\angle ABC$ in three-dimensional space

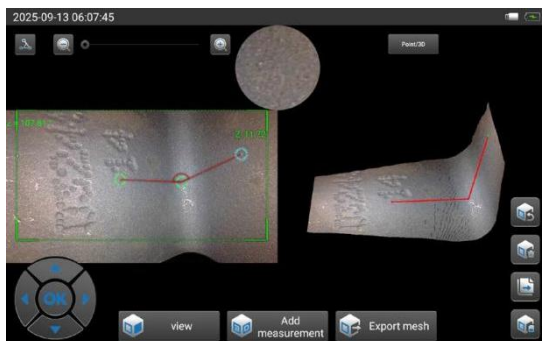


Figure 8-6-15

8.6.16 Return to the previous step

Click this icon to return to the previous step.

8.6.17 Reset measurement

Click this icon to clear all measurement points and measurement results on the left image and re-measure with the measurement method type unchanged.

8.6.18 Return

Click this icon to return to the live image interface (main interface) .

8.6.19 Save

After entering the 3D interface, click to save the current left image, including the selected points and measurement results.

8.6.20 Point cloud display

The display area on the right side of the interface is the point cloud display area. The point cloud is the representation of the 3D spatial points of the object being measured. The specific shape of the object being measured can be seen. The object being measured can be observed by rotating it and can be zoomed in and out.

Another function of the point cloud image is to verify and confirm whether the measurement points selected in the left picture are correct and whether the selected points are on the object being measured, which can better ensure the accuracy of the measurement.

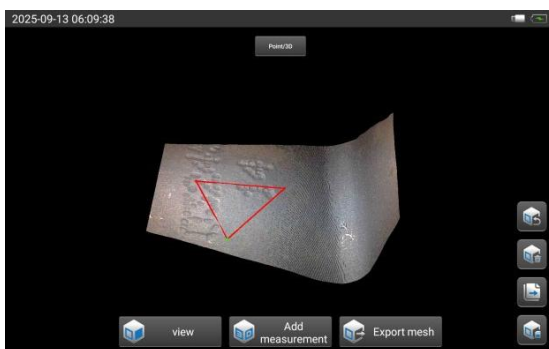


Figure 8-6-16

⚠ If sufficient accuracy is not possible

- 1) Move the endoscope as close to the object as possible so that the object fills the frame;
- 2) When selecting test points, areas with high point cloud density should be selected as much as possible;
- 3) If the object has similar patterns around the measurement point, missing surface features, or has blurry or reflective images, change the observation point and recapture the image;

- 4) If this doesn't improve the accuracy, try taking another new photo.

8.7 HDMI output

Connecting the HDMI cable to the monitor and host HDMI port respectively can realize the video output interface and achieve dual-interface display (i.e. host interface and monitor interface).

8.7.1 Touch screen function introduction

This instrument uses a capacitive touch screen, which is more sensitive and responsive than a resistive touch screen and supports multi-touch.

Note: Do not use sharp objects to press the touch screen (the touch pressure cannot be greater than 120g.) .

8.7.2 Data transmission

Install a USB flash drive in the USB flash drive slot on the left side of the instrument. The captured images and videos will be automatically saved to the USB flash drive. Remove the USB flash drive and use a card reader to read the data on the USB flash drive on a PC. When the instrument is powered on, you can connect the data cable to the PC to directly view or edit the SD card data.

8.7.3 Monitor synchronized images

Connect the HDMI cable to the monitor and host HDMI ports respectively, then turn on the host to realize the video output interface and achieve dual-interface display (i.e. host interface and monitor interface).

