

Quick Start Guide

Uncooled Thermal Scope



– USER MANUAL –

FCC Statement

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.

Caution:

Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment. 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.

RF Exposure Information

The device has been evaluated to meet general RF exposure requirement.

The device can be used in portable exposure condition, compliance with exposure requirements.

This equipment should be installed and operated with minimum distance 0 mm between the radiator & your body.



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



Do not touch the surface of 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
208x170x82mm	≤ 978g
	
Main Unit (x1)	User Manual (x1)
	
Lens Cleaning Cloth (x1)	Picatinny Rail (x1)
	
16340 Li-ion Batteries (x2)	Mount (x1)
	
Accessories (x1 Kit)	

CATALOGUE

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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

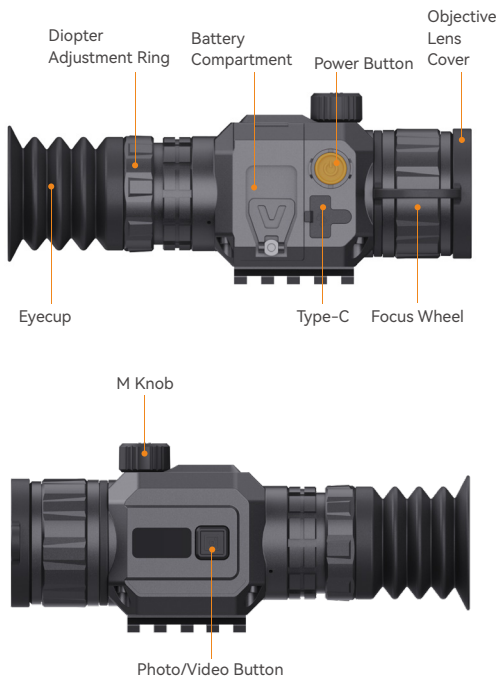
This product is an entry-level infrared thermal imager that is highly cost-effective, compact, and portable. It features a high-sensitivity VOx uncooled detector, a 1024x768 high-definition OLED display, and supports customized lenses with various focal lengths. Easy to operate, it is well-suited for long-distance observation in diverse scenarios.

2 Functional Features

1. Contrast, sharpness and brightness adjustable;
2. Palettes: White Hot, Black Hot, Rainbow, Iron Red, Red Hot, Bird Observing;
3. Display: 0.39inch 1024×768, OLED;
4. Correct defective pixel function;
5. Hot-track function;
6. Wi-Fi image transmission;
7. Photo taking and Video recording;
8. Picture in picture function;
9. Six reticle;

10. 1x, 2x, 4x, 8x digital zoom;
11. Default display in English (support multi-language customization);
12. Quick Menu.

3 Product Appearance



1. Diopter Adjustment Ring

Used to match users with different eyesight, with an adjustment range of -5D to +5D.

2. Focus Wheel

After the product is turned on, the observation target should be aligned. When the distance of the observation target changes, the image may appear blurry. Please rotate the lens focusing handwheel to refocus until the target image is clear.

3. Type-C

Used to transmit image and video, external power input or battery charging.

4 Button Definition

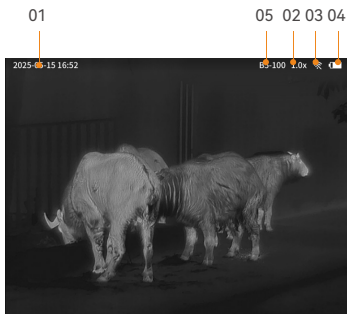
Button	Long Press	Quick Press	Rotate
Power Button	Power On/ Power Off	Standby/ Wake-up Mode	/
M Knob	Main Interface: Enter/Exit Menu Menu: Back to Previous Menu.	Main Interface: Palettes Switching Menu: Enter Submenu/ Confirm	Main Interface: Digital Zoom Menu: Move the cursor/ Adjust the value.
Camera Button	Start/End Recording and Save Video Files	Take and Save Photos	/

