ERDI LASER®

ERDI TECH LTD

Multi-functional thermal imaging monocular

Product Manual

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Contents

Version	Revision Records	remark
V1.5	1. Additional note: PAL video-enabled aviation connectors must be purchased separately. 2. Additional caution: Photo and video capture functions may malfunction when connected to USB.	

•Warnings, Cautions, and Tips
This document may contain warnings, cautions, and tips. Their meanings are as follows:

•Warning
Indicates a potentially hazardous situation that requires the user to follow specific conditions, practices, or procedures to avoid personal injury or loss of life.

• Caution
Indicates a potentially hazardous situation. Users must follow specified conditions, practices, or procedures to avoid minor injury or equipment damage.

• Tip
Provides essential information of particular importance, relevance, or assistance for use or operation

Chapter 1: Equipment Information and Description

1.1 Equipment Information

Model and Name: Multifunctional Thermal Imaging Monocular

Product Overview:

This multifunctional thermal imaging monocular is designed for observation and target acquisition in nighttime, low-light, zero-light, adverse weather, and complex environmental conditions. Compact and lightweight with clear imaging and extended battery life, it can be worn on the head, handheld, or used as a sight or front-end sight attachment. Suitable for security enforcement, outdoor hunting, wilderness exploration, search and rescue, and other applications.

Waterproof Case Contents: Monocular, helmet adapter mount, L4G24 helmet mount, Type -C connection cable, rail mount, rail mount screws, sighting eyepiece, user manual, lens cleaning cloth, and carrying case.

Serial	Accessories
1	Monocular Multifunction Thermal Imager Body
2	Helmet Mounting Adapter
3	L4G24 Helmet Mount
4	Type-C Connection Cable
5	Pistol Rail Mount
6	Pistol Rail Mount Screws
7	Sighting Eyepiece Cover
8	Operating Manual
9	Lens Cleaning Cloth
10	Carry Case
11	Waterproof box

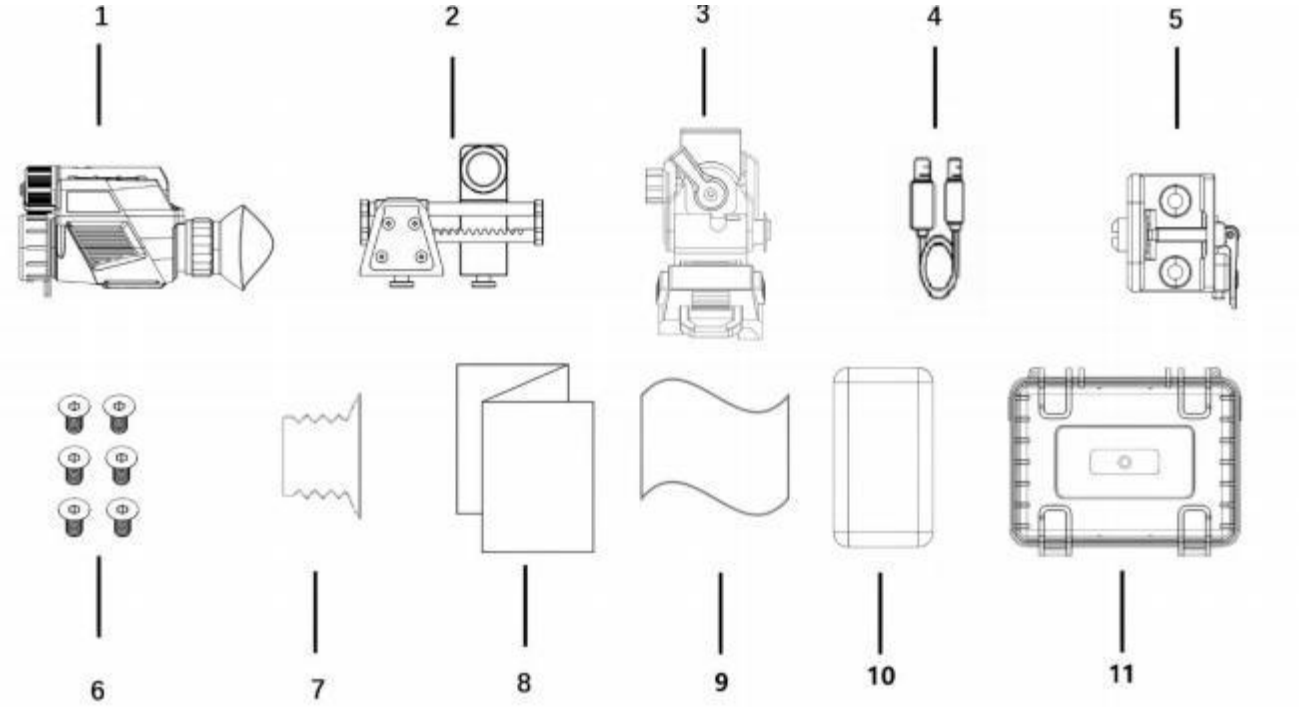


Figure 1.1 Diagram of the Complete Unit and Accessories

Main Unit Components and Functional Description:

