

Observation and aiming multi-function thermal imager

User Guide



Before using the machine, please read this manual carefully and keep it in a safe place for future reference.

Catalogue

Overview	1
Features	1
User's Guide	3
I. Part name	3
II. Key functions and definitions	4
III. Screen information	8
IV. Menu description	9
V. Setting Example	16
Precautions	20
After-sales	21
Packing list	21

Overview

Thank you for purchasing our viewer type multi-functional thermal imager.

This product adopts vanadium oxide uncooled focal plane detector and real-time digital image processing circuit. It can work continuously during day and night, and also has the ability to penetrate particles such as fog, smoke and dust, and can complete search, reconnaissance, aiming and shooting actions simultaneously, which is your ideal assistant to complete anti-terrorism, law enforcement and hunting tasks.

Features

- Advanced FPGA real-time image processing technology, ultra-low power consumption
- 300,000 pixels high resolution, built-in storage can record 400,000 photos or 40 hours of video recording.
- 50Hz real-time imaging display, fast moving without smear.
- Digital video image enhancement algorithm (DVIE), wide dynamic (HDR) image processing.
- Professional telephoto germanium lens, 2x, 4x digital zoom
- White /black /Sepia/brown/iron/Fite/rainbow colors are available.
- Standardized interface with crosshairs and automatic adjustment of crosshair color
- High definition OLED eyepiece system

- Manual or automatic image enhancement mode, which can find the target in extremely harsh environment.
- Very low power consumption, can work continuously for a long time.
- Convenient and easy to operate scrolling button menu.
- The system is reliable and has the ability of anti-falling and earthquake resistance.
- IP67 is waterproof and suitable for all-weather outdoor use.
- Equipped with high-precision laser ranging function

User's Guide

I. Part name



1. Lens/lens zoom ring
2. TYPE-C interface
3. Battery compartment
4. Eyepiece/diopter adjustment
5. Rubber eye protection goggles
6. Power switch
7. Down button ▼
8. Confirm button M
9. Up button ▲

II. Key functions and definitions



Power Switch: Long press for 3 seconds to turn on the device, long press for 3 seconds to turn off the device

1. Shortcut function: 1. Shortcut key function: Short button ▲ can double the number by 1X~2X~4X

Short press ▼ to take a photo/long press ▼ to record a video¹

Long press the M key to refresh the gear block once

Short press the M key to enter the menu (see Table 1 on the next page for details)

¹ The multimedia icon on the OLED screen flashes in the video state

2.Button menu item adjustment: The function definition of the button menu is shown in Table 1.

table 1 List of keystroke pad menu function²

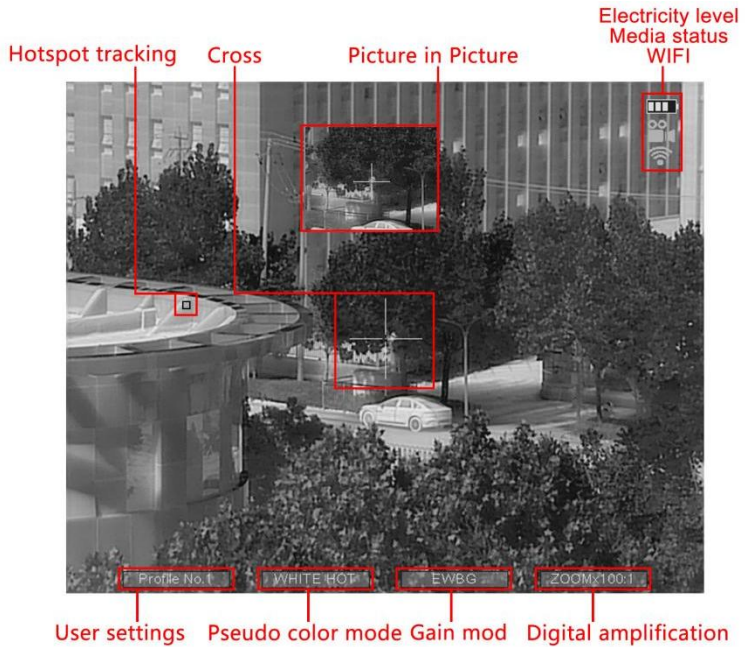
Keystroke	Key definition	functional description
▼	<p style="text-align: center;">Options</p> <p>photograph/ videotape</p>	<p>▼Option+:</p> <p>See the menu/activation function first, after entering the menu mode, short press ▼ Option+, menu items switch in order: Profile, Image, Luminance, Reticle, Ballistic, Shutter, WIFI, Default , Others, Exit Menu, Bad point, Update; if you need to adjust the menu item settings, Short press M to activate the menu item adjustment mode, short press ▼ Option+ corresponding menu item to add a unit value. Restore shortcut functions after exiting the menu.</p> <p>Shortcut function:</p> <p style="padding-left: 40px;">Short press button to take photos / long press button to record videos;</p>

