

J-YM Monocular Head Mounted Thermal Imager

User Manual V1.3

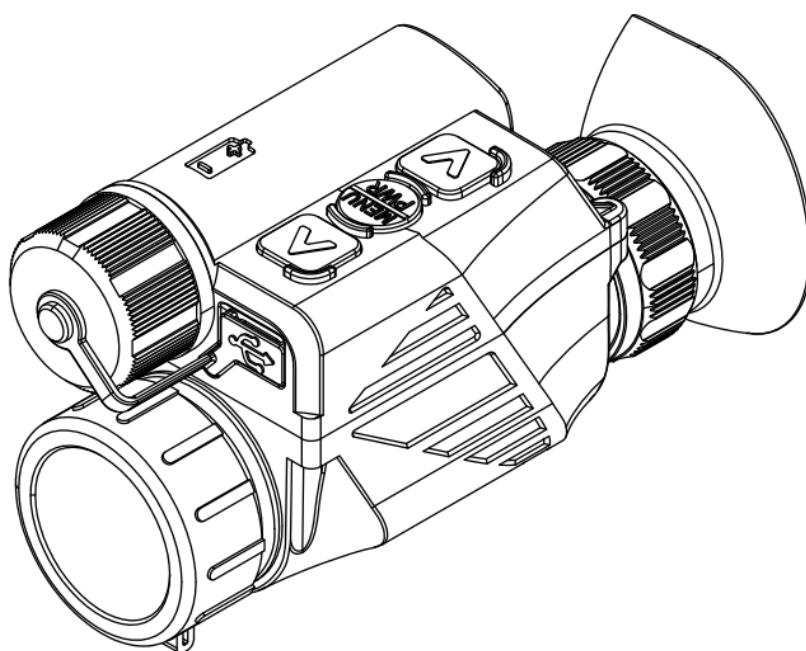


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- **Warnings, Cautions and Notes**

Warnings, cautions, and notes may be found in this document. They are defined as follows:

- **Warnings**

Alert you to potentially hazardous situations, and conditions, practices or procedures that users must follow, so as to avoid serious injury and death.

- **Cautions**

Alert you to potentially hazardous situations, and conditions, practices or procedures that users must follow, so as to avoid moderate injury and equipment damage.

- **Notes**

Provide basic information that helps you better use or operate the product.

1. Device Information and Description

1.1 Device Information

Device model and name:

J-YM

Monocular head mounted thermal imager

Device use:

J-YM is a multi-functional monocular thermal imaging device, which can be used for observation and target search under night, dim, dark, bad weather and complex scene conditions. Featuring a compact size, light weight, low power consumption, and long battery life, it can be helmet-mounted or handheld. It is suitable for enforcement, outdoor hunting, wilderness exploration, search and rescue and other fields.

J-YM packing list: monocular head mounted thermal imager body, helmet adapter bracket, L4G24 helmet bracket, battery charger, cable, and user manual, lens wiping cloth.

J-YM packing list:

No.	Component
1	Thermal imager device body
2	Helmet adapter bracket
3	Helmet bracket
4	Type-C cable
5	User manual
6	Lens wiping cloth
7	Portable bag
8	Waterproof case

