

# Infrared Scope User & Maintenance Manual

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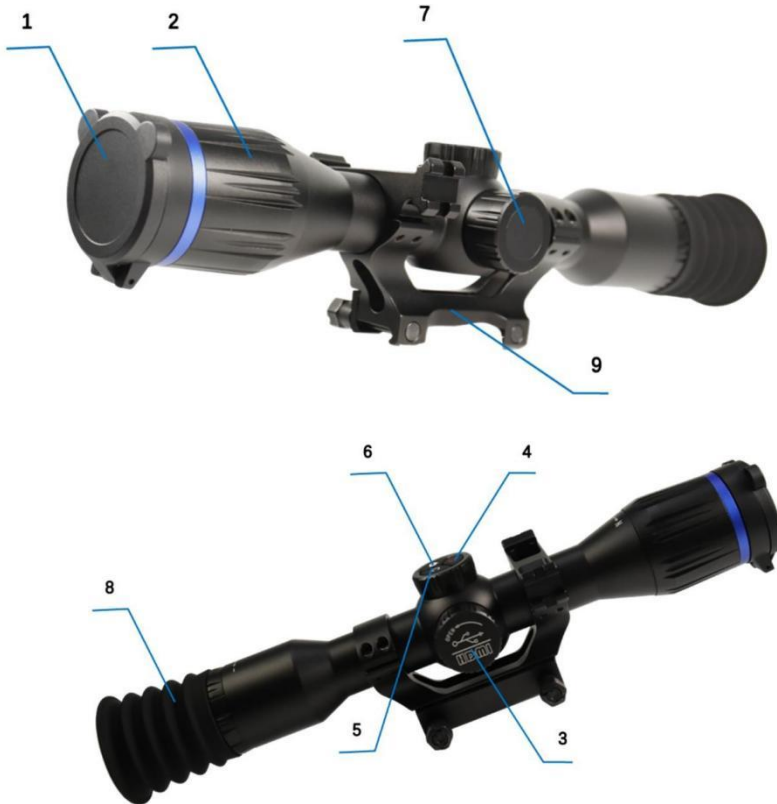
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# 1. Product Overview

## 1.1 Product Features

- 8 Types of reticle, 6 reticle colors to meet various usage requirements.
- 5 Quickly switch between various pseudo colors (White Hot, Black Hot, Green Hot, Iron Red, Red Hot) .
- With Wi-Fi function of connecting to mobile terminals to transmit video images.
- Continuous zoom from  $1\times$  to  $8\times$ .

## 1.2 Product Appearance



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1	Lens Cover
2	Lens Focus Ring
3	Interface Cover
4	Power button
5	Calibration Button
6	Photo / Video button
7	Menu Knob
8	Eyepiece
9	Pickup Truck Bracket

## 2. Technical Parameters

Detector Resolution	640 × 512, 12μm			384 × 288 , 12μm	
Focal Length ( mm )	25	35	50	25	35
Detection distance (people)	1000m	1400m	2000m	1000m	1400m
Field of view	17.4° × 14°	12.5° × 10°	8.7° × 7°	10.5° × 7.9°	7.5° × 5.6°
Startup time	≤ 8s	≤ 8s	≤ 8s	≤ 8s	≤ 8s
Photos / Videos	JPG/ MP4 , H.264 Compression, audio and video synchronization				
Power supply	charge 3.6V, 4500mAh Large capacity 21700 Battery				
Maximum Continuous Operating time ( 25 °C ) *	7h	7h	7h	7h	7h
Data Interface	Type-c, can supply power and charge, can read memory card data				
Wireless interface	Wi-Fi Data communication, 2.4GHz , with corresponding mobile phone APP				
Operating temperature	-40 °C ~+ 50 °C				
Storage temperature	-40 °C ~ +60 °C				
Protection level	IP67				
Shock	Axial : 750g@1ms				

\* The actual operating time depends on the intensity of usage of Wi-Fi, photo taking and video recording, etc.