² Menu functions will be changed without notice.

<p>Short press Long press M</p>	<p>Menu/Activati on Manual gear shift</p>	<p>Menu: In the initial state, short press to enter the menu, where ▼ represents options+functions and ▲ represents options - functions; After exiting the menu, ▼ restore the photo/video recording function, ▲ restore the image enlargement function;</p> <p>Activate: After entering the menu, ▼ or ▲ browse the menu and switch to the menu item you want to adjust (white on black), Short press M to activate the menu item (black on white), Adjust the mode, press M again to exit the menu item adjustment mode;</p> <p>Shortcut function: Long press M in the initial state, and the baffle works once.</p>
---	---	---

<p>▲</p>	<p>Options/-</p> <p>Digital amplification</p>	<p>▲ options:-</p> <p>See the menu/activation function first, after entering the menu mode, ▲ option- , menu items switch in order: Update, Bad point, Exit Menu, Others, Default , WIFI, Shutter, Ballistic, Reticle, Luminance, Image, Profile; If you need to adjust the menu item settings, Short press M to activate menu item adjustment mode, short press ▲ option - corresponding menu item decreases by one unit value.</p> <p>Restore shortcut function after exiting the menu.</p> <p>Shortcut function:</p> <p>Digital image enlargement: 1x~2x~4x cycle</p> <p>Long press ▲ to freeze the image</p> <p>Long press ▲ again to unfreeze the image</p>
----------	--	---

III. Screen information



1. The battery will be protected and shut down when the power indicator is completely black, please replace the battery or use external power supply in time.
2. The media logo is on in white, blinks in black and white alternately for recording, and is on standby in gray.
3. Due to different equipment guide errors, the crosshairs may deviate from the center of the screen after calibration. The digital zoom is enlarged with the cross as the center, and the calibration coordinates will not deviate.

4. The high-temperature tracking feature tracks hot objects instead of tracking animals or humans in summer or warmer temperatures.

IV. Menu description

Menu items



Profile : You can select/save 1/2/3/4 modes.

Image: You can select Zoom/AGG/Brightness/sharpness/Denoise/Color/Contrast.

Luminance: There are 1-10 brightness options available.

Reticle: You can enter to set the differentiated color/style/Position.