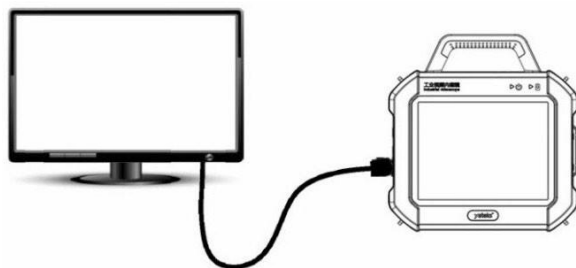


Figure 8-7-1 Host connected to monitor

8.8 Handle Operation Guide

8.8.1 Operating handle introduction

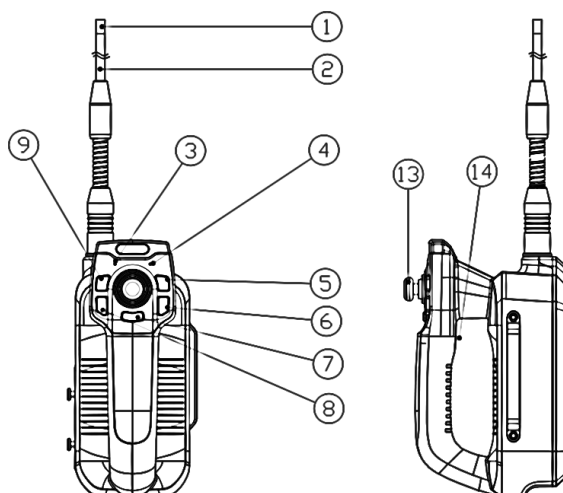


Figure 8-8-1 Operating handle

The functions of the components in Figure 8-8-1 operating handle are described in the table below:

No.	Name	Function	
①	Camera module	Video and photo taking	
②	Insertion tube	Connect the handle	
③	Lock indicator light	Lock status prompt	
④	Power indicator	Power Tips	
⑤	Joystick switch button	Short press	Switch joystick speed
		Long press	Switch joystick mode
⑥	Brightness adjustment button	LED brightness adjustment function, a total of 10 levels of brightness	
⑦	Photo button /camera switch button	Photo function/long press to switch to dual camera function	
⑧	Recording button	Video recording function	
⑨	Setting button	Enter the settings interface	
⑬	Joystick	Direction control function	
⑭	Photo button /camera switch button	Photo function/long press to switch to dual camera function	

8.8.2 Check the lighting

- 1) Click the "Live Monitoring" icon on the main screen to enter the shooting function and confirm that the brightness indicator is displayed on the screen.
- 2) Adjust the lighting intensity: Lightly press the brightness adjustment button to see if the brightness can be changed step by step.
- 3) The brightness indicator is located on the LCD screen and is used to observe the brightness of the light emitted by the insertion tube.



Warnings

- After using the instrument, be sure to adjust the LED brightness to 0, that is, turn off the lighting.
- Do not allow the light from the front end of the insertion tube to shine directly into your eyes to prevent vision damage.

8.8.3 Check angle bending function

- 1) Straighten the insertion tube.
- 2) Slowly operate the joystick in the operating handle to ensure that the angle bending part can move smoothly

Hint

The angle bending action corresponds to the angle and direction of the joystick action.

8.8.4 Check angle lock and mode / speed switching

- 1) Move the joystick to the viewing angle and keep it still for 3 seconds.
When the lock indicator turns green, the angle is automatically locked .
Confirm that the angle is still locked even when you release the joystick.
- 2) If you need to reset the distal tip, push the joystick at any position and then release it. The tip will automatically reset and the instrument lock indicator will go out.

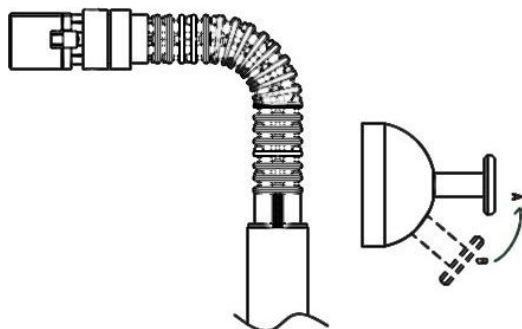


Figure 8-8-2 Angle inspection and locking

- 3) If you need
to switch modes, long press the joystick switch button to switch between normal and step modes. In normal mode, the lock indicator light is off. In step mode, the lock indicator light is red.
- 4) To switch speeds, short-press the joystick switch button to cycle through the joystick speeds. Normal mode (1-2) cycles. Step mode (1-3) cycles.