### 3. Precautions

Please strictly observe the following precautions at all times:

- Do not use or store the instrument in an environment that exceeds the permitted operating or storage temperature of this product.
- Do not point the product directly at high-intensity heat radiation sources, such as the sun, lasers, welding machines, etc. Cover the lens cap when the instrument is not in use.
- Do not expose this product to dust or moisture.
- Do not knock, drop or vibrate the instrument and accessories to avoid damage.
- Do not disassemble the device by yourself, as this may cause damage to the device and void the warranty.

This device has a built-in lithium-ion rechargeable battery. For safe use of the battery, the following matters must be strictly observed:

- The external power output specification for product charging is **DC5V**.
- Do not place the battery in a high temperature environment or near high temperature objects.

Please follow the steps below when wiping the device:

- Non-optical surfaces: When necessary, the non-optical surfaces of the product can be wiped with a clean, soft cloth.
- Optical surface: Avoid dirtying the optical surface of the lens when using the product. Do not touch the lens with your hands, as sweat on your hands will leave marks on the lens glass and may corrode the optical coating layer on the glass surface. When the optical lens surface is contaminated, use professional lens paper to wipe it carefully.

## 4. Basic Instructions

### 4.1 Button

There is one knob on the left side of the product, and three buttons on the top (see Figure 1). The lens is surrounded by a focus ring. The definitions and operations are detailed in the table below.



Figure 1 Buttons and knobs

No.	Button Name	Operation Type	Functional Description	
			On the main interface	Under the menu
1	Menu Knob	Short press	Enter the main menu	Select current option
		Rotation	Digital zoom	Toggle Options
2	Power button	Long press	Power on / off	
3	"Calibration" button	Short press	Shutter Correction	Back to previous level
		Long press	Background Correction	
4	"Photo / Video" key	Short press	Photograph	Back to previous level
		Long press	Video	/
5	Focus ring	Rotation	Adjust the focus position	

### 4.2 Interface

There are 1 Type -C Interface and 1 HDMI Interface on the right side of the product. (see Figure 2) .

Figure 2 Interface

No.	Interface Name	Description
1	Type- C	Use the matching Type-C cable to charge the product ; as a USB Connect the device to the computer to achieve Data copy and delete functions.
2	HDMI	Via HDMI Interface to transfer images.

### 4.3 Power on/off

In the shutdown state, long press the product "⏻"key 3S Turn on the product. Observe the startup screen through the eyepiece ( see Figure 3) will prompt that the product is starting up and will enter the main interface after completion. Long press the product"⏻" button to shut down the device .



Figure 3 Startup screen



## 4.4 Main Interface

The main interface is shown in Figure 4 .

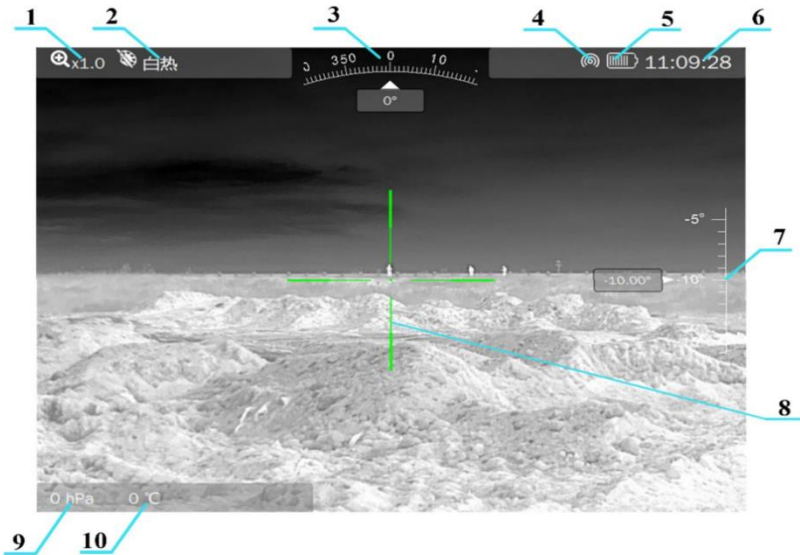


Figure 4 Main Interface

1 :	Magnification	2 :	Pseudo color Mode
3 :	Azimuth	4 :	Wi-Fi Hot Spots
5 :	Battery status	6 :	Current time
7 :	Pitch Angle	8 :	Center Cross
9 :	Atmospheric pressure	10 :	Internal temperature