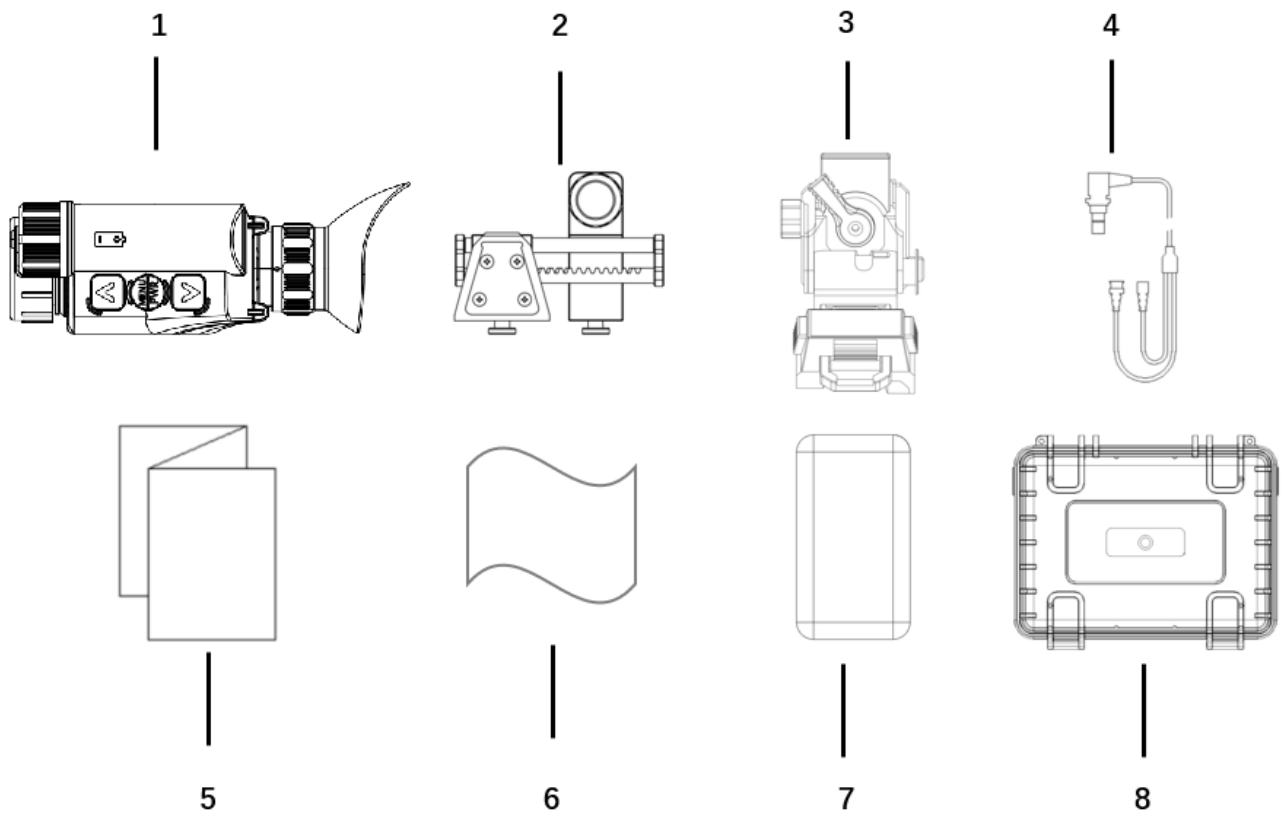


Figure 1.1 J-YM Packing List

Components and their function descriptions of the J-YM monocular head mounted thermal imager device body:

No.	Component	Function Description	
1	 button	Press	In the menu : returns to the previous option/increases the value.
			Out of menu : digital zoom
		Press and hold	In the menu : no function
			Out of menu : switch image polarity
2	MENU PWR button	Press	In the menu : confirm
			Out of menu : no function
		Press and hold	In the menu : no function
			Out of menu : On/Off
3	 button	Press	In the menu : moves to the next option/decreases the value.
			Out of menu : image capture
		Press and hold	In the menu : no function
			Out of menu : video capture
4	Type-C interface	Connects the cable, external USB serial port and analog video interface.	
5	Eyepiece	diopter adjustment knob	
6	Objective lens	Adjusts the focal length of the objective lens.	
7	Mounting interface	Head-mounted adapter bracket interface	
8	Battery compartment	Adapts to 18650 batteries after battery cap is installed.	