⚠ Notice

When entering the lock and mode/speed switching function, do not bend your hand at an excessive angle when moving the joystick.

8.8.5 Optical adapter mount (for interchangeable lens series only)

- 1) Check the inside and outside of the objective lens for dust or water. If there is dust or water, hold the hard end and wipe it clean with soft gauze or a cotton swab.
- 2) Position the optical adapter through the end of the insertion tube, and then carefully insert the optical adapter into the end of the insertion tube.

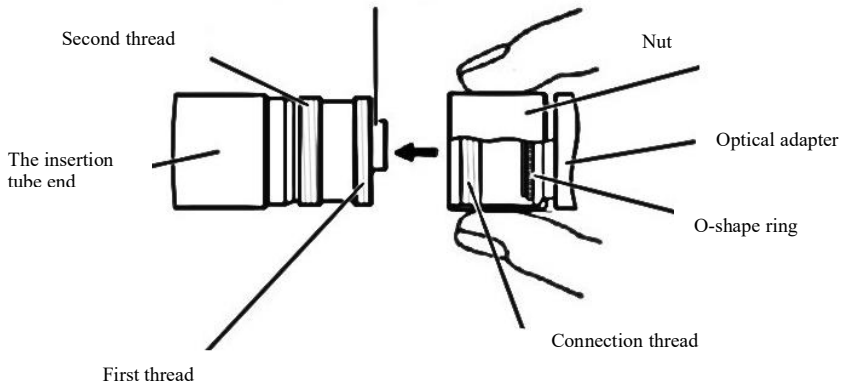


Figure 8-8-3

- 3) Turn the optical adapter nut clockwise until the first thread passes through the connecting threads.

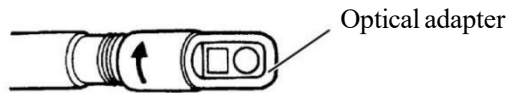


Figure 8-8-4

- 4) Once the first thread is through, turn the entire optical adapter body clockwise while gently pushing against the end of the insertion tube until it stops.

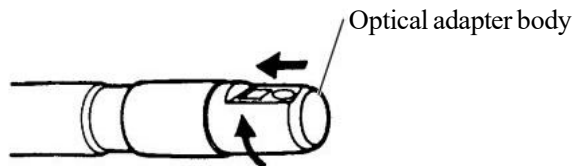


Figure 8-8-5

- 5) Turn the optical adapter's nut clockwise until the second thread is screwed onto the connecting thread. Tighten the nut until it stops.

8.8.6 Insert the insertion tube

■ Hold the operating handle and insertion tube

- 1) When operating the joystick, you can press and hold it with your thumb to complete the operation.
- 2) All other buttons can be operated by pressing and holding the thumb.

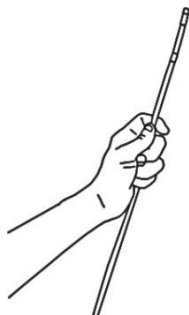


Figure 8-8-6 Handle Operation

■ Insertion tube

- 1) While observing the monitor screen, carefully inspect the insertion tube and slowly insert the object under observation, bending it as needed and applying careful and even force.
- 2) When withdrawing the insertion tube, make sure the front end of the insertion tube is in a straight position (the joystick is in the middle position), and then withdraw it slowly.

■ Angle bending operation

- 1) According to the needs of on-site inspection, operate the joystick to control the bending of the lens for observation.
- 2) Adjust the LED brightness to achieve the desired brightness and make the picture clearest.