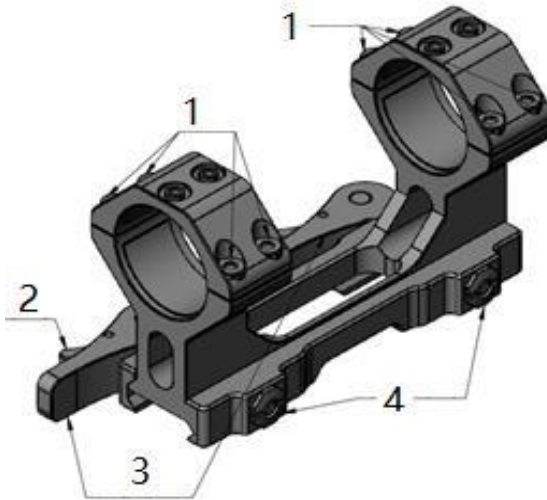
## 4.5 Manual Focus

When observing a target through the product, if the target is not clearly imaged, you can adjust the focus by rotating the focus ring on the lens. Focusing operation: Focus and observe through the eyepiece at the same time to make the image clear.

## 5. Bracket Use

The product is equipped with a pickup bracket, and the parts of the bracket are shown in Figure 5.

Figure 5 Pickup Truck Bracket



1 : Screw

2 : Hook

3 : Locking handle

4 : Lock nut

### 5.1 Bracket Adjustment

Before using the bracket, you need to adjust the tightness of the bracket:

1) Hold the hook and turn the locking handle to the left. Push the locking handle to make the locking nut protrude from the side of the bracket and adjust the locking nut.

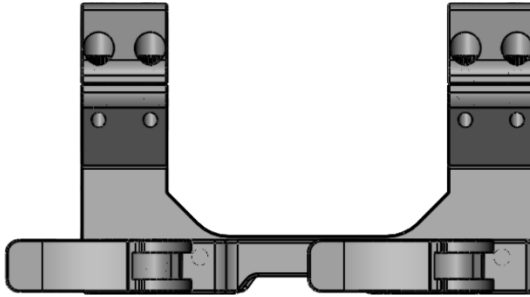


Figure 6 Lock the handle to the left (in disassembled state, the hook faces inward )

2) Install the bracket into the gun Picatinny rail. Insert the screw into the limit groove, the bracket is close to the pickup limit surface, and the lower plane is in contact with the upper plane of the rail. Turn the locking handle to the right (as shown in the figure) to fix the bracket;

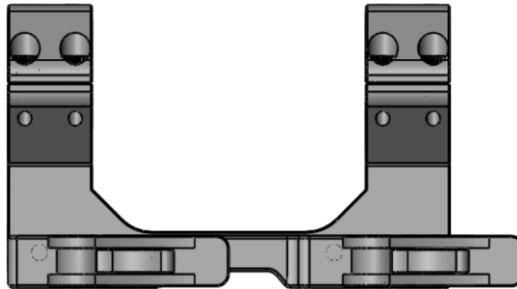


Figure 7 Lock the handle to the right (locked state )

If the bracket is firmly and stably connected to the gun rail, the bracket adjustment is completed; if the bracket is loosely connected to the rail, the locking nut needs to be adjusted, and the above operation is repeated until the bracket is firmly and stably connected to the rail.

### 5.2 Bracket installation

When installing the bracket, clean; the mating parts. adjust the front and rear positions of the bracket to center the center of gravity of the product; use the hexagonal wrench (product accessory) to tighten the screws alternately in sequence. It is recommended that the torque does not exceed 2N to avoid over-tightening and damaging the product body. The bracket installation diagram is shown in Figure 8.



Figure 8 Bracket installation diagram

Notice:

- Before the bracket and the gun rail are assembled, there must be no other matters in the rail joint;
- Adjust the front and rear position of the product on the gun rail so that the distance between the human eye and the product is moderate and comfortable when aiming with the cheek against the gun;
- Before using the bracket with the gun, check whether the connection between the bracket and the guide rail is loose. If it is loose, follow the steps below to fix it.

Reinstall according to the procedure of "Stand Adjustment".