Serial No.	Component	Function Description	
1	Button 	Short-press	Within menu: Previous option/Increase value
			Outside menu: Electronic zoom
		Long-press	Within/Outside menu: Shutter calibration
2	Button 	Short-press	Within menu: Confirm
			Outside menu: Menu display
		Long-press	Within menu: Exit menu
			Outside menu: Power on/off
3	Button 	Short-press	Menu: Next option/Decrease value
			Outside menu: Take photo
		Long-press	Menu: No function
			Outside menu: Record video
1+3		Short-press	Menu/Outside menu: Image polarity switch
1+2		Short-press	Menu/Outside menu: Manual screen off
2+3		Short-press	Menu/Outside menu: Icon hide
4	Eyepiece	Diopter Adjustment Knob	
5	Installation Interface	Head-Mounted Adapter Mount Interface	
6	objective lens	Adjusting Objective Lens Focus	
7	Type-C port	External USB Serial Port	
8	Battery compartment	Compatible with 18650 Batteries	

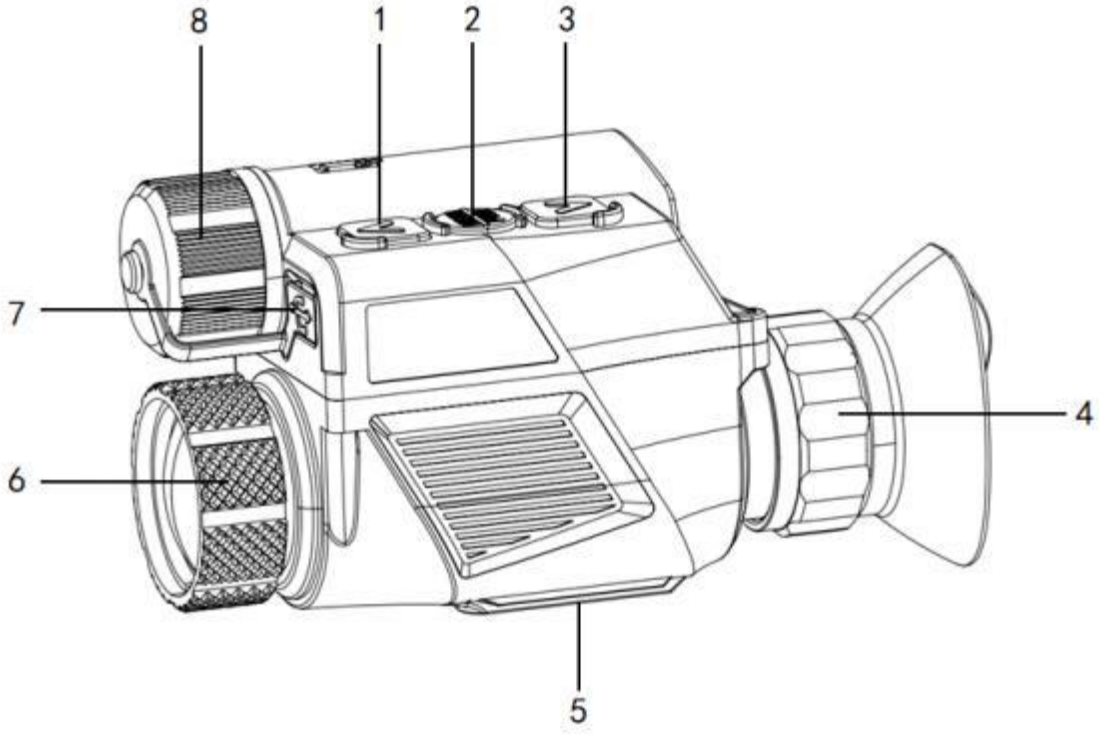


Figure 1.2 Description of Components

1.2 Product Parameters

Parameters:

Parameters		Data
Infrared Parameters	Pixel Size	12 μm
	Resolution	640*512
	Frame Rate	50 Hz
	Display	1024 × 768 OLED

Optical Parameters	Objective Lens Focal Length	26.7mm/F1.0
	Field of View	16.3° X 12.3°
	Magnification	1 x
	Diopter Adjustment	-5 、 +2
	Exit Pupil Distance	>20mm
Display Mode	Polarity	White Heat, Black Heat, Iron Red, Green Heat, Outline, Red Heat
Functional Parameters	Digital Zoom	1x , 2x, 4x , 6x
	Electronic Compass	Azimuth, Elevation, Roll
	WIFI Video Transmission	Support
	Video Recording/Snapshot	Support
	Memory	64G
Power Supply	Battery	1 x 18650 (3.7V)
	Maximum Battery Life (Without Wi-Fi)	10h
Weight and Volume	Weight (Without Battery)	< 270g
	Dimensions (mm)	113 x 70 x 48
Usage Mode		Handheld, Head-mounted
Environmental Requirements	Protection Rating	IP67
	Operating Temperature	-20℃ --- 50℃
External Interface	Type-C	Device Power Supply and Serial Port

Recognizing Parameters

Target	Type	Distance
People 1.7m X 0.5m	Identify	310m
	Recognize	630m
	Detect	1800m
Vehicle 4.6m X 2.3m	Identify	425m
	Recognize	850m
	Detect	2500m

Chapter 2 Product Assembly and Initial Operation

2.1 Product Installation/Removal

The device offers four usage modes: handheld, head-mounted, sight-mounted, and front-mounted. Each mode requires specific accessories and installation methods. Batteries must be installed before any usage mode.

2.1.1 Battery Installation

The device supports 18650-type batteries with protection boards (battery diameter: 18± 0.5mm, length: 69±0.5mm, with a raised pin on the positive terminal).
Note: Ensure correct battery polarity during installation. Incorrect installation may prevent device startup or cause damage.