5 Product Parameter

Specifications			
Detector	Uncooled VOx Microbolometer		
Resolution, pixels	640×512/12μm		
Objective Lens (F1.0)	19mm	25mm	35mm
Field of View	22.9° ×18.4°	17.5° ×14°	12.5° ×10°
Magnification	1.1x~8.8x	1.4x~11.6x	2x~16x
Spectral Band	8~14μm		
Frame Rate	50Hz		
NETD	≤ 25mK @F1.0 300K		
Display	0.39" OLED 1024×768		
Digital Zoom	1x, 2x, 4x, 8x		
Eyepiece Diopter	-5 ~ +5		
Eye Relief	45mm		
Power Supply	Two 16340 Li-ion Batteries		
Standby Time	≥ 4h		
Weight (No Batt.)	≤ 500g		
Dimensions(Including Eyepiece/Objective Covers)	155x55x70mm	160x55x70mm	168x55x70mm
Interface	External Power/Type-C		
Operation Temperature	-20℃ ~+55℃		
Protection Rating	IP67		
Reliability	800g Shock Resistance 0.5ms		
Altitude	≥ 5000m		
Adaptability	All-weather		
Detection Range (Wolf)	19mm/1260m	25mm/1660m	35mm/2330m
Detection Range (Rabbit)	19mm/530m	25mm/690m	35mm/970m

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

6 Main Interface



No	Description
01	Date and Time
02	Digital Zoom
03	Wi-Fi
04	State of Power
05	Reticle Type Indicator

7 Menu Introduction

7.1 Main Menu

Icon	Name	Description
	Reticle	Enable/disable the cross reticle and configure its parameters.
	Picture-in-Picture	Turn On/Off Picture-in-Picture
	Hot Track	Turn On/Off Hotspot Tracking
	Distance Measure	Turn On/Off Distance Measure
	Brightness	Brightness Adjustment
	Contrast	Contrast Adjustment
	Sharpness	Sharpness Adjustment
	Wifi	Wi-Fi Turn On/Off
	DPC	Enter Bad Pixel Correction mode to perform automatic or manual correction.
	Language Selection	Select Menu Language
	Date/Time	System Date and Time Settings
	OSD	Turn On/Off Time, Date Information
	Unit	Change Unit (Meter/Yard)
	Restore Device	Restore Default Parameters
	Version	Version Information/Upgrade Device/Change to Clip-on Mode
	Quick Menu	Change to Quick Menu

7.2 Quick Menu

Icon	Name	Description
	Picture-in-Picture	Turn On/Off Picture-in-Picture
	Distance Measure	Turn On/Off Distance Measure
	Reticle	Select Reticle Type
	Main Menu	Change to Main Menu

8 Operation Introduction

8.1 Power On / Power Off / Standby

In the shutdown state, long press the power button for 3 seconds to start the product and display the startup screen.

In the power on state, press and hold the power button for 3 seconds to enter the 5-second shutdown countdown. Press the power button again within 5 seconds to cancel the shutdown.

In the power on state, quick press the power button to enter standby mode. When in standby mode, quick press the power button again to cancel standby and the display screen will light up again.

8.2 Adjust Diopter and Focus

Power on the device first, and make sure the eyecup covers your eye. Then adjust the diopter adjustment ring until the OSD information, such as Date and Time, Digital Zoom, etc is clear. Finally, adjust the focus ring until the image is clear.

8.3 Digital Zoom

In the power on state, rotate the M knob to engage digital zoom, clockwise to enlarge the main interface image, and counterclockwise to reduce. The image is cyclically enlarged by 1x, 2x, 4x, and 8x in sequence.