Ballistic: off/G3A3

Shutter : Select automatic/start for 10 minutes/start twice according to needs

W I F I : WiFi on/off

Default: Restore to factory settings

Others: Info/PIP/HOT track/Media/Flip

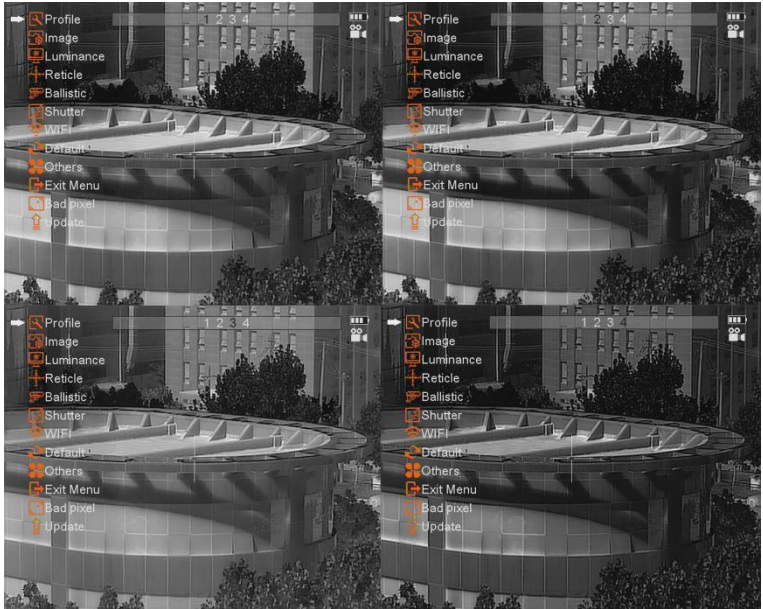
Exit menu: Select to save the configuration or exit without saving after modifying the menu parameters.

Bad point: Press and hold the menu key to enter the bad dot elimination mode (for details on eliminating invalid pixels on the screen, see Section 5.2 for examples of bad dot elimination).

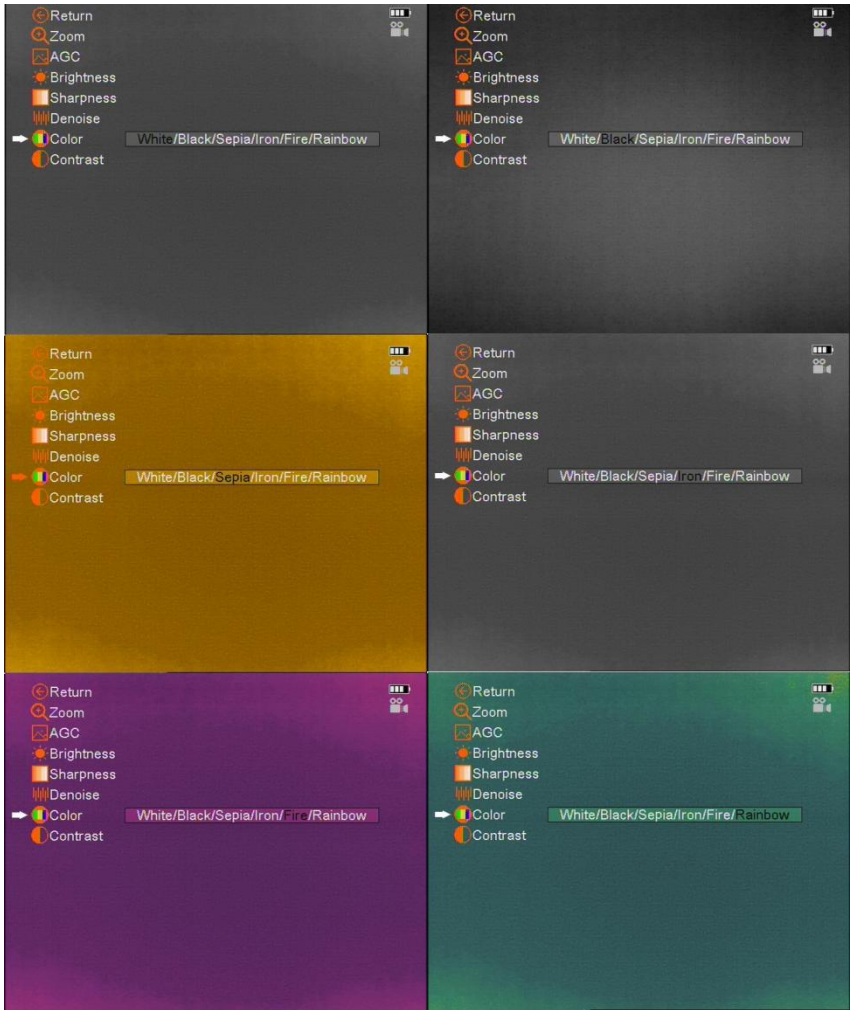
Update: Stop/Start (firmware upgrade)

Examples of detailed descriptions of each mode

- 1) Profile: Select 1-4 normal mode, select 5 as prepose mode. please choose the best configuration mode according to the actual usage scenario.



