Quick Start Guide

Uncooled Infrared Thermal Imager

– USER MANUAL –

Under no circumstances (on/off) do not look directly at high intensity radiation sources such as the sun

Do not touch the lens

Do not remove the battery cell

Do not touch the Type-C interface with wet hands

Do not bend or damage the connecting cables

Package Contents

Package Dimensions	Total Packaged Weight
260×147×150mm	≤ 1800g

Main Unit（x1）

Carry Bag（x1）

Lens Cleaning Cloth（x1）

Installation Bracket（x1）

18650 Li-ion Batteries（x4）

Accessories（x1 Kit）

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Thank you for choosing us! To ensure you have the best user experience, we recommend reading this user manual carefully before use. If you have any questions, please feel free to contact us.

1 Product Overview

This thermal imaging scope is a high-performance device that can assist you in long-distance observation under various environmental conditions. It features a compact body, advanced shutterless technology，high sensitivity，high refresh rate and long-lasting endurance. It can be used for security monitoring, search and rescue, outdoor hunting, and special missions.

2 Functional Features

1. Real-time image noise reduction function;

2. Adjustable contrast and brightness;

3. Pseudo color modes: white hot, black hot, iron red, desert yellow, green hot, red hot, sky, edge;

4. Image output resolution: OLED: 1024×768; CVBS (PAL): 768×576;

5. Blind element compensation function;

6. Hotspot tracking function;

7. Wi-Fi image transmission, photo and video recording function;

8. Laser ranging function;

9. Horizontal, pitch display, digital compass function;

10. Picture-in-picture function;

11. Multiple reticles;

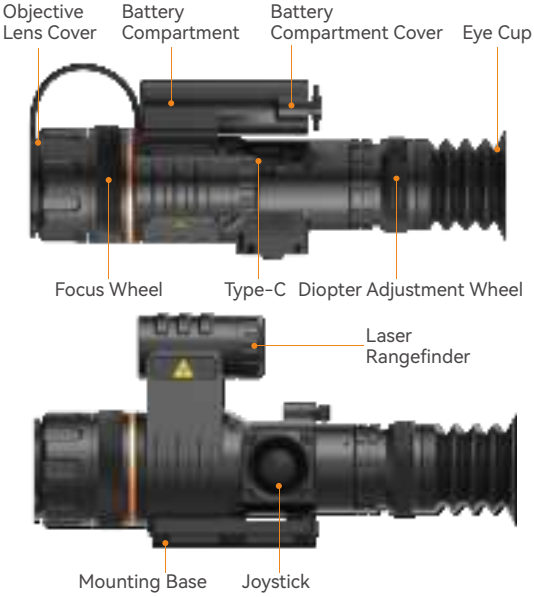
12. Support 1x, 2x, 4x digital zoom;

13. Default Chinese and English language display (customizable);

14. Support wide voltage range input;

15. Ballistic Calculation.

3 Product Appearance



1. Diopter Adjustment Wheel
Used to match the best viewing acuity of different users, with an adjustment range from -5 to +5.

2. Focus Wheel
After powering on the product, align it with the observation target. If the distance to the observation target changes and the image becomes blurry, rotate the lens focus wheel to refocus until the target image is clear.

3. Mounting Base
Used for fixing equipment, with shock absorption function to ensure stable installation position, and provide tripod mounting holes.

4. Type-C Interface
Used for picture and video data transmission and external analog display (PAL) output. Note: The external analog output displayer needs to be customized by the manufacturer.

4 Button Definition

Joystick Operation	Menu Operation	Long Press	Short Press
Push Upwards	Move Upwards/ Add one	/	Digital Zoom
Push Downwards	Move Downwards/ Minus One	Turn On/Off WiFi	Pseudo-color Mode Switch
Push Forwards	/	Gun Calibration Mode	Laser Rangefinder
Push Backwards	Confirm/Switch Options	Video Recording	Capture and Save Photo
Press Middle	Enter/Exit Menu	Power On/ Off	Enter/Exit Menu

Note: Actual operation is subject to the actual device software version.