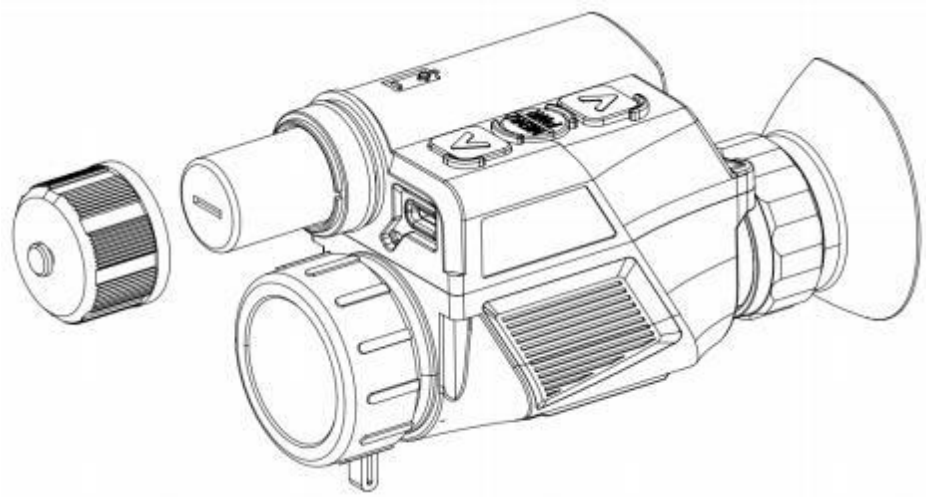


Figure 2.1 18650 Battery Installation Diagram

2.1.2 Handheld Use

Handheld operation requires no additional accessories. Simply install the battery and use the device directly. The unit ships factory-set for handheld use.

2.1.3 Head-Mounted Use

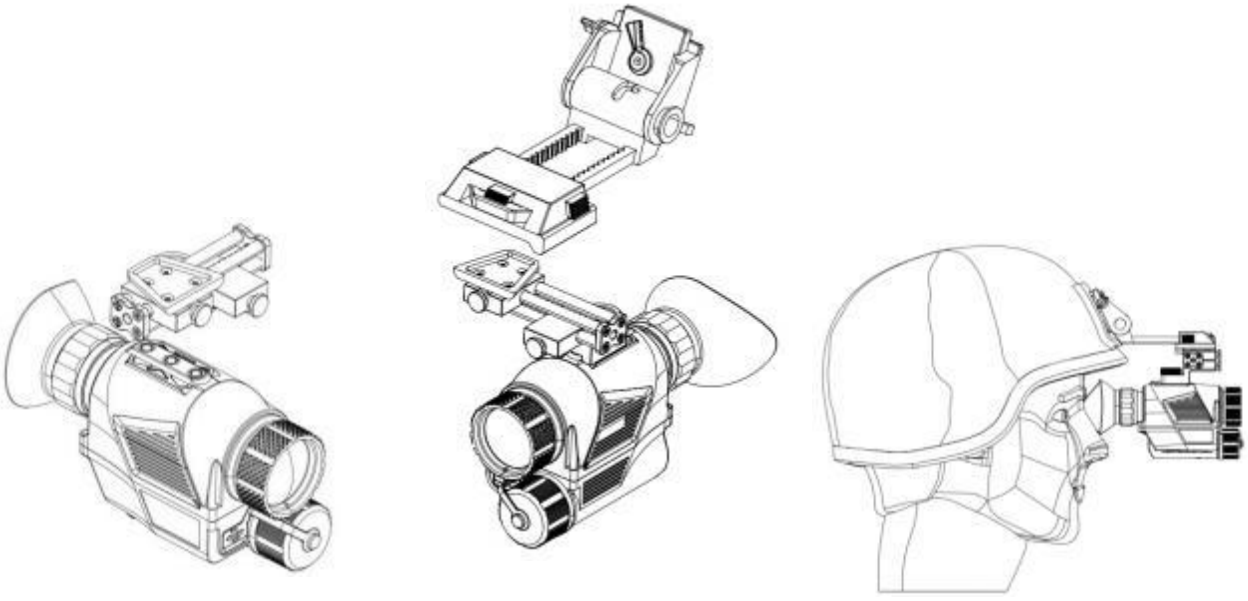
For head-mounted operation, install the head-mounted adapter bracket after battery installation. Follow these steps:

1. Remove the head-mounted adapter bracket. Install the mounting screw on the bracket into the center threaded hole of the thermal imager's mounting interface.

2. Mount the device with the head-mounted adapter bracket installed onto the L4G24 standard dump truck bracket;

3. Adjust the L4G24 bracket and adapter bracket to achieve the optimal viewing position.

Note: When using the head-mounted display, you must navigate the device's menu to flip the interface.