# 6. Function Operation

## 6.1 Photo / Video

In the main interface, short press "📷" key to take a photo; long press "📷" button to start recording. Display the video duration, when recording, short press "📷" button to stop recording .

## 6.2 Correction

Correction can improve the non-uniformity of infrared detectors and reduce the noise on the image. The product can be used in two ways to perform background correction and shutter correction.

### 1) Use Shortcut Keys:

In the main interface, you can perform shutter correction by short pressing the " C " key; cover the lens cap and long press the " C " key to perform background correction.



**Note:** To ensure the background correction effect, you must cover the lens cap before correction, or point it at the ground under your feet, or at the cloudless sky in the distance!

### 2) Menu Selection

In the main menu, rotate the menu knob to select "Calibration" to enter the calibration options, as shown in Figure 9 .



Figure 9 Digital Zoom Sub-menu

#### A) Background Correction

Before background correction, you need to cover the lens cap to obtain a uniform background. Press the menu knob to select "Background Correction" to perform background correction.

#### B) Shutter Correction

Select "Shutter Correction" using the menu knob and short press the menu knob to execute the

operation.

### C) Automatic correction

Use the menu knob to select "Auto Calibration." Short press the menu knob to enter the option, then rotate the knob to select "Yes" or "No" to enable or disable the function. When auto calibration is enabled, the device will periodically perform shutter calibration.

## 6.3 Main Menu

In the main interface, short press the menu knob to enter the main menu, as shown in Figure 10. In the main menu, the cursor stops at The left position indicates the current option.

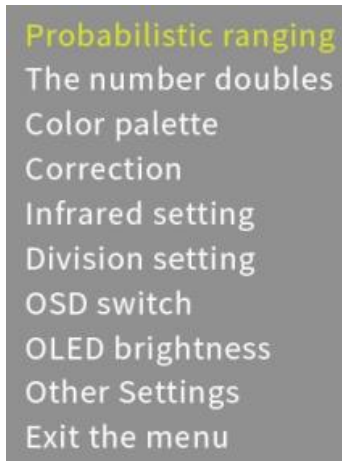



Figure 10 Main Menu

In the main menu and sub-menus, various operations are performed by pressing keys. If there are no special operating instructions, the operation can be performed according to the table below .

No.	Button Operation	Function
1	Short press menu knob	Open or select the current option / Execute current option
2	Rotate menu knob forward/backward	Move the cursor / Switch option content
3	Short press“C”button	Exit Menu
4	Short press“  ”Button	Exit Menu

### 6.4 Probability Ranging

In the main menu, rotate the menu knob to place the cursor on the "Probability Ranging" position, and short press the knob to enter the Probability Ranging (as shown in Figure 11) .

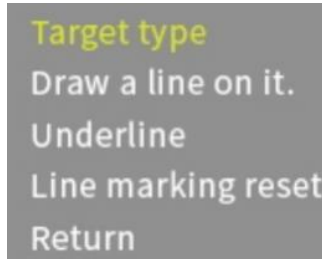


Figure 11 Probability Ranging Sub-menu

- A) Target type: Use the knob to switch between different target types, including "Human," "Wolf," "Wild Boar," "Deer," etc.
- B) Upper / Lower line adjustment: Use the knob to change the position of the upper/lower line in the image .The lines are adjusted to align with the top and bottom of the target image, and the probability ranging result is displayed at the bottom right of the screen.
- C) Line reset: The line position returns to the default initial position.

### 6.5 Digital Zoom

The digital zoom function can magnify the image, with a magnification of  $1 \times$  to  $8 \times$ .

In the main menu, use the menu knob to select "Digital Zoom" and enter the option. Its sub-menu is shown in Figure 12. Turn the knob to select the desired magnification and short press the knob to confirm. Select "Continuous Zoom", the icon turns red and the current electron magnification is displayed on the right side of the option. Rotate the knob to Continuous selection of multiples, short press the knob to determine the multiple.



Figure 12 Digital Zoom Sub-menu



### 6.6 Color Plate

In the main menu, rotate the menu knob to move the cursor to "Color Palette". Short press the knob to confirm. The icon turns red and the current pseudo color mode is displayed on the right side of the option ( as shown in Figure 13 ). Rotate the knob to switch the mode. Short press the knob to confirm the pseudo color mode.