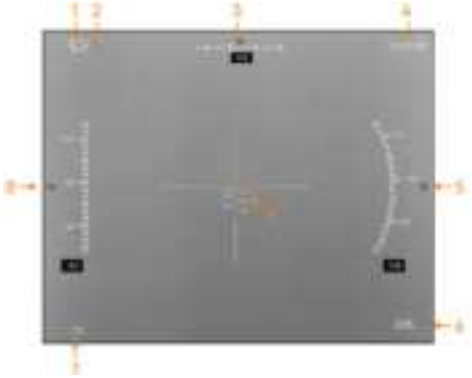
5 Product parameter

Specifications			
Resolution/Pixels	384×288/12μm	640×512/12μm	
Detector	Uncooled VOx Microbolometer		
Objective Lens (F1.0)	50mm	55mm	75mm
Field of View	5.3° ×4.0°	8.0° ×6.4°	5.9° ×4.7°
Visual Magnification	4.82~19.26	3.1~12.42	4.23~16.93
Spectral Band	8~14μm		
Frame Rate	50Hz		
NETD	≤ 35mk@300K		
Display	0.39" OLED 1024x768		
Digital Zoom	1x、2x、4x		
Eyepiece Diopter	-5~+5		
Eye Relief	45mm		
Power Supply	Two 18650 Li-ion Batteries		
Operating Time	≥ 8h		
Weight (No Batt.)	≤ 720g	≤ 735g	≤ 820g
Dimensions	241×83x100mm	249×83x100mm	278×88x100mm
Interface	External Power/Type-C		
Operation Temperature	-30℃ ~ +55℃		
Protection Rating	IP67		
Reliability	2000g Shock Resistance		
Altitude	≥ 5000m		

Specifications			
Adaptability	All-weather		
Detection Range (Human)	50mm/4730m	55mm/5200m	75mm/7090m
Detection Range (Object)	50mm/6390m	55mm/7030m	75mm/9590m

Note: Due to continuous product improvements and upgrades, parameters in the table may be subject to modifications without further notification.

6 Main Interface



Index	Interface Info
1	Battery Level
2	WiFi Status
3	Compass Heading
4	Time
5	Compass Roll Angle
6	Pseudo-color Mode
7	Zoom Level
8	Compass Pitch Angle
9	Reticle

7 Menu Instructions

Icon	Name	Description
	Network	Wi-Fi On/Off
	Zeroing	Enter Gun Calibration Mode，Gun Type, Reticles Settings
	Laser/RedD	Laser Coordinate Adjustment
	BC	Enter Ballistic Calculation Mode，Bullet Type，Etc Setting
	H-Tracking	Hot Spot Tracking Switch
	PIP	Picture-in-Picture Switch
	Compass	Digital Compass Switch/Calibration
	Image	Contrast/Brightness/Sharpness/ Pseudo-Color Adjustment
	BP-CLR	Adjust The Threshold Key To Eliminate The Blind And Save
	Restore	Restore the Default Parameters
	Time	Time and Date Adjustment
	Language	Chinese, English and Other Languages Switch Display
	Video	Adjusting OLED Cool/Warm Tone
	ID	Device Number Information

8 Operation Introduction

8.1 Power On/Off

When powered off, long press the joystick to start the device and the startup screen will appear.

When powered on, long press the joystick. The system will display the shutdown prompt and then power off.

8.2 Diopter Adjustment/Focus

The eyepiece diopter can be adjusted using the focus wheel to accommodate users with different levels of astigmatism.

Adjust the objective lens using the focus wheel to observe distances from 3m to infinity. Rotate counter clockwise for distant focus and clockwise for near focus.

8.3 Digital Zoom

When powered on, short press the joystick upwards on the main screen to cycle through image zoom levels of 1x, 2x, and 4x.

1x image 2x image 4x image

8.4 Menu

After powering on, short press the joystick to enter the menu in the main interface. Use up and down short presses to navigate through the main menu options, and use the backward short press to switch sub-menu options. Short press the joystick to return to the previous menu or exit the main menu.

8.5 Laser/Red Dot

Short press the joystick to enter the main menu, select "Laser/ RedD" in the sub-menu, and adjust the X/Y coordinates for Laser ranging, Long press up or down to support continuous adjustment of coordinates.

8.6 Picture in Picture Settings

Press the joystick to enter the main menu, select "PIP" to enter the submenu, and select enable or disable picture-in-picture function. In this mode, digital zoom will only magnify the small window image.

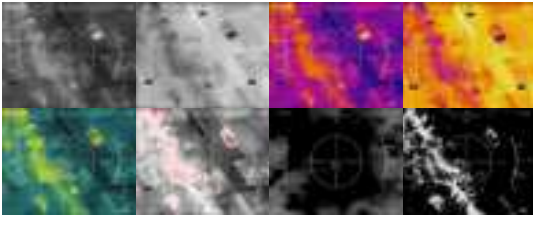
8.7 Digital Compass

Short press the joystick to enter the main menu, select "Compass" in the sub-menu, and calibrate the device and set the offset.

8.8 Image Adjustment

Short press the joystick to enter the main menu, select "Image" in the sub-menu, and adjust contrast, brightness, sharpness level, and pseudo-color mode.