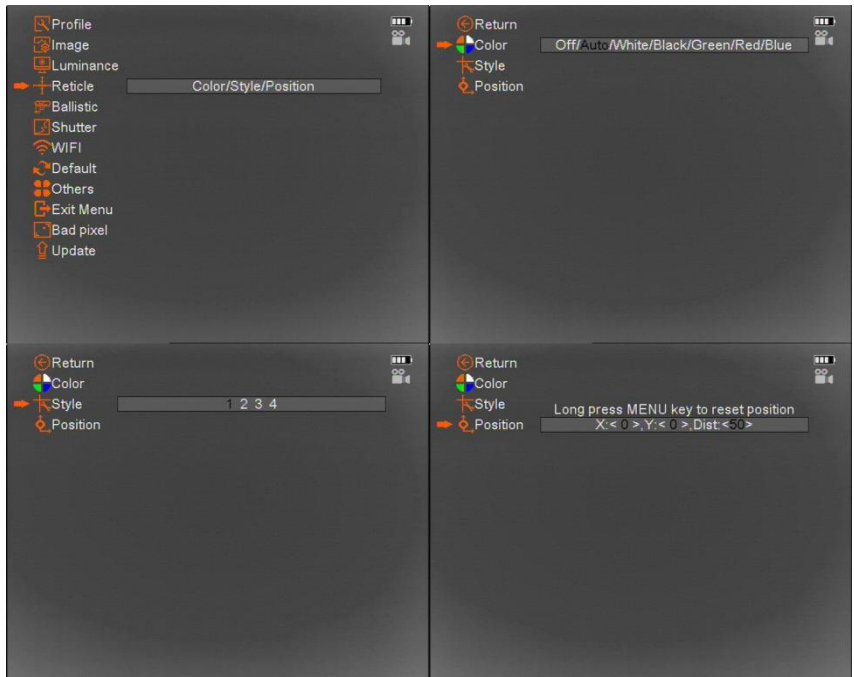
- 2) Image: Short press to enter menu choice color Enter the menu and select according to your needs white/black/brown/red heat/iron red/rainbow



Key points: the false color display effect is related to the configuration and the setting of screen brightness.

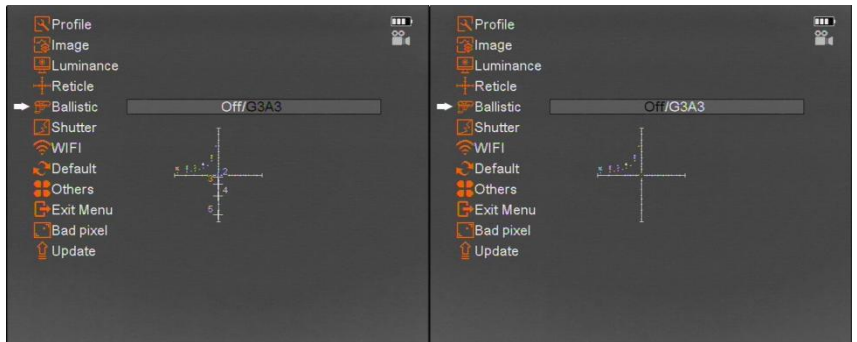
3) Reticle: color/style/Position

- Return: Return to the upper menu.
- Color: you can choose Differentiation Off/Auto/White/Black/Green/Red/Blue.
- Style: There are four styles to choose from.
- Position: You can set the coordinates of eight bullet drop points with a fixed distance.