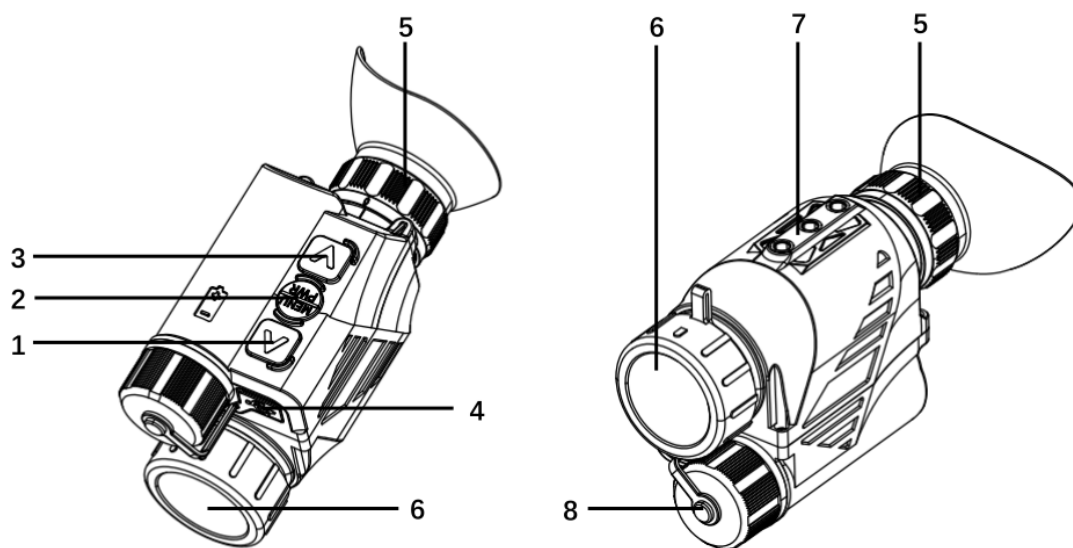


Figure 1.2 Components of the J-YM Monocular head mounted thermal imager Device Body

1.2 Device Specifications

Device Specifications :

Parameters		Value	
		YM316	YM627
Thermal	Pixel Pitch	12 μm	
	Resolution	384*288	640*480
	Frame Rate	50 Hz	
	Display	1024 $\times$ 768 OLED	
Optical	Focal Length of Objective Lens	16mm/F1.0	26.7mm/F1.0
	FOV	16.3° X 12.3°	
	Visual Amplification	1 x	
	Diopter Adjustment	-5, +2	
	Exit Pupil Distance	>20mm	
Display	Polarity	Black hot, White hot, color palettes, Iron	

Mode	Mode	Default, Outdoor, Arctic, Rainforest	
Functions	Digital Zoom	1x , 2x , 3x , 4x	1x , 2x , 4x , 6x , 8x
	DMC	Azimuth, Pitch, Roll	
	Wi-Fi image transmission	Support	
	Video/Image Capture	Support	
Power	Battery	1 x 18650 (3.7V)	
	Max Battery Life (Wi-Fi disabled)	> 7h	> 6h
Weight & Volume	Weight (w/o battery)	< 300g	
	Dimension (mm)	113 x 70 x 48	
Mounting Type		Handheld, head-mounted	
Environmental Requirement	Encapsulation Rating	IP67	
	Operating Temperature Range	-10℃ --- 50℃	
External Interfaces	Type-C	power supply, serial port, analog video output	

Recognition Distance Specifications:

Target	Type	Distance	
		YM316	YM627
Human target 1.7m×0.5m	Identification	190m	310m
	Recognition	370m	630m
	Detection	1200m	1800m
Vehicle target 4.6m×2.3m	Identification	250m	425m
	Recognition	510m	850m
	Detection	1500m	2500m

2. Assembly and Power-on for Use

2.1 Assembly/Disassembly

There are two use methods of J-YM: handheld and helmet-mounted. Different use methods need to correspond to the specified accessories and mounting methods. The battery needs to be installed first before any use.

2.1.1 Installing the Battery

J-YM supports 18650 battery with protective board (battery diameter $18\pm0.5\text{mm}$, length $69\pm0.5\text{mm}$)

Note: confirm the battery polarity before installation, the incorrect installation may lead to boot problem or device damage.