Contrast adjustment range: 0-10 (recommended setting to 7);
Brightness adjustment range: 0-10 (recommended setting to 7);
Sharpness adjustment range: 0-4;
Pseudo-color mode: White Hot, Black Hot, Iron Red, Desert Yellow, Green Hot, Red Hot, Sky, Edge.



8.9 Blind Element Compensation

Short press the joystick to access the main menu. Select "BP_CLR." to enter the sub-menu. Short push upwards/backwards to navigate options: Threshold, Recovery, Clear, and Save. Threshold range is 20-32.

For "Threshold" , short push upwards/backwards to adjust. Long presses allow continuous adjustment. After setting, short push upwards/backwards to select other options.

In "Recovery" short push upwards to undo previous operation. When the option is set to "Save", short push upwards to save all previous operations. (Be cautious when saving if bad spots exceed 1000.)

8.10 Factory Restore

Short press the joystick to enter the main menu, select "Restore" in the sub-menu, and follow the prompts to choose to restore or cancel the restoration.

8.11 Time Setting

Short press the joystick to enter the main menu, select "Time" in the sub-menu, and adjust the date and time separately. Short push backwards for selection and short press upwards/downwards for adjustment.

8.12 Photo/Video Capture

When powered on, short press the joystick backward to capture a photo with a saved photo notification.
Long press the joystick backward to record a video, the screen will show the recording time. Long press the joystick backward again to save the video.

8.13 Language Settings

Short press the joystick to enter the main menu, select "Language" in the sub-menu, and choose different languages.

8.14 Gun Calibration Mode

Short press the joystick to enter the main menu, select “Zeroing” in the sub-menu.

8.14.1 Secondary Menu

1. Gun Type
There are 10 types of gun types, A-J, switch gun types, the reticle color and style will change with the gun type; The reticle position will change according to the coordinates of the main distance under the gun type, if there is no main distance set under the gun type, the reticle is in the center of the image.

2. Reticle Type
Total 6 kinds of cross reticle, default 2, style and gun type are bound.
Note: The reticle style is turned off when the reticle style is 0.

Note: The reticle style is turned off when the reticle style is 0.

3. Reticle Color
3 colors, white, yellow and black correspond to 0, 1 and 2 respectively, default 0, color and gun type are bound.

4. Reset
Push backward reset, prompt "Do you want to reset?". Select "Confirm", confirm by up-keying, all the reticle styles and colors will be restored to the default state.

5. Add Configuration
Enter add configuration, push upwards to exit, push downwards to select the number of digits, push upwards/downwards to adjust the distance, press middle to confirm, the distance is bound with the gun type, each gun type can be configured with 5 distances, when switching the gun type, the added configuration is automatically displayed in the menu options, the distance ranges from 1-999m.

6. Added Distance
Push backward to enter the three-level menu of the calibration gun.

8.14.2 Three-level Menu
1. Setting the Primary Distance
Setting this distance as the primary distance, a triangle marker will appear to the right of the distance. The coordinates where the reticle is located will change to the coordinates set for that distance, and the gun type and distance for the primary distance will be displayed at the top right of the main menu.

2. Delete Distance
Delete the selected distance, such as deleting the main distance, the reticle will return to the center of the image.

3. Parameter Setting
Enter the four-level menu

8.14.3 Four-Level Menu

1.Adjustment of Calibration Data

Short push upwards/downwards to adjust X/Y value, initial X/Y value is zero. The red cursor moves along with it, menu key confirms it, and the cross divider moves to the red cursor. X/Y value is limited to -108~108.

2.Zeroing of calibration data

After confirming zeroing, the X/Y value will be zeroed, the crosshair and red cursor will not move, and then you can continue to adjust the X/Y value.

3.Reset The Calibration Data

Crosshair and red cursor back to the center of the image, while the X/Y value is silhouetted, and the X/Y value is zeroed.

4.Digital Room

Image cycle zoom, in order of 1 times, 2 times, 4 times.

5.Picture Still

The screen will be frozen until the screen is closed.

8.14.5

When switching gun types, the display icon in the upper right corner of the screen will change accordingly. The letter represents the gun type, and the number indicates the primary distance. If there is no primary distance, the number will not be displayed, and only the gun type letter code will be shown.

Attention: Adjustment of the calibration data (XY coordinate change) is only possible with digital zoom x1.

8.15 Ballistic Calculation

Short press the joystick to enter the main menu, select “BC” in the sub-menu.