△ Hint

- 1) If the bending control mechanism stops functioning or if you notice any abnormality during operation of the instrument, stop using it immediately. Release the joystick to the automatic zero (center) position and carefully withdraw the insertion tube from the observation object.
- 2) If you hear a harsh electric sound inside the instrument when you move the joystick, please stop using it and use it only after checking that there is no abnormality.
- 3) It is advised to develop the habit of slowly moving the joystick to operate.
- 4) Repeated bending of the insertion tube will reduce the maximum bending value of the angled bend. Please keep the insertion tube as straight as possible.
- 5) Before starting the instrument, ensure that the insertion tube and lens are in a straightened state. Do not turn the instrument when the insertion tube is in a curled state to avoid damaging the traction mechanism.

8.8.7 Remove the insertion tube

- 1) Unlock the angle bend.
- 2) Remove the insertion tube.

WARNING

- Do not remove the insertion tube while the angle is being bent, locked, or fine-tuned; this may damage the insertion tube and the object being observed.
- After using in a high-temperature environment, the tip of the insertion tube becomes hot within a short period of time and should be used only after it cools down.
- If the insertion tube is abnormal during removal, please gently turn the

joystick to remove it. Do not use excessive force to avoid damage.

8.8.8 Detailed explanation of the operating handle buttons

■ Directional joystick

The joystick controls the instrument's 360° rotation and lock function in real time. To locate and observe, move the joystick to the viewing angle and hold for 3 seconds. The lock indicator will turn green and the angle will automatically lock. To reset the distal tip, move the joystick and release it. The tip will automatically reset and the instrument indicator will turn off.

■ Brightness adjustment

The brightness adjustment key has the function of adjusting the LED brightness from 0 to 10 levels, and level 0 turns off the LED light.

■ Photograph

The photo button has a photo-taking function. Press the photo button to take a photo.

■ Video

The record button has a record function. Press the record button to start recording.

■ Indicator light

- 1) Lock indicator light: green in lock position, red in fine adjustment

mode/step mode (cannot be locked in non-normal mode).

- 2) The power indicator light is red when working.

■ Connecting to the host interface

Quick interface for connecting to the host.

■ Joystick switch

1) Mode switch, long press the joystick switch button to switch to step mode (the lock indicator light is red, the status bar icon switches to S ) , at this time, moving the joystick can move step by step. Press and hold the joystick switch button again to switch back to normal mode (the lock indicator light goes out and the status bar icon switches to ).

2) Speed switch, short press the joystick switch button to switch the joystick speed. Normal mode (1-2) cycle switching. Step mode (1-3) cycle switching.

IX. Instrument storage and maintenance cleaning

9.1 Cleaning

■ Cleaning the insertion tube

- 1) Use a dust-free cloth to wipe away any foreign matter on the insertion tube.
- 2) If liquid (waste water or oil) comes into contact with the insertion tube, wipe it off in the following order:

- ① Wipe with a dust-free cloth or cotton cloth;
- ② Wipe with a neutral detergent and a dust-free cloth;

- ③ Wipe with a dust-free cloth dipped in water;
- ④ Wipe away water stains with a dust-free cloth.

⚠ Notice

- To extend the life of the insertion tube, clean it with a dust-free cloth.
- Do not rinse the lens directly with tap water, as this may damage the instrument.
- Store the instrument horizontally at room temperature and keep the room clean and dry.
- Do not collide with other objects during storage, handle with care and use safely.
- If the instrument is not used for a long time, the function of the instrument should be checked regularly.

⚠ Warnings

- Keep the instrument out of reach of children and use it only after the child is familiar with the usage rules.
- It is strictly forbidden to store the instrument in high temperature, high humidity, strong light, strong vibration, high dust, pollution or corrosion environments.

■ Cleaning the LCD screen

If fingerprints or stains are found on the LCD screen, wipe it clean with a dust-free cloth.

■ Clean the main unit and operating handle

If the host is found to be dirty, wipe it clean with a dust-free cloth.

Do not use tap water to clean the instrument directly to avoid damage to the instrument.