1x Image

2x Image

4x Image

8x Image

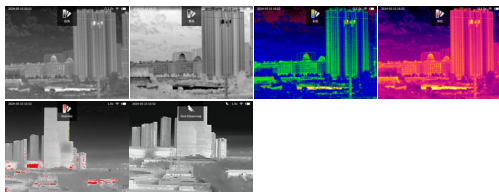
8.4 Picture and Video

In the power on state, quick press the photo button to take a photo and the screen displays a message that the picture has been saved. Long press the camera button to start recording the video, and the recording time will be displayed at the top of the screen. Long press the camera button again to stop recording and display a message that the recording has been saved.

8.5 Palettes Mode

In the power on state, quick press the M knob on the main screen to switch palettes .

Palettes mode: White Hot, Black Hot, Rainbow, Iron Red, Red Hot, Bird Observing.



8.6 Menu

After turning on, long press the M knob for 3 seconds to enter the first level menu. Rotate the M knob to move the cursor. Press the M knob shortly to select the item under the cursor. Long the M knob to return to the previous menu.

On the numerical interface, rotating the M knob can increase or decrease the value.

On the pop-up selection interface, pressing the M knob briefly will execute the confirmation action.

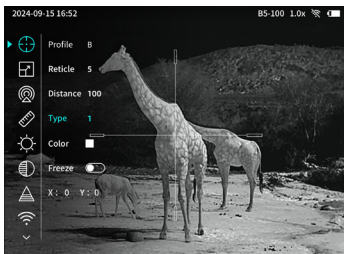
8.6.1 Reticle Settings

Long press the M knob to enter main menu. Rotate the M knob to reticle settings and press shortly to enter. Rotate the M knob and press shortly to select item (Such as Profile, Reticle, Distance and Type), and rotate the knob to change the value of the item, and long press to confirm and exit.

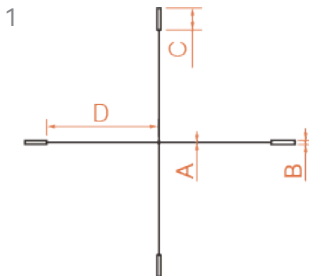
Rotate the knob to Freeze function, and short press the knob to enable the function. Freeze function help to make the image displays stay still.

Rotate the knob to X or Y axis, short press and rotate the knob to select and adjust the X or Y Value. The reticle's position changes as the X and Y values are adjusted.

The right top of the image displays the reticle information. For example, B5-100 means you are using Profile B, reticle 5, and the set distance is 100m.

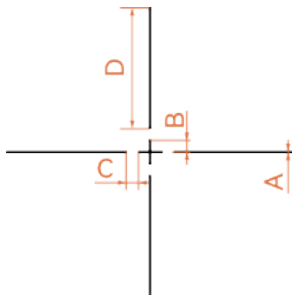


Below are the parameters represented by the six types of reticle type.



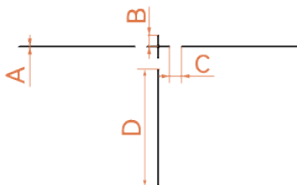
Reticle Parameters(for 1x magnification)	19mm		25mm		35mm	
	MOA	cm@100m	MOA	cm@100m	MOA	cm@100m
A	1.3	4	1	3	0.7	2.2
B	10.8	30.2	7.8	23	5.8	17.2
C	54.2	165.4	43	126	30.8	90
D	259	835	217	634.6	155.5	455.5

2



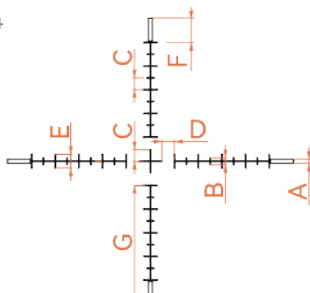
Reticle Parameters(for 1x magnification)	19mm		25mm		35mm	
	MOA	cm@100m	MOA	cm@100m	MOA	cm@100m
A	1.3	4	1	3	0.7	2.2
B	26.8	80	20	60	14.7	43.3
C	29.5	88	22	66	16	47.6
D	259	835	217	634.6	155.5	455.5