Step 1 Step 2 Step 3

Figure 2.2 Head-Mounted Device Installation Diagram

2.1.4 Sight/Front Mount Usage

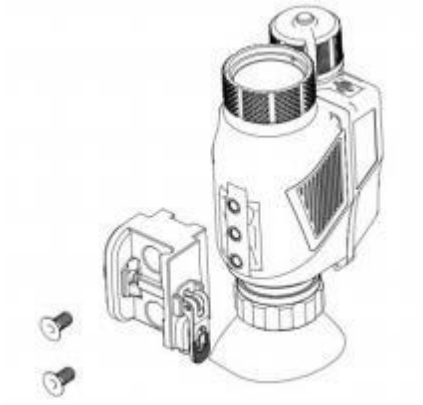
When using the device as a sight/front mount, after installing the battery, attach the Picatinny rail adapter mount (rail mount) to the night vision device. Then mount the device onto the Picatinny rail. Follow these steps:

1. Remove the rail mount and secure it to the two threaded holes on the outer side of the night vision device's mounting interface using two M5 screws;

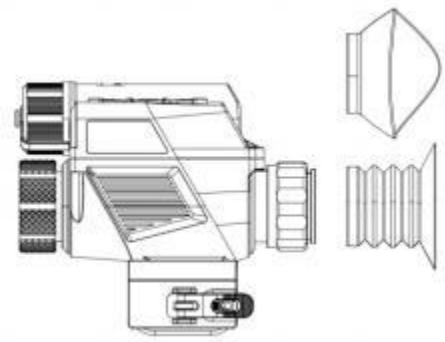
2. Remove the horseshoe eyecups and replace them with the sight eyecups;

3. Mount the device with the rail mount attached to the Picatinny rail.

Note: When removing the horseshoe-shaped eye mask, grasp the base firmly and pull straight out. Directly tugging on the outer surface may damage the mask.



step 1



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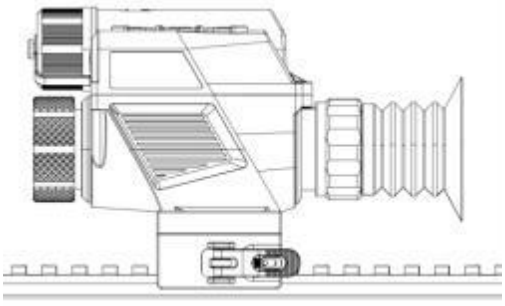

Step 3

Figure 2.3 Schematic Diagram of Gun-Sight Mounting

2.2 Powering On and Using

Before powering on, open the objective lens cover. Press and hold the power button for 3 seconds. The screen will illuminate and display the “Initializing...” startup screen. Wait for the shutter calibration to complete before the infrared thermal imaging display appears.

Chapter 3 Product Operation Instructions

3.1 Main Interface Operation

3.1.1 Main Interface Display

The main interface displays the following information: infrared image, time, battery level, azimuth information, pitch angle information, roll angle information, electronic zoom magnification, image polarity, reticle (displayed when enabled in menu settings), picture-in-picture (displayed when enabled in menu settings), and Wi-Fi status indicator.

Main interface display content

S.N.	Display Name	Description
1	Compass	Display W, NW, N, NE, E, SE, S, SW directions with angle values
2	Time	Display real-time time
3	Battery Level	Full battery shows 4 bars; battery icon turns red when low
4	Grid	Hidden by default; enable via menu settings
5	Pitch Angle Indicator	-90° ~ 90°
6	Roll Angle Indicator	-90° ~ 90°
7	Picture-in-Picture Digital Zoom	Default zoom centered on reticle; enable via menu settings
8	Image Polarity	White hot, black hot, iron red, green hot, outline, red hot
9	Video Recording Icon	Video recording indicator icon
10	Photo Capture Icon	Photo capture indicator icon
11	Digital Zoom Level	Display magnification level
12	Wi-Fi Icon	Display Wi-Fi status