9.2 Repacking

- Separate the instrument in the following order: Handle → Main unit.
- Store the operating handle, insertion tube, and main unit in the correct order. Failure to do so may damage the insertion tube.
- When placing the insertion tube into the box, please handle it with care, otherwise the insertion tube may be damaged.
- Store the insertion tube so that it does not become bent.
- Please lock the box's latches correctly. If not, the box lid may open during transportation.
- Before putting the main unit back into the box, please lay the box flat and close the lid carefully to avoid pinching your hands or instrument accessories.
- Please use the standard box, otherwise the operating handle or host may be damaged or malfunction.

■ Fasten the box

If the box is bumped during movement, the lid may open.

Check that the box is securely fastened during transport.

⚠ Notice

Fasten the four buckles of the box.

9.3 Storage precautions

- 1) Store the instrument under normal room temperature and humidity conditions.
- 2) Please turn off the power of the instrument before packing.
- 3) Place the instrument on a clean, dry, and table surface.

⚠DANGER

Do not bend, pull, twist, or crush the signal cable forcefully; otherwise, breakage of the signal cable may result in fire or electric shock.

⚠Notice

- 4) Do not store the instrument in locations with high temperature, high humidity, excessive dust or fine particles, direct sunlight, or where radioactive materials are emitted; otherwise, the instrument may be damaged.
- 5) When storing the instrument, please handle it with care and avoid collision with other objects, otherwise it may cause malfunction.

X.Troubleshooting

If the fault cannot be corrected by following the methods below, do not use the instrument and contact Yateks:

- 1) Check the instrument as described in Chapter 8 for any obvious faults.
- 2) Abnormalities that cannot be resolved by following "10.1 Troubleshooting Guide".

10.1 Troubleshooting Guide

Fault	Possible causes	Recommended actions
Unable to shut down the system	Frequent operation freezes	Press and hold the "host switch" for 6 seconds to turn off and restart
Video playback	AVI format, video cannot be played	VLC Media Player or QQ Video can be opened
Short standby time	Mixing batteries with low power	Use a charger to charge four batteries full
Unable to record photos and videos	U disk capacity is insufficient or the U disk is not inserted plate	Delete the files in the USB drive or insert the USB plate
After inserting the USB drive, displays no card inserted	The USB drive is not properly inserted	Need to reinsert the card into the slot
Automatic shutdown	The instrument will automatically shut down if the ambient temperature is too high.	Terminate the test, allow the instrument to cool down, and then restart it.
	Low battery level will trigger automatic Shutdown	Charging the instrument

The image is not clear enough	The tip of the insertion tube or the LCD screen is dirty	Wipe with a clean, dust-free cloth or cotton swab
The operating handle has a "squeak" noise	Motor noise	This is a normal phenomenon
Angle bending operating load getting harder and harder	Angle control motor overload	Extend the insertion tube as far as possible to reduce detour
Angle bends cannot return to their original position.	Angle bend lock is set	Move the joystick at will to release the angle degree bending lock
	It may enter the "fine adjustment/step" mode, at which time the "lock" indicator light is red	Press and hold the "stick switch" button again until the "lock" indicator goes out to return to normal mode and release the angle bend lock. The angle returns to the initial position and can be positioned again.
Incorrect depth of field	The optical adapter thread is not screwed in place (For interchangeable lenses)	Follow 8.8.5 again

The video recording cannot be turned off and keeps recording again and again . Click File Management Will exit the APP	U The disk is not FAT32 Format	Format to convert the disk to FAT32
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10.2 Instrument repair

1. Before returning the instrument for repair, please contact Yateks. When returning the instrument for repair, a detailed description of the fault and the circumstances under which the fault occurred must be included.
2. According to the warranty agreement, any faults that occur during the warranty period will be repaired free of charge. Please include the warranty card when returning the instrument for repair.
3. This product does not have any parts that can be repaired by the user. Do not disassemble, modify or repair it. Yateks will not be held responsible for any losses caused to the user. Repair services for this product are only provided by Yateks and authorized dealers.

Warnings

Yateks will not be held responsible for any losses caused by repairs not performed by Yateks personnel.

XI. External use standards

Low Voltage Directive and EMC Directive	CE compliant	CE
WEEE Directive	WEEE compliant	
RoHS Directive	RoHS compliant	RoHS