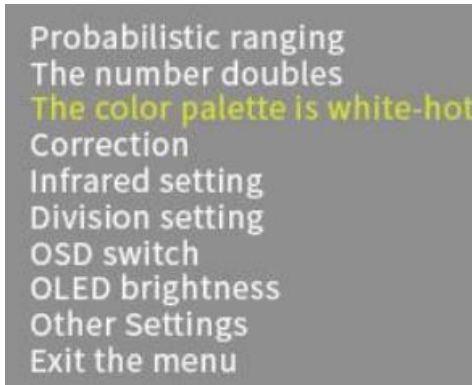


Figure13 Color palette switching

### 6.7 Infrared Settings

Select "Infrared Settings" under the main menu to set the parameters of the product's infrared image (as shown in Figure 14).



Figure14 Infrared Settings Sub-menu

- A) Brightness: You can set the brightness of the infrared image. Short press the menu knob and the option turns red and displays the current brightness.

Front brightness level, rotate the knob to change the brightness level, select the appropriate brightness and short press the knob to confirm.

- B) Contrast: You can set the contrast of the image. Short press the menu knob, the option turns red and displays the current contrast. Contrast gear, rotate the knob to change the gear, select the appropriate contrast and short press the knob to confirm.
- C) Image Enhancement: Select to turn on /off the image enhancement mode.
- D) Picture-in-Picture: Select to turn on / off the picture-in-picture function.
- E) Blind pixel setting: Blind pixels can be eliminated manually.

### 6.8 Graticule Settings

Select "Division Settings" in the main menu to set 10 Reticle parameters for 10 groups of gun types and ammunition types



Fig.15 Graticule Settings Sub-menu

Note: When using for the first time, you need to initialize the parameters of each group.

When setting, first select the gun type and bullet type, then enter the setting menu to set the reticle parameters. The reticle parameters include color, style and cross cursor position (as shown in Figure 16) .



Figure 16 Graticule Parameters Sub-menu

- A) Color: You can change the color of the reticle.

B) Style: You can change the reticle style.

C) Move: You can adjust the position of the crosshair cursor to achieve the gun calibration function. When calibrating the gun, first aim the center of the reticle at the center of the target, and then adjust the center of the reticle to the bullet hole position after shooting. The lower right corner of the interface prompts the corresponding fine position value of the reticle moving 1 grid in the horizontal / vertical direction (as shown in Figure 17) .