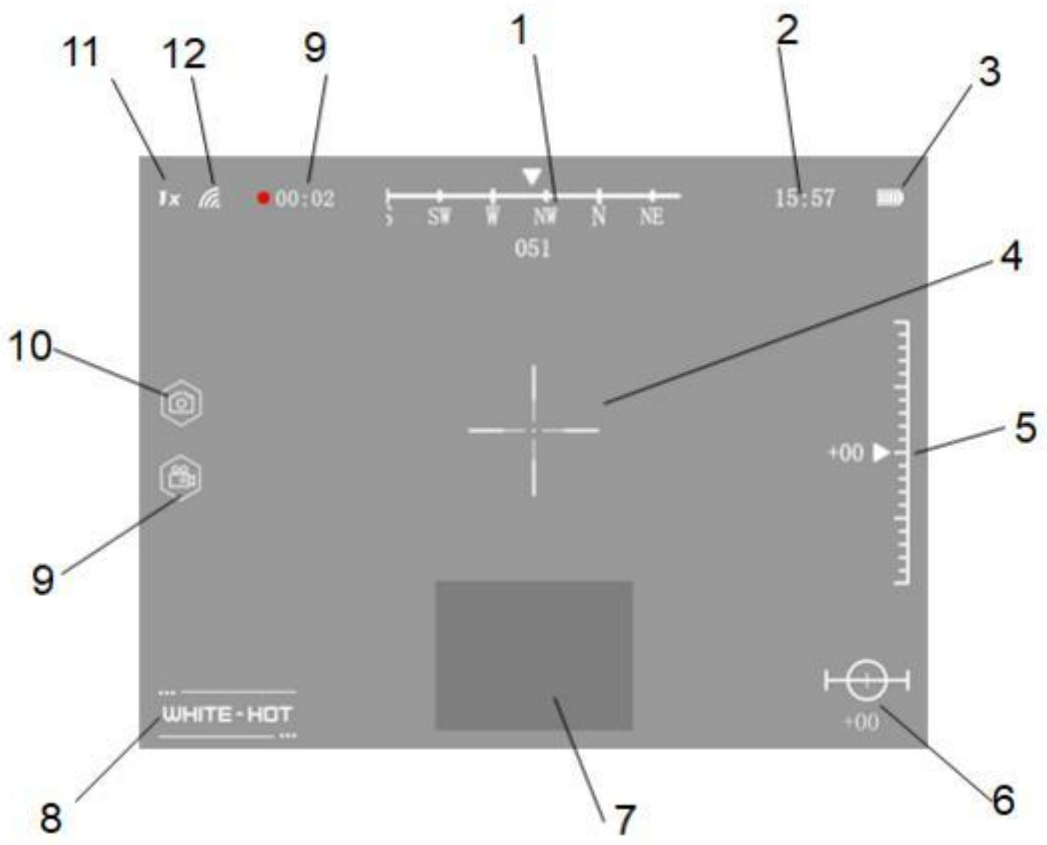

Figure 3.1 Main Interface

The primary functions of the buttons are as follows:

S.No.	Component	Function Description	
1	Button ⌃	Short-press	Within menu: Previous option/Increase value
			Outside menu: Electronic zoom
		Long-press	Within/outside menu: Shutter calibration
2	Button MENU PWR	Short-press	Within menu: Confirm
			Outside menu: Call menu
		Long-press	Within menu: Exit menu
			Outside menu: Power on/off
			Within menu: Next option/Decrease value

3	Button ▼	Short-press	Outside menu: Take photo
		Long-press	Menu: No function
			Outside menu: Recording
4	Button ▲+ ▼	Short-press	Menu/Outside menu: Image polarity switch
5	Button ▲+ MENU PWR +	Short-press	Menu/Outside menu: Manual screen off
6	▼ MENU +PWR	Short-press	Menu/Outside menu: Icon hide

3.1.2 Digital Zoom

In the main interface mode, briefly press the ▲ key to adjust the electronic zoom function. The device defaults to full-screen electronic magnification.

The device supports 1x to 6x electronic magnification, displaying 1/2/4/6x magnified images centered on the subject.

3.1.3 Polarity Switching

In Main Interface/Menu mode, briefly press the "▲+▼" buttons to toggle image polarity. Polarity switching supports a six-cycle rotation: White Hot, Black Hot, Iron Red, Green Hot, Edge Highlight, and Red Hot.

3.14 Manual Image Calibration

In the main interface/menu mode, when the infrared image appears blurred, degraded, uneven in brightness, or exhibits the "pot lid effect," manual shutter calibration is required.

Press and hold the "▲" button (2s) to perform manual shutter calibration. A shutter clicking sound will be audible during calibration, which lasts less than 1 second.

3.15 Photo Capture Function

In the main interface mode, briefly press the "▼" button to take a photo. During capture, a camera icon will appear on the left side of the screen. Photos are automatically named using the current time and saved.

3.16 Video Recording Function

In the main interface mode, press and hold the "▼" button to start recording. A video icon will appear on the left side of the screen during recording. Recorded files are named based on the current time and stored. Recording can be used continuously, with a video file saved every 20 minutes.

3.17 Manual Screen Off

In Main Interface/Menu mode, simultaneously press "▲+●" (1s) to turn off the screen.

3.18 Icon Hide

In Main Interface/Menu mode, simultaneously press "●+▼" (1s) to hide icons.

3.2 Menu Operations

In the main interface mode，Short press MENU PWR button enter menu mode，In menu mode, you can adjust image parameters, differentiation settings, device settings, and select the pre-serial mode.

Figure 3.2 Main menu

3.2.1 Image Settings

Brightness: Primarily adjusts the display brightness of the screen. Adjustment range: 1-10. Default value: 5.

Contrast: Adjusts the contrast of the image display. Adjustment range: 1-10. Default value: 5.

Threshold Adjustment: Adjusts the prominence of heat sources in thermal images. Adjustment range: 1-3. Default value: 2.

Outline Color: Adjusts the color of thermal source outlines in the image. Available options: White, Green, Red.

Picture-in-Picture Display: Sets the image display mode. Default is full-screen mode. Picture-in-Picture mode is also available. When selected, a picture-in-picture window will be overlaid at the bottom of the display interface.

Compass Information: Enables or disables the display of compass information, pitch angle, and roll angle. The device defaults to off.
Interface Flip: Configures the display orientation for different usage modes. The default is handheld mode, where the interface appears upright with buttons facing up. When using the headset, enable interface flip. Default is off.
Screen Off When Upside Down: Enables screen-off functionality when the device is flipped upside down during head-mounted use. Default setting is off.