3



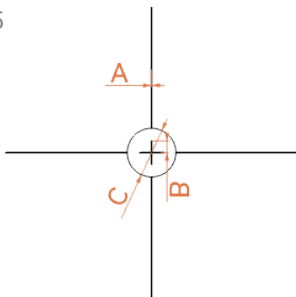
Reticle Parameters(for 1x magnification)	19mm		25mm		35mm	
	MOA	cm@100m	MOA	cm@100m	MOA	cm@100m
A	1.3	4	1	3	0.7	2.2
B	26.8	80	20	60	14.7	43.3
C	29.5	88	22	66	16	47.6
D	259	835	217	634.6	155.5	455.5

4



Reticle Parameters(for 1x magnification)	19mm		25mm		35mm	
	MOA	cm@100m	MOA	cm@100m	MOA	cm@100m
A	10.8	30.2	7.8	23	5.8	17.2
B	16	48	12	36	8	26
C	26.8	80	20	60	14.7	43.3
D	29.5	88	22	66	16	47.6
E	32	96	24	72	16	52
F	54.2	165.4	43	126	30.8	90
G	259	835	217	634.6	155.5	455.5

5



Reticle Parameters(for 1x magnification)	19mm		25mm		35mm	
	MOA	cm@100m	MOA	cm@100m	MOA	cm@100m
A	1.3	4	1	3	0.7	2.2
B	26.8	80	20	60	14.7	43.3
C	112	336	84	252	56	182

6



Reticle Parameters(for 1x magnification)	19mm		25mm		35mm	
	MOA	cm@100m	MOA	cm@100m	MOA	cm@100m
A	1.3	4	1	3	0.7	2.2
B	26.8	80	20	60	14.7	43.3

8.6.2 Picture-in-Picture Settings

Long press the M knob to enter the menu, select the picture in picture setting to enter the submenu, and choose to turn on or off the picture in picture function. In picture in picture mode, without reticle, the zoom center is the center of the screen; With the reticle, the center of magnification is the center of the reticle.

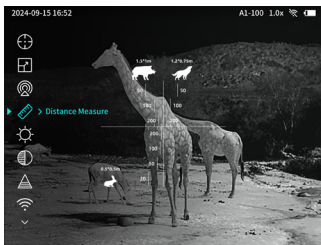
After enabling picture-in-picture, the zoom range is 2x, 4x, and 8x. The zoom only adjusts the small picture, while the main picture remains at 1x. After closing the picture-in-picture, it will be restored to 1x, 2x, 4x, and 8x.

8.6.3 Hot Track

Long press the M knob to enter the menu, select hot track, and quick press the M knob to switch on and off.

8.6.4 Distance Measure

Long press the M knob to enter the menu, Rotate the M knob to Distance Measure and shortly press, the Distance Measure marker line will turn on/off. Align the target with the cursor's scale. The corresponding number on the cursor indicates the approximate distance to the target.



8.6.5 Brightness Adjustment

Long press the M knob to enter the menu, select brightness settings, rotate the M knob to adjust brightness value.

Brightness range: 0~10, it is recommended to set it to 5~7.

8.6.6 Contrast Adjustment

Long press the M knob to enter the menu and select contrast settings, rotate the M knob to adjust contrast value.

Contrast range: 0~10, it is recommended to set it to 6.

8.6.7 Sharpness Adjustment

Long press the M knob to enter the menu and select sharpness settings, rotate the M knob to adjust sharpness value.

Contrast range: 1~4, it is recommended to set it to 2.

8.6.8 Defective Pixel Correct

Please confirm that the lens cover is closed before using this function!

Long press the M knob to enter the menu, select the DPC function, and rotate the knob to select Auto DPC or Manual DPC, short press to enter the DPC setting interface.

Auto DPC:

After entering this function, several options are displayed, including Threshold, Restore, Clear, Save, and Bad pixel number. Quick press the M knob to enter the threshold option. Rotate the M knob to adjust the threshold, which ranges from 20 to 32. The smaller the threshold, the more bad pixels can be cleared. It is recommended to set the threshold at around 26. Long press the M knob to return to the previous step.