4) Ballistic: off/G3A3

Set the ballistic according to the ballistic parameters of the firearm used



5) Image :Zoom/AGG/Brightness/sharpness/Denoise/Color/Contrast



6) Shutter : Select automatic/start for 10 minutes/start twice according to needs

Automatic: Automatic calibration, calibrated approximately every 5 minutes after the temperature stabilizes

10 minutes of startup: The gear will automatically start working within 10 minutes of startup, and the user will manually activate it after 10 minutes

2 times after startup: The gear shift works 2 times during startup, and then waits for the user to manually activate it

Key points:

Automatic mode: suitable for search and use, automatically detecting detector status, controlling screen correction, and keeping the image in the best state;

Manual mode: Suitable for aiming and will not miss the target due to gear calibration.

When calibration is needed, long press the menu to activate calibration.

7)Others:

a) Info

Turn on/off menu information.

b) PIP

Turn the picture-in-picture function on/off.

c) HOT track

Turn on/off hotspot tracking function, automatically search and track the hottest hotspot in the video Media

d) Media

Off: When the media function is turned off, the photo/video recording is disabled, which can reduce power consumption and increase battery life.

On: When the camera/video recording is in working or standby state, the power consumption of the equipment will increase.

e) Return

Choose the desired selection and return to the main menu interface



V. Setting Example

5.1 Examples of differentiation settings:

1. Press Menu/Activate to enter the menu, and short press ▼ or ▲ to switch to the differentiation menu item;
2. Turn to the color selection level to directly turn off the display of differentiation, select automatic differentiation to automatically adjust the differentiation color according to the background color, and select white/black/green/red/blue

differentiation to change with the selected color;

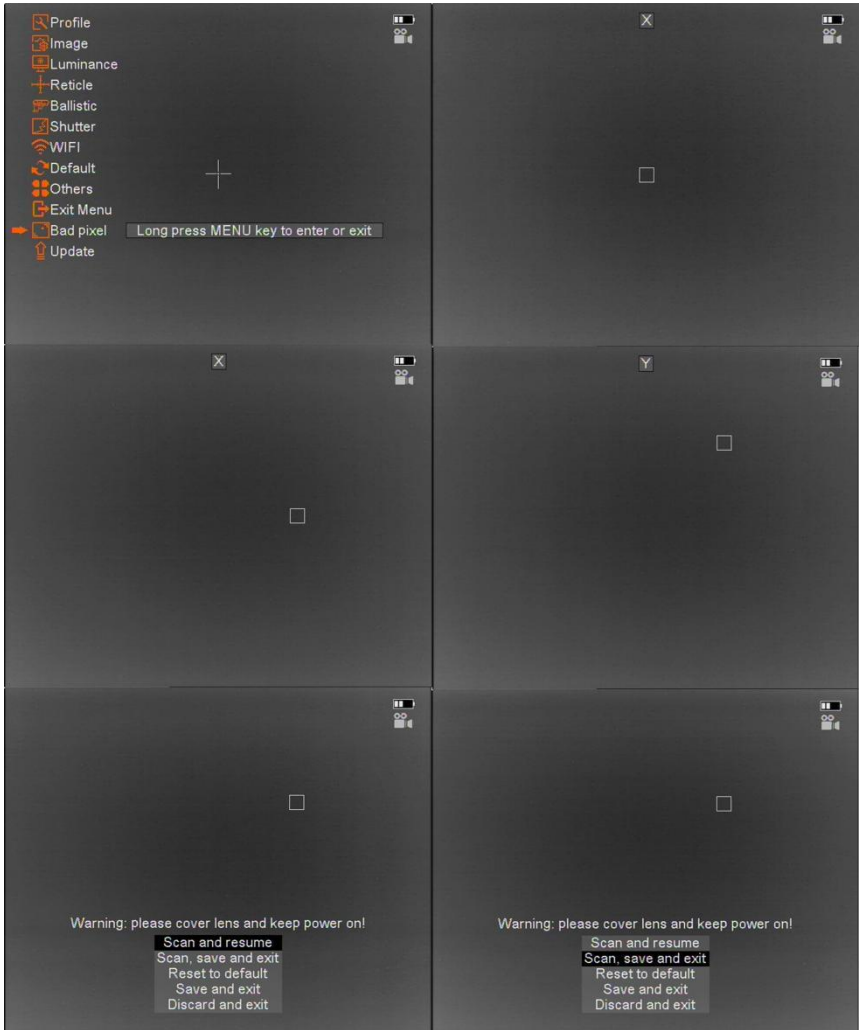
3. There are four kinds of differentiation to choose from when rotating to the style, and the required differentiation style can be selected as required;
4. Rotate to coordinate short press menu/activate to enter menu,short press ▼ or ▲ to switch to coordinate menu item;
5. Shoot at the target with a big cross and observe the position relationship between the impact point and the big cross;
6. Press and hold the menu/Activate to enter the adjustment mode of the cross X menu item. Turn the Rotate to coordinate short press menu/activate to enter menu,short press ▼ or ▲ to switch to coordinate menu item;
7. to move the small cross in the horizontal direction, and move the small cross to the horizontal position of the impact point with reference to the big cross;
8. Press menu/activate to switch to the cross Y menu item, and move the small cross to the impact point vertically with the Press and hold the menu/Activate to enter the adjustment mode of the cross X menu item. Turn the Rotate to coordinate short press menu/activate to enter menu,short press ▼ or ▲ to switch to coordinate menu item;
9. then aim the small cross at the target and shoot, and observe the position relationship between the impact point and the two crosses;
10. Repeat steps 3-4 to make the impact point coincide with the small cross and return to zero;