Figure 3.3 Image Settings

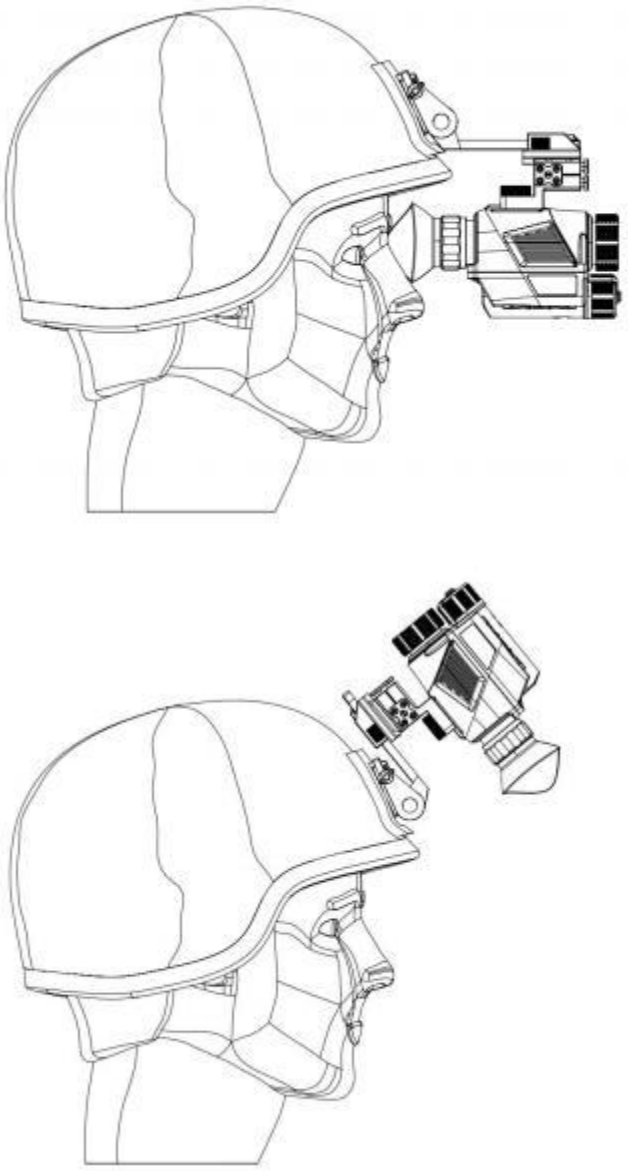

Figure 3.4 Flip to Wake

3.2.2 Reticle Settings

Reticle settings primarily configure the interface display content, including the “Reticle Display,” “Reticle Type,” “Reticle Magnification,” “Reticle Color,” and “Reticle Movement” options.

Reticle Display: This option enables or disables reticle display. When displayed, the reticle's color and position can be customized.

Differentiation Type: This option allows setting five styles of differentiation type.

Differentiation Zoom: This option allows setting whether the reticle follows electronic zoom magnification or remains unchanged.

Reticle Color: Five colors can be set: “Black,” “White,” “Green,” “Red,” and “Blue.”

Reticle Movement: Reticle movement offers three settings: “Default Position,” “Horizontal,” and “Vertical.” Selecting “Default Position” resets the reticle to the image center. Adjusting ‘Horizontal’ or “Vertical” allows reticle movement in horizontal or vertical directions, respectively. Movement range: -100 to 100. Each unit represents one pixel. Five reticle positions can be saved.

Figure 3.5 Partition Settings

3.2.3 Device Settings

The “Device Settings” option primarily handles device calibration, factory reset, and other operations. It includes the following options: “WIFI,” “Compass Calibration,” “Date and Time Settings,” “Analog Video,” “Calibration Mode,” “Factory Reset,” “Cumulative Usage Time,”

“Product SN Information,” ‘Language’ (optional on some devices), “Storage Format,” and “WIFI Reset.”

WIFI: Enables or disables WIFI (default: disabled). When WIFI is enabled, a WIFI icon appears on the main screen. After approximately 10 seconds, mobile devices can detect the hotspot named “XWIFI_XXXXX” with the default password “12345678”. Connecting via WIFI allows device monitoring, recording, and other operations through the app.

Note: During WIFI activation, the WIFI icon will flash as a notification. Do not take photos or record videos during this time.

Note: Contact your designated supplier to obtain the APP.

Compass Calibration:

Primarily corrects the accuracy of compass readings. Calibration is required when using the device for the first time or after changing locations. Upon entering the “Compass Calibration” option, calibration instructions appear:

Horizontal Calibration— Rotate the device 360° horizontally around its own center. Click “Start” to begin rotation. After completing the rotation, click ‘OK’ to finish calibration. Vertical Calibration—Rotate the device 90° upward around its own center, then rotate downward 90°. Click “Start” to begin rotation. After completing the rotation, click the center button again to finish calibration.

PAL Video: Provides switch control for external analog video output. Default setting is off. When enabled, connect the multi-head fixture cable to the device's Type-C port. The BNC connector on the other end can be connected to a monitor to view device images (this multi-head fixture cable requires separate purchase).

Note: Enabling PAL video output increases device power consumption.

Note: When this feature is enabled, photo and video recording functions may experience abnormalities.

Calibration Settings: Provides options to adjust the shutter calibration interval. 0, 3, 5, 10, 15, 20, 25, 30 represent fixed intervals in minutes (min) for shutter operation. 0 indicates manual shutter calibration is required.

Restore Factory Settings: Selecting this function prompts confirmation to restore default parameters. Choosing “Yes” initiates factory reset and exits all menus. The Type-C port cannot be used to connect other devices while this function is active.

Cumulative Usage Time: Displays the total duration of device usage.

Note: Performing a factory reset will not clear the device's usage time.

Product SN Information: Displays the product serial number and software version information.

Language: Some models allow changing the interface language.

Storage Format: Ensure the Wi-Fi switch is turned on before selecting this option. Do not connect other devices via the Type-C port while this function is running. Photos, videos, and other stored files will be deleted after the function completes.
WIFI Reset: Ensure the WIFI switch is turned on before selecting this option. Do not connect other devices via the Type-C port while this function is running. After completion, the WIFI name and password will revert to default settings.