8.15.1 Secondary Menu

1. On
Turn on Ballistic Calculation function

2. Off
Turn off Ballistic Calculation function

3. Enter the Three-level menu

8.15.2 Three-level Menu

1. Bullet Weight
Unit:gr
Value range: 0~500
Initial value: 124
Stepping: 1

2. Initial Velocity of Bullet
Unit: m/s
Value range: 30~1400
Initial value: 680
Stepping: 1

3. BC
Value range: 0.001~1.2
Initial value: 0.465
Stepping: 0.001

4. Drag Function
Value range:
G1,G2,G5,G6,G7,G8
Initial value: G1
Stepping: G1,G2,G5,G6,G7,G8

5. Zero Range
Unit: m
Value range: 0~2000
Initial value:100
Stepping: 1

6. Sight Height
Unit: mm
Value range: 0~100
Initial value: 40
Stepping: 1

7. Temperature
Unit: ℃
Value range: 0~100
Initial value: 25.0
Stepping: 0.5

8. Altitude
Unit: m
Value range: 0~8000
Initial value: 0
Stepping: 1

Confirm: Save the current Settings and exit to the main menu
Cancel: Do not save the current Settings and exit the main menu

8.16 Data Retrieval

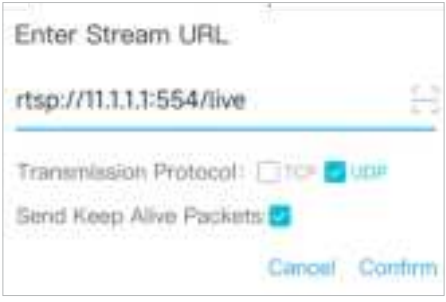
Open the bottom USB cover, insert the Type-C data cable, connect the other end to the computer to access the photos and videos stored in the SD card of the device.

Note: Photos stored in the "image" folder; Videos stored in the "video" folder.

8.17 Exploring Through the App

Activate the hotspot feature in the main menu and enable Wi-Fi on your phone. Connect to "Camera-IR" network with password 87654321. Launch the VLC App (available for downloaded from the App store or browser), click on "More" options, and create a new stream.

Enter the address and click “Confirm” to observe the real-time image on the mobile device.



9 Precautions

1. Avoid aiming the device directly at strong heat radiation sources such as the sun, lasers, welding machines, etc., to prevent irreversible damage.

2. The rated charging voltage for the battery is 5V. Please avoid over-voltage charging and recharge the battery in a timely manner when the battery is low to prevent over-discharge from affecting the service life.

3. It is recommended to use this product in a temperature range of -20℃ to +50℃, Avoid using this product for extended periods in high-temperature environments. When the ambient temperature is too high, the thermal imager will automatically enter a high-temperature protection mode and shut down.

4. When using this product in a humid environment, ensure that the Type-C interface cover is securely fastened.

5. Operators should only perform basic maintenance, such as

replacing or checking cables, lens covers, daily cleaning, and functional checks to ensure the equipment remains in good technical condition.

6.If the thermal imager is not in use for a long period, charge it at least once every two months during storage and store it in a dry and ventilated environment.

7.If the device malfunctions, do not disassemble the module casually. Please contact the manufacturer for fault diagnosis before handling.Do not use solvents or similar liquids on the equipmentand cables, as this may cause damage to the device.

10 Troubleshooting

1. Device cannot be powered on
Solution: Replace the battery.

2. Device can't take photos/record videos
Solution: Internal storage is full. Transfer data and format the memory.

3. Device displays incorrect time
Solution: Reset the product's time and date in the menu.

4. Blurry imaging during use
Solution: Manually adjust the lens for focus until the display is clear.

11 Storage and Transport

Here are methods for the product storage and transportation. To prevent potential dangers and property loss, please read carefully before use.

Storage:

1. Store the device in an environment of -45° C to 60° C, with relative humidity not exceeding 95%, free from corrosive gases, and with good indoor ventilation.

2. Charge the battery every three months at fixed intervals.

Transportation:

During transportation, avoid rain, water immersion, upside-down positioning, and prevent severe vibration and impact. Handle with care during transportation, and strictly avoid dropping.

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 inte rference received, including interference that may cause undesired operation.
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 interferenceto 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.

Specific Absorption Rate (SAR) information
This device meets the government's requirements for FCC exposure limits set forth for an uncontrolled environment. This device was tested for typical body-worn operations with the back of the Uncooled Infrared Thermal Imager kept 0 mm from the body. To maintain compliance with FCC RF exposure requirements, use accessories that maintain an 0 mm separa tiondistance between the user's body and the back of the Uncooled Infrared Thermal Imager. The use of belt clips, holsters and similar accessories should not contain metallic components in its assembly.
The use of accessories that do not satisfy thes e requirements may not comply with FCC RF exposure requirements, and should be avoided.