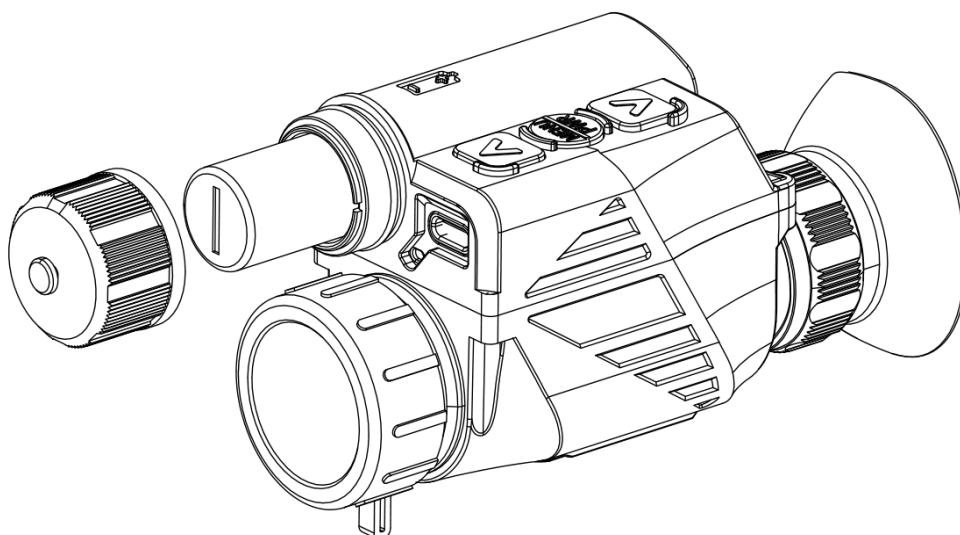


Figure 2.1 J-YM 18650 Battery Installation Diagram

2.1.2 Handheld Use

J-YM is for handheld use by default and requires no other accessories. You can use it directly after installing the battery.

2.1.3 Helmet-mounted Use

For helmet-mounted use, after installing the battery, you need to install the helmet adapter bracket. The installation steps are as follows:

- 1、 Take out the helmet adapter bracket, and fix the screw on the adapter bracket into the middle screw hole of the thermal imager device mounting interface.
- 2、 Install the device with the helmet adapter on L4G24 standard helmet bracket.
- 3、 Adjust L4G24 bracket and adapter to the optimal observation position.

Caution: In helmet-mounted use, you need to operate the menu in the device to flip the screen.

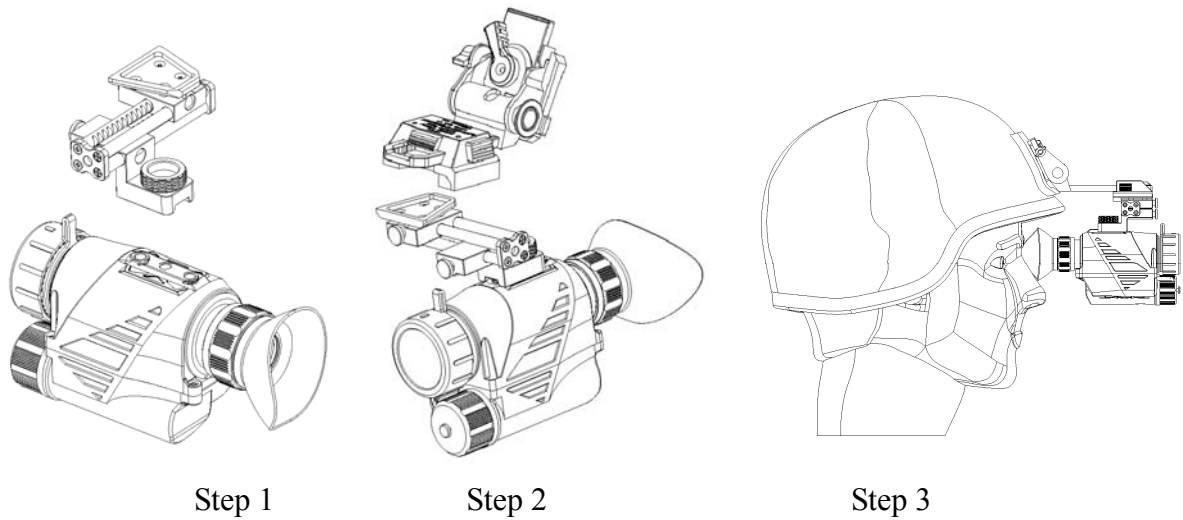


Figure 2.2 J-YM Installation Diagram for Helmet-mounted Use

2.2 Power-on for Use

Remove the lens hood before powering on the device, and press and hold the On button for 3s. The startup screen indicating that the device is being initialized will be displayed and the image will be displayed after shutter correction.