3.2.4 Serial Port Mode

When the device connects to a PC via the Type-C interface, it offers serial port and OTG mode switching functionality. The default setting is serial port mode, enabling host computer serial debugging. Upon enabling WiFi, the connection switches to OTG mode, allowing OTG video and photo storage/retrieval. The PC will display a Camera device prompt.

Note: When exporting images and recordings via the assembly line, ensure the device's WiFi switch is enabled beforehand.

Note: Using this function may cause abnormal behavior in the photo and video recording functions.

When connected to a PC via the USB port on the fixture line in serial debugging mode, an additional serial port appears on the PC. Users can then use the host computer to upgrade the device and debug parameters.

Note: Device upgrades via the host computer must be performed under professional guidance to avoid damaging the device

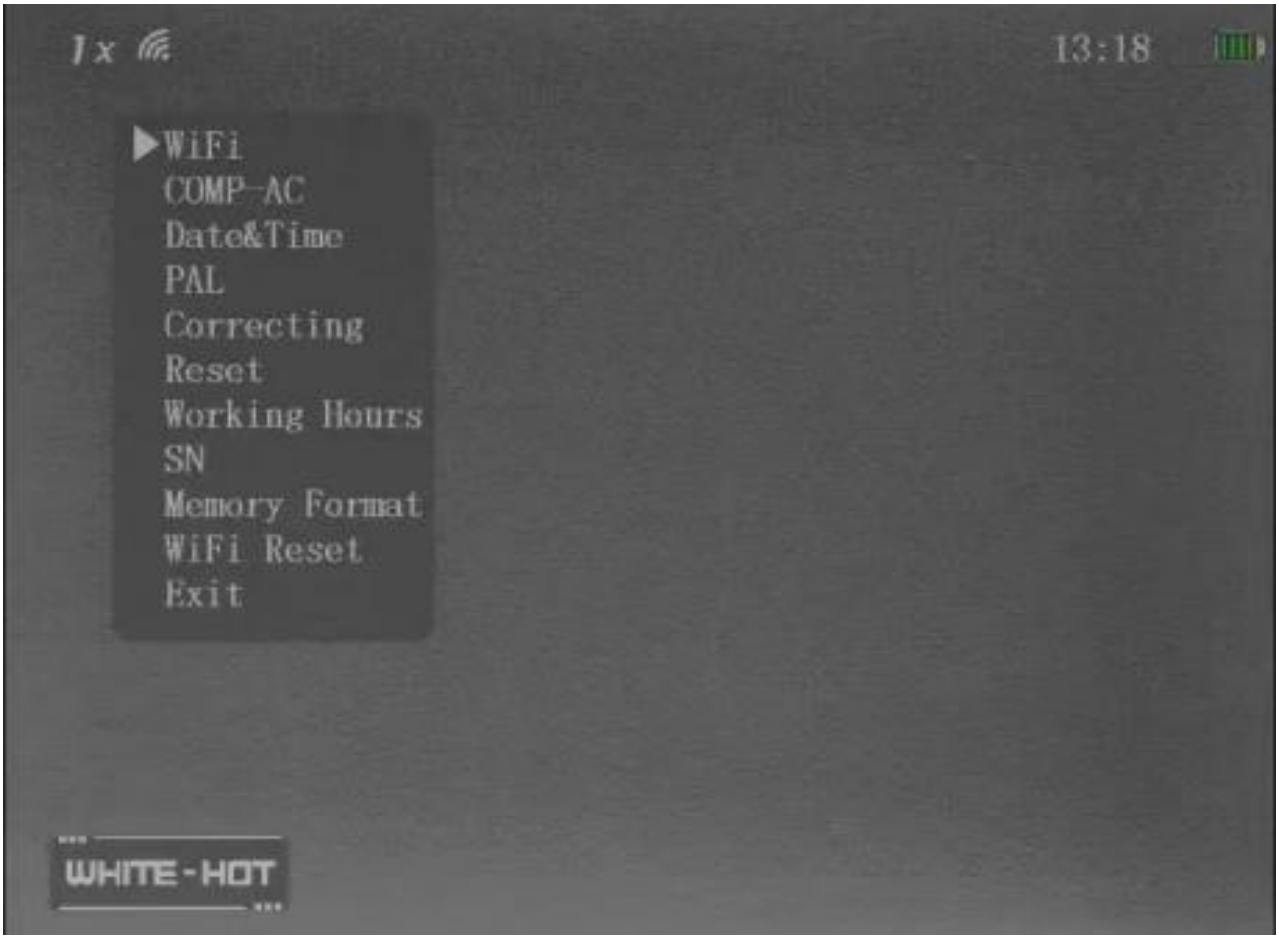

Figure 3.6 Device Settings

3.2.5 Front Serial Mode

Mode Switch: Select “M” to exit the front serial mode interface.

Brightness: Select “ ” Set the display brightness of the screen. The adjustment range is 1-10, with a default value of 5.

WIFI：Select“ ” Turn on or turn off WIFI，Default is off.

Screen movement: Select“ ”Three options are available for configuration: “Save G,” “Horizontal X,” and “Vertical Y.” Selecting “Save G” archives the division position, with 5 save slots available. Adjusting the “Horizontal X” and “Vertical Y” options allows the division to move horizontally and vertically by ±83 and ±111 pixels respectively. Each increment represents one pixel. Changes are automatically saved upon exiting.

Exit：Select“ ”exit menu.