When the option is on the clear option, quick press the M knob to eliminate all blind elements in the screen. And the number of bad pixels will display the number of bad pixels corresponding to the current threshold. When the number of bad pixels is greater than 1000, it is considered as over calibration behavior. At this time, it should be restored first. After restoration, adjust the threshold to be greater than the current value and continue to clear. If the number of bad pixels is still greater than 1000, repeat the above steps until the number of bad points is less than 1000. Exercise caution when performing the save operation if the number of bad pixels exceeds 1000. When the option is on the save option, long press the M knob to save all previous operations. Restore can cancel current DPC.



Manual DPC:

Rotate the M knob and press shortly to select X or Y axis, rotate the knob, both cursor in the image displays and the PIP move, until they reach the dead pixel, then long press the knob to exit X,Y axis. Select Clear and short press the M knob to confirm. Move the cursor on the save option, long press the M knob to save all previous operations. Restore can cancel current DPC.

8.6.9 Language Settings

Long press the M knob to enter the menu, select language settings to enter the submenu. At present, only English is available.

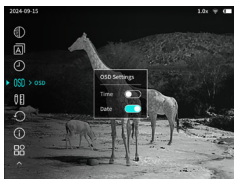


8.6.10 Time Settings

Long press the M knob to enter the menu, select time settings to enter the submenu, and adjust the time through the M knob.

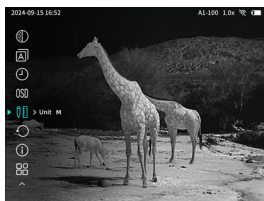
8.6.11 OSD Settings

Long press the M knob to enter the menu, select OSD settings to enter the submenu, and use the M knob to select the information that needs to be displayed in the screen menu bar.



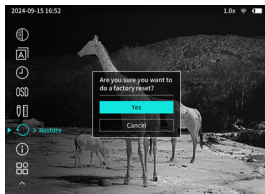
8.6.12 Unit Settings

Long press the M knob to enter the menu, select Unit. Then rotate the knob to change M/YD, and long press the M knob to confirm and exit. The reticle parameter and Distance Measure marker line will change in the mean time.



8.6.13 Restore Device

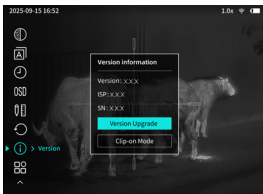
Long press the M knob from the main interface to enter the menu, select Restore and short press M knob to enter the submenu, and follow the prompts to restore or cancel factory reset through the M knob.



8.6.14 Version

Long press the M knob to enter the menu, select Version, there are some information of the device. Select the Version Upgrade to upgrade the device. When use the device as Clip-on scope, the Clip-on Mode should be selected.

When upgrading the device, the Upgrade file needs to be copied to the root directory of the device's via USB cable, and then execute "Version Upgrade". When switching to the Clip-on Mode, you need to select "Clip-on Mode" and confirm it. Then, wait for the device to automatically restart and complete the switch to the Clip-on mode.

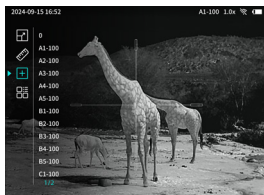
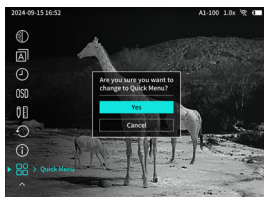


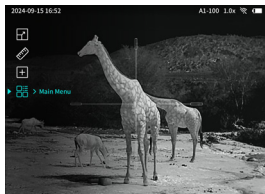
8.6.15 Quick Menu

Long press the M knob to enter the menu, rotate the knob to select Quick Menu, and short press the knob to enter. Then click the Yes to change to Quick Menu.