3. Operating Instructions

3.1 Home Screen Operations

3.1.1 Home Screen Display

The information displayed on the home screen of J-YM includes the infrared image, time, battery level, azimuth information, pitch angle information, roll angle information, digital zoom amplification, image polarity, reticle (displayed after being set in the menu), and PIP (displayed after being set in the menu).

J-YM Home Screen Display

No.	Icon	Description
1	Azimuth compass	Displays W, NW, N, NE, E, SE, S, and SW azimuths and angles.
2	Wi-Fi icon	Display Wi-Fi on/off status
3	Battery level	Displays four bars when the battery is fully charged and turns red when the battery level is less than 10%.
4	Reticle	Is not displayed by default and can be displayed after being set in the menu.
5	Pitch angle	-90° ~ 90°
6	Roll angle	-90° ~ 90°
7	PIP digital zoom	Can be displayed after being set in the menu. The default mode is full-screen digital zoom.
8	Image polarity	BlackHot, WhiteHot, Color Palettes, Iron
9	Video capture icon	Video capture prompts icon
10	Image capture icon	Image capture prompts icon
11	Digital zoom amplification	Display digital zoom magnification

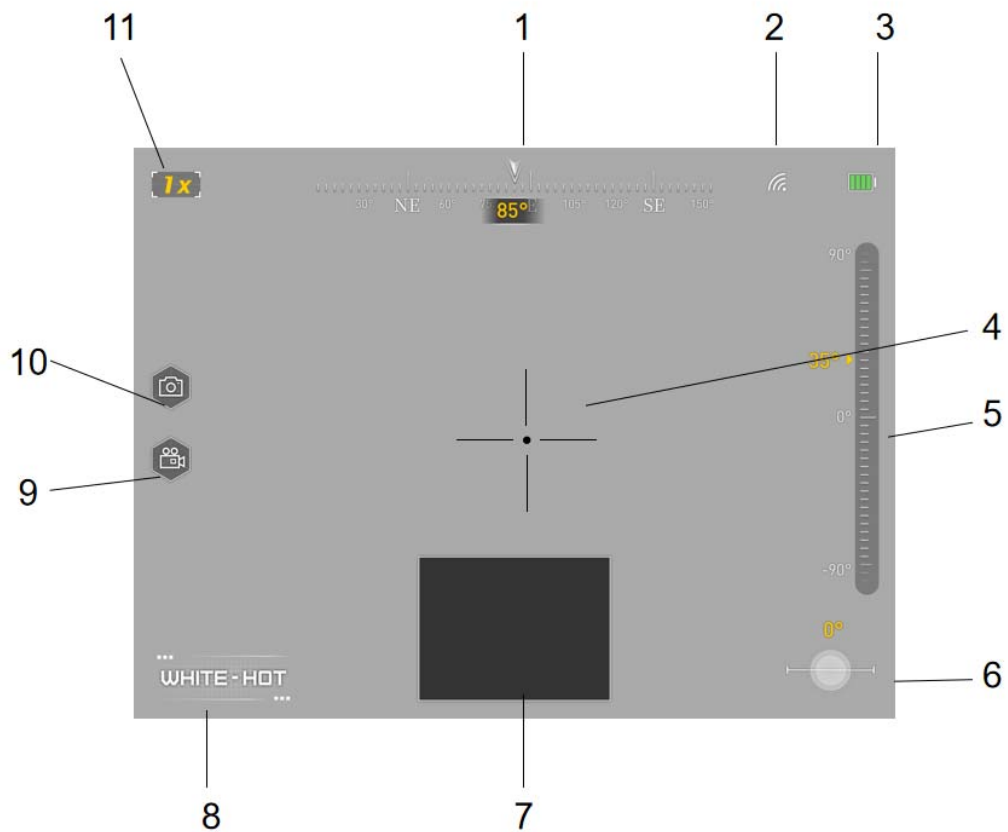


Figure 3.1 J-YM Home Screen

Main functions of J-YM buttons

No.	Component	Function Description	
1	 button	Press	In the menu : returns to the previous option/increases the value.
			Out of menu : digital zoom
		Press and hold	In the menu : no function
			Out of menu : switch image polarity
2	MENU PWR button	Press	In the menu : confirm
			Out of menu : no function