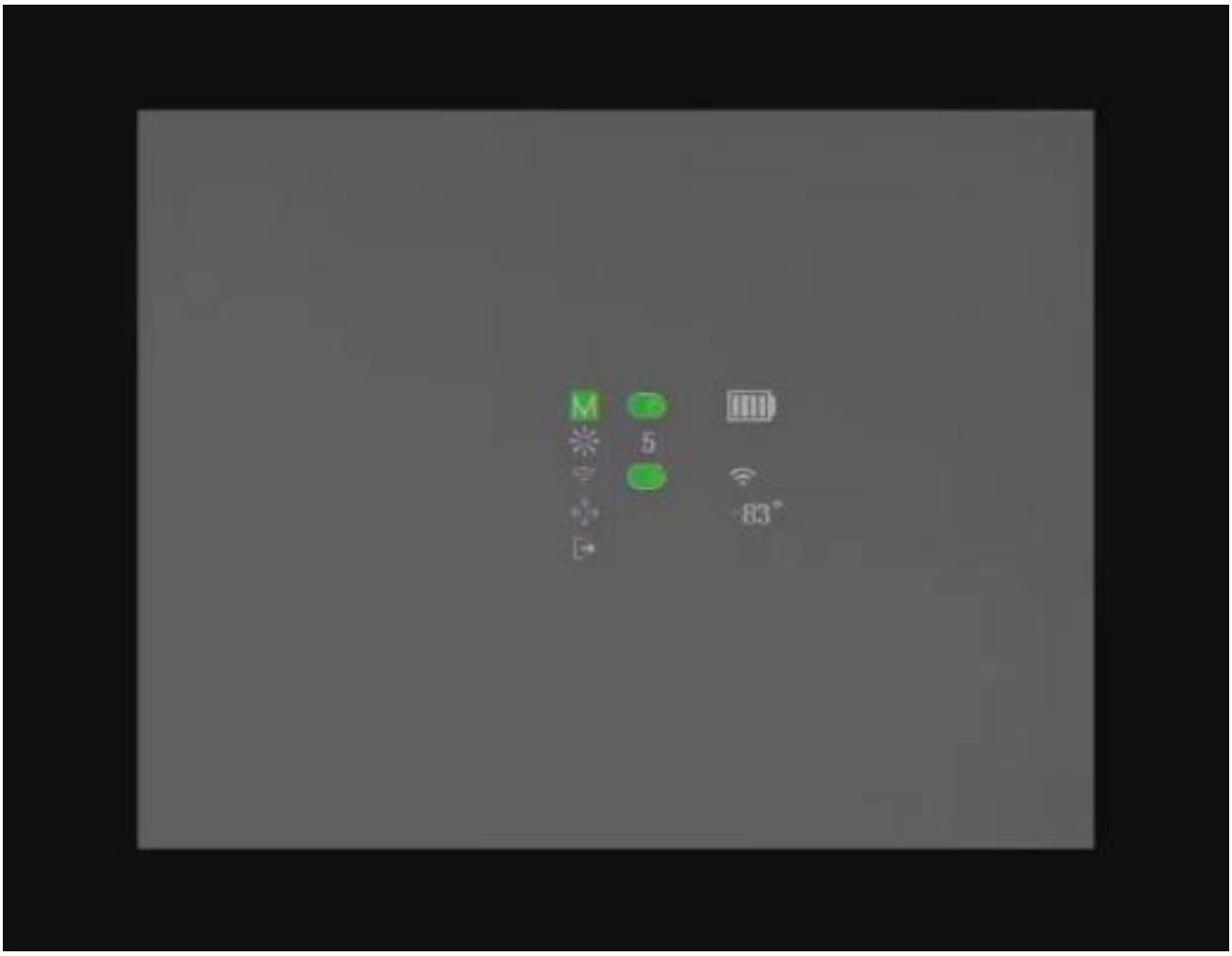

Figure 3.7 Pre-Chain Mode

Figure 3.8 Screen Movem

Chapter 4: Abnormal Conditions and Handling

The table below lists common equipment malfunctions during operation. Follow the sequence shown in Table 4.1 for inspection and corrective actions.

After implementing corrective actions, verify whether the abnormality has been resolved. Table 4.1 does not cover all possible malfunctions. If an unlisted malfunction occurs or corrective actions fail to resolve the issue, escalate to higher-level maintenance.

Table 4.1 Troubleshooting Guide

S. No	Fault	Test or inspection	Corrective Action
1	Battery compartment cover Cannot be tightened or remains locked and cannot be opened.	(a) Verify the battery is installed in the correct orientation. (b) Inspect for debris or particles around the battery cover knob. (c) Check the battery cover for damage, wear, or deformation. (d) Inspect the battery compartment for damage or deformation. (e) Confirm the battery dimensions meet specifications (φ 18±0.5mm, length 69±0.5mm).	(a) Reinstall the battery. (b) Clean the threads on the battery cover and battery compartment. (c) Proceed to advanced maintenance. (d) Proceed to advanced maintenance. (e) Replace with a standard 18650 battery.
2	Unable to power on	(a) Check whether the battery is installed, whether it is oriented correctly, and whether it has sufficient charge. (b) Check whether the power button can be pressed normally.	(a) Replace with a new battery and install it correctly according to Chapter 2. (b) Proceed to advanced maintenance procedures.
3 3	Image not displayed	(a) Verify whether the objective lens cover is open and confirm whether the focal length is appropriate.	(a) Open the objective lens cover and adjust the objective lens focusing knob.