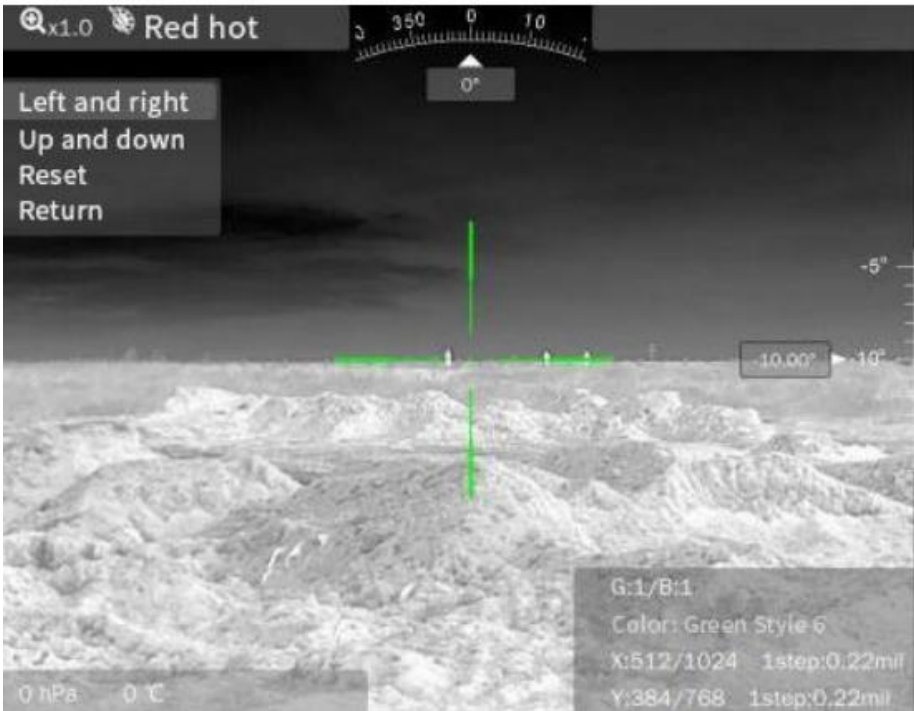


Figure 17 Gun calibration interface

### 6.9 OSD Switch

OSD" from the main menu. Switch" can control each OSD separately Component display status: On or Off ( such as Figure 18).



Figure 18 OSD Toggle sub-menu

### 6.10 OLED Brightness

In the main menu, select "OLED Brightness." After a short press to confirm the selection, the option turns red, and the current brightness level is displayed on the right side. Rotate the menu knob to adjust the screen brightness.

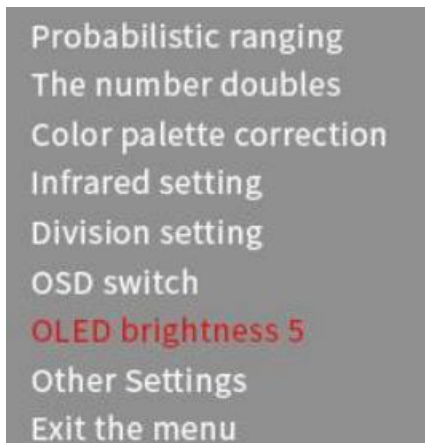


Figure 19 OLED Brightness setting interface

### 6.11 Other Settings

Select "Other Settings" under the main menu to change the system settings of the product. Its sub-menu is shown in Figure 20 .

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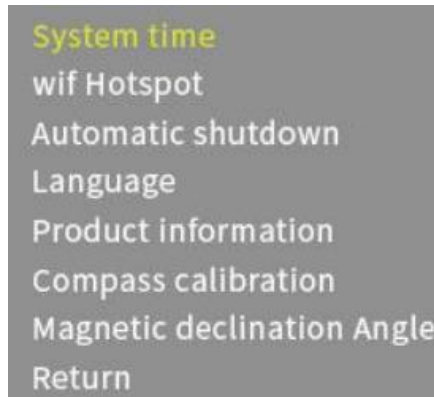


Figure 20 Other settings sub-menu

A) System time: You can modify the system time and date of the product (as shown in Figure 21). Short press the knob to select and rotate to turn the knob to adjust the number and short press again to confirm the selection.



Figure 21 Time setting interface

B) Wi-Fi Hotspot: Option to turn Wi-Fi on / off Hotspot. The hotspot name is the product model + serial number, password: 12345678 After the hotspot is turned on, the product sends RTSP in real time Online video, play address: rtsp://192.168.5.1/live .

C) Automatic shutdown: Set the automatic shutdown time. If there is no operation within the set time, the product will automatically shut down.

D) Language: You can choose Chinese, English, and Russian.

E) Product Information: View product number, infrared resolution, focal length and other information.



F) Compass calibration: Follow the steps to calibrate the product in azimuth, pitch, and roll . The axes rotate at a uniform speed 3 Compass calibration is complete.

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G) Magnetic declination: To obtain a more accurate azimuth, set this to the local magnetic declination value.

## 7. Simple Troubleshooting

Issues	Causes	Solutions
Increased image non-uniformity during use	No calibration	First cover the lens, or point it at the ground nearby, or at a distant clear sky. Then long press "C" button (for about 4 seconds) to perform background calibration.
Unable to turn on	Low battery	Charge for a period of time via the Type-C port before attempting to power on.
	 The key is pressed too short	Press  button 3 seconds or more, Release it after the startup screen appears in the eyepiece.
Cannot take photos or videos	Insufficient Memory	Free Up Memory Space
Unclear image	No focus on target	Rotate the focus ring left or right until the image is clear.
	The image and characters are not clear	Rotate the eyepiece left or right to adjust the diopter until the characters can be seen clearly.
	The lens or eyepiece is fogged or contaminated.	Use professional tools for cleaning.