3	 button	Press and hold	In the menu : no function
			Out of menu : On/Off
		Press	In the menu : moves to the next option/decreases the value.
			Out of menu : image capture
		Press and hold	In the menu : no function
			Out of menu : video capture

3.1.2 Digital Zoom

In the home screen, short press the ▲ button to display the digital zoom image. The device defaults to full-screen digital zoom.

J-YM supports 1.0–8.0× digital zoom, image centered 1×/2×/4×/6×/8× amplification.

3.1.3 Polarity Switching

In the home screen, press and hold the ▲ button to switch image polarities among **WhiteHot**, **BlackHot**, **Color Palettes**, and **Iron** cyclically.

3.1.4 Manual Image Correction

In the home screen, when the infrared image is blurred, degraded, uneven, or with halos, manual shutter correction is required.

Press the ▲+▼ button simultaneously for 1s to manually correct the shutter. You can hear the shutter click during the correction. The correction time is less than 1s.

3.1.5 Image Capture

In the home screen, press ▼ button to capture an image, the image capture icon will be displayed on the left side of the interface during image capture, the captured image will be named by the current time and saved.

3.1.6 Video Capture

In the home screen, press ▼ button to capture a video, the video capture icon will be displayed on the left side of the interface during image capture, the captured image will be named by the

current time and saved, the max duration is 30min.

3.2 Menu Operations

In the home screen, short press  button to enter the menu mode. In the menu mode, you can set the image, display, device settings and select application scenarios.



Figure 3.2 Main Menu

3.2.1 Image

Brightness : set the screen brightness to 1-10 , and the default value is 5.

Contrast : set the image contrast to 1-10 , and the default value is 5.

3.2.2 Application Scenario

Application Scenario can be Default, Outdoor, Arctic, or Rainforest. Specifically, Default is the initial mode; Outdoor is mainly suitable for environments with fewer outdoor thermal targets to highlight thermal targets; Arctic is suitable for scenes with low ambient temperature, like winter; Rainforest is suitable for scenes with high ambient temperature and high humidity.

3.2.3 Display

Display allows setting options like **DMC**, **Menu Flip**, **PIP**, **Reticle Display**, **Reticle Color** and **Reticle Movement**.

DMC allows setting the compass information and whether to display the pitch angle and roll angle. By default, they are displayed.

Menu Flip allows setting the display status of the menu, handheld use by default, that is, the image interface is normal when the buttons are facing up. For head-mounted use, you can switch the menu direction by enabling menu flip to ensure that it is consistent with the direction of use, this function is disabled by default.

PIP allows setting the display mode of the image. The default is Full-screen, and PIP can be selected. When PIP is selected, it will be overlaid on the bottom of the display.

Reticle Display allows displaying or hiding the reticle. When the reticle is displayed, the color and position of the reticle can be set.

Reticle Color can be set to White, Black, or Green.

Reticle Move can be set to **Default**, **Horizontal**, or **Vertical**. If **Default** is selected, the position of the reticle will be reset to the center of the image. If **Horizontal** or **Vertical** is selected, the reticle will move horizontally or vertically. The move value ranges from -100 to 100, and each move value represents a pixel.

3.2.4 Settings

Settings allows calibrating the device, restoring factory settings, etc., which includes **Wi-Fi**, **Date and Time**, **DMC Calibration**, **Analog Video**, **Type-C Mode**, **Calibration Mode**, **Factory Reset**, **Accumulated Service Time** and **Product SN**.

Wi-Fi : enable or disable Wi-Fi , disable by default ; The Wi-Fi icon will be displayed on the home interface when Wi-Fi is enabled. The access point named XWIFI_XXXXXX will be found via mobile phone or other mobile devices after about 10s when Wi-Fi is enabled, the password is 12345678 by default. You can observe or capture image/video via App after Wi-Fi is successfully connected.