You can use functions such as PIP, Distance Measure, Reticle. Short press the Reticle, and rotate the knob to select different reticle (they have to be set up in the Reticle function of Main Menu).

Select the Main Menu, short press the knob to change back to Main Menu.





8.7 Read Data

Connect the device and PC with a type-C cable and power on the device, double-click on the desktop "My Computer" to read and manage the photos and videos stored in the component SD card.

Note: All photos are stored in the "image" folder, and all videos are stored in the "video" folder.

8.8 Exploring Through the App

Enable the Wi-Fi in the product's menu, with the hotspot name "Demonxxxxxxxxxxxx". Turn on the Wi-Fi function on your phone and connect to "Demonxxxxxxxxxxxx", with the password 'abcd1234'. Download a streaming player from the app store capable of creating streams. Taking VLC player APP as an example, open the VLC player APP, click on more options, and create a new stream (the software download can be found in the app store or browser).



Video



Audio



Browse



Playlist



More

+
Create New
Stream

Enter Stream URL

Transmission Protocol:

☐ TCP ☒ UDP

Send Keep Alive Packets:

☒

Cancel

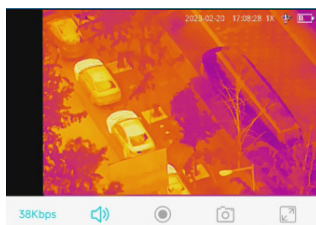
Confirm

The stream URL address is:

rtsp://192.168.7.168:554/streaming/001?auth=admin:123456,
without UI.

rtsp://192.168.7.168:554/streaming/102?auth=admin:123456,
with UI.

By entering the address and clicking “Confirm”, live stream the
image feed on to your smartphone with the app of the device.



9 Precautions

1. The rated charging voltage of this product is 5V. Please avoid overcharging due to overvoltage. When the battery is low, please charge it in a timely manner to prevent excessive battery discharge from affecting the lifespan of the thermal imager. When using user interface connectors, make sure to align them correctly before inserting them. Do not directly pull or tug on the cable when plugging or unplugging the plug line.
2. If the battery is installed but cannot be turned on, please check if the battery is correctly installed first. Do not use Type-c to power when the batteries are installed by the wrong way. First check if the battery is installed upside down, otherwise Type-C power supply will burn out the battery if it is installed upside down.
3. If the memory space is less than 128MB, the device can just take photo but not record videos. When recording, the memory space is insufficient to 128MB, the recording will automatically end.
4. Avoid prolonged use of this product in high temperature environments. When the ambient temperature is too high, the thermal device will automatically enter a high-temperature protection state and shut down automatically.
5. It is recommended to use this product within the temperature range of -20°C to $+55^{\circ}\text{C}$. Do not charge it in environments below 0°C or above 40°C .
6. When using this product in a humid environment, please ensure that the Type-C waterproof plug is tightly fastened.
7. Please avoid directly aiming the thermal imager at strong radiation sources such as sunlight and lasers to avoid irreversible damage to the thermal imager.

8. Operators only need to perform basic maintenance, such as replacing or inspecting cables, lens covers, daily cleaning, and functional checks, to ensure that the equipment remains in good technical condition.
9. When not using the thermal imager for a long time, please charge it at least once every two months during storage and store it in a dry and ventilated environment.
10. If the device malfunctions, do not easily remove the module. Please contact the manufacturer for fault location before handling.

10 Troubleshooting

1. Device can't turn on

Solution: Simply remove the battery and check if it is installed correctly. If it is not installed backwards, check if the battery is fully charged; Or replace the batteries; If it still cannot be turned on, the device should be repaired.

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 device's time and date in the menu.

4. Screen turns off during use

Solution: Press the power button briefly to wake up the device from sleep and light the screen.

5. Blurry imaging during use

Solution: Turn the M knob counterclockwise until you can clearly see the OSD. Then manually turn the focus handwheel to focus until the target is displayed clearly.

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:

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.

Transport:

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