11. Press Menu/Activate for a long time, and submenu options will appear; Select group setting calibration distance, select update and continue/save to exit, and the big cross will be saved as the small cross position. (A total of 8 groups of data can be saved)

5.2 Example of bad spot elimination (warning: cover the lens cap and keep the power steady before performing this operation)

Thermal imaging in the use of natural aging of the detector or strong vibration may appear invalid pixels (bad points) is not a quality problem, does not affect normal use but will affect the visual perception, the machine has developed a special bad point elimination function, the user can read this paragraph guide to eliminate bad points to achieve the best use of the results.

1. Press the **menu** key to activate the menu and turn the knob to select the **bad point** option.
2. Press the **menu** button for 3 seconds to activate the bad spot elimination function.
3. The **X** icon is displayed at the top of the screen, and the selection box can be moved horizontally by turning the knob.
4. Press the **menu** key to toggle the icon to **Y**. Press the vertical direction to move the selection box so that the bad point is inside the selection box.
5. Press the **Menu** key for 3 seconds to activate the submenu, select **Scan and continue** Press the **Menu/Activate** key to execute.
6. Repeat steps 1-6 to eliminate all bad spots and execute the **Save and Exit** option.



Warning: Be sure to close the lens cap and keep the power steady before performing this operation.

Precautions

1. Do not put the camera detector in front of high radiation sources, such as the sun, CO2 laser, welding machine, etc.
2. Please do not look directly at the laser beam using the laser red dot indication to avoid damage to your eyesight.
3. Do not touch the infrared lens and the rangefinder window with your fingers or other objects.
4. Please do not use any chemical solvents, thinners to wipe the infrared lens and range window, use a clean, soft, dry flannel cloth to wipe.
5. Do not install the wrong positive and negative battery, the positive end of the battery is installed outward. The battery compartment cover screws are tightly screwed and closely fit the waterproof rubber ring, otherwise it will affect the shock resistance and waterproof performance.
6. Please do not disassemble this instrument, private disassembly will lose the warranty service.
7. To transport this camera, please use the original safety box and add sufficient cushioning material to avoid damage.

After Sales

one year warranty and lifetime maintenance for this thermal imaging viewer from the date of purchase;

Free replacement within 7 days due to quality problems;

For failures caused by human factors and natural disasters, replacement parts will be charged according to the physical condition.

Packing list

Standard Edition Packing List

- Mainframe *1
- Lens cap *1
- Charger *1
- 20mm clamp (installed) *1
- 4 lithium batteries (2 in the machine, 2 spare)
- video serial port cable *1
- Instruction manual *1