Note: please contact the supplier for App.

DMC Calibration: mainly calibrate the accuracy of the compass indication. You are recommended to perform an azimuth calibration when using the device for the first time or in a

different place. After entering **Azimuth Calibration**, you can view the calibration instructions. Specifically, horizontally rotate the device 360° around itself, click **Start** to start the rotation, and click **OK** after the rotation is completed.

PAL Video : allows turning on/off the output of analog video, disabled by default. You can observe the image on the monitor by connecting the Type-C interface on the device to the BNC connector on the monitor with the cable in the package.

Note: The power consumption will be increased after PAL video output is enabled.

Serial Port Mode : switch between serial port and OTG mode, realize debugging by connecting Type-C connector with serial port and OTG video and image reading, OTG Mode by default. Under OTG mode, the Camera icon will be displayed on the PC after connecting with PC via USB interface on the cable, then the image and video in the device can be read.

Note: The device Wi-Fi needs to be enabled when exporting images and videos via cables.

Under serial port debugging mode, after the device is connected with PC via USB connector on the cable, a serial port will be displayed on the PC, then the user can update and debug via client software.

Note: To avoid device damage, the device needs to be updated via client software under professional guidance.

Correction Settings: allows setting the shutter correction time interval. Auto indicates that the device will perform auto shutter correction according to environmental situations. Manual indicates the user needs to perform shutter correction manually. 1-10 indicates that the shutter correction will be performed according to fixed time interval. Unit: minute.

Factory Reset allows restoring factory settings. If required, you can select this option and click **OK** to restore the device data to factory defaults and quit all menus.

Accumulated service time: display accumulated service time.

Note: The factory reset will not clear the service time of the device.

SN : display product serial number.

4. Faults and Troubleshooting

Table 4.1 lists common faults of J-YM during use. Please check and fix the faults according to the steps listed in Table 4.1. You need to check whether the faults are fixed after troubleshooting. Not all possible faults are listed in Table 4.1. If the unlisted faults occur in J-YM or the faults cannot be fixed upon troubleshooting, please perform the higher level maintenance.

Table 4.1 J-YM Troubleshooting

No.	Faults	Test or Check	Troubleshooting
1	Unable to screw or open the cover of the battery compartment	(a) Check whether the battery is installed in the correct direction. (b) Check whether there are sundries or scraps around the knob of the battery cover. (c) Check whether the battery cover is damaged, worn or deformed. (d) Check whether the battery compartment is damaged or deformed. (e) Check whether the battery size conforms to the requirement ($\phi 18 \pm 0.5 \text{mm}$, length: $69 \pm 0.5 \text{mm}$)	(a) Reinstall the battery. (b) Clean the threads of the battery cover and battery compartment. (c) Perform the higher level maintenance. (d) Perform the higher level maintenance. (e) Change 18650 battery conforming to standard
2	Unable to power on	(a) Check whether the battery is installed, whether its direction is correct, and whether its power is sufficient. (b) Check whether the On/Off button can be pressed normally.	(a) Replace the old battery with a new one and install it correctly according to the instructions in Chapter 2. (b) Perform the higher level maintenance.
3	Unable to display the image	(a) Check whether the lens hood is removed and whether the focal length is appropriate. (b) Check whether the objective lens is blocked during operation. (c) Check whether the lens is damaged. (d) Long press the ▲ button to perform manual shutter correction.	(a) Remove the lens hood and adjust the objective lens focusing knob. (b) Remove the barriers. (c) Perform the higher level maintenance. (d) Perform the higher level maintenance if the

			fault persists.
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FCC Warning

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The SAR limit adopted by USA is 1.6 watts/kilogram (W/kg) averaged over one gram of tissue. The highest SAR value reported to the Federal Communications Commission (FCC) when it is tested for use at the body is 1.08W/kg, and the head is 0.015W/kg.

The device complies with the RF specifications when the device is used near your head or at a distance of 0 mm from your body. Ensure that the device accessories such as a device case and a device holster are not composed of metal components.