

ULIRVISION

FORESIGHT SERIES

Thermal Monocular

User Manual

About this manual

Dear users,

Thank you for choosing the F-Series Thermal Imaging Monocular!

Please take a few minutes to read this manual before first use;

Please be sure to follow the operating rules in this book!

Due to version upgrades or other reasons, this manual is subject to change without notice!

Disclaimer

- To the fullest extent permitted by law, this manual and the products described (including its hardware, software, firmware, etc.) are provided "as is" and may be subject to defects or errors. ULIRVISION does not provide any form of express or implied warranties, including but not limited to warranties of merchantability, satisfactory quality, fitness for a particular purpose, etc., and shall not compensate for any special, incidental, incidental or consequential damages arising out of the use of this manual or the use of ULIRVISION products, including, but not limited to, lost business profits, system failures, loss of data or documentation.
- You are aware of the open nature of the Internet, and you may have risks such as network attacks, hacker attacks, and virus infections when you access your products to the Internet, and ULIRVISION will not be responsible for the abnormal working of the products and information leakage caused by this, but ULIRVISION will provide you with product-related technical support in a timely manner.

- When using this product, please strictly follow applicable laws and regulations and avoid infringing on the rights of third parties, including but not limited to rights of publicity, intellectual property rights, data rights or other privacy rights. You shall not use this product for illegal hunting of animals or infringement of others' privacy or other illegal or harmful to the public interest, nor shall you use this product for weapons of mass destruction, biological or chemical weapons, nuclear explosions or any unsafe use of nuclear energy or human rights violations.
- In the event of a conflict between the contents of this manual and applicable law, the provisions of the law shall prevail.

Precautions

- During the installation and use of the equipment, it is necessary to strictly comply with the electrical safety regulations of the country and the use area.
- Please use the power adapter provided by the regular manufacturer, please refer to the product parameter table for the specific requirements of the power adapter. Do not connect multiple devices to the same power adapter (exceeding the adapter load may generate excessive heat or cause a fire).
- Do not swallow the battery to avoid chemical burns. Do not place the battery within the reach of children.
- Do not place the battery near heat or fire sources, avoid direct sunlight. Do not use batteries that have been discharged, and remember to charge batteries in time after discharge.
- The device has a built-in removable battery, please use the correct specification battery, improper use may create an explosion hazard. After the battery has been installed or removed, the battery compartment is required to be closed safely.

- When wiring, disassembling and other operations, please disconnect the power supply of the device, and do not operate with electricity.
- To avoid heat build-up, keep the perimeter of the device well ventilated.
- Do not directly touch the heat dissipation parts of the device to avoid burns.
- If the device smokes, produces peculiar smells, or emits noise, please disconnect the power of the device immediately and contact the dealer or service center in time.
- If the device is not working properly, contact the store where the device was purchased or the nearest service center and do not disassemble or modify the device in any way. (The company is not responsible for problems caused by unauthorized modifications or repairs).
- Check the lens for foreign objects or scratches, and wipe it carefully with a lens cloth.
- Check whether the products and accessories are complete, the host should be handled with care, the infrared lens is fragile, and do not directly contact other objects.
- It is forbidden to face high-temperature objects, and the equipment should be stored in a dry and non-corrosive gas

environment, and avoid storing the equipment in direct sunlight, poor ventilation or near heat sources (such as heaters, heaters), etc., ignoring this may lead to fire hazards.

- After opening the battery compartment cover, remove the battery. Place it in the accompanying charger with the negative pole of the battery aligned with the compression spring and the positive pole facing the direction of the light. Plug it into a 220V AC power source to charge. The positive and negative poles of the battery should be placed according to the "+" and "-" markings on the battery compartment.
- You must use the battery provided by our company, or the model battery with protection specified by our company.

Waring

FCC Statement

15.19

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. (2) This device must accept any interference received, including interference that may cause undesired operation.

15.21

Note: The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

15.105(b)

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 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.

ISED Compliance

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;

2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

For FCC

FCC RF Exposure requirements: The highest SAR value reported under this standard during product certification for use next to the Body with the minimum separation distance of 0mm. This transmitter must not be collocated or operating in conjunction with any other antenna or transmitter.

This product is compliance to FCC RF Exposure requirements and refers to FCC website

<https://apps.fcc.gov/oetcf/eas/reports/GenericSearch.cfm> search for FCC ID: 2BE6SHW0002

For IC

This EUT is compliance with SAR for general population/uncontrolled exposure limits in IC RSS-102 and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528 and IEC 62209. This equipment should be installed and operated with minimum distance 0 mm between the radiator and your Body. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet appareil est conforme aux limites d'exposition DAS incontrôlée pour

la population générale de la norme CNR-102 d'Industrie Canada et a été testé en conformité avec les méthodes de mesure et procédures spécifiées dans IEEE 1528 et IEC 62209. Cet appareil doit être installé et utilisé avec une distance minimale de 0 mm entre l'émetteur et votre corps. Cet appareil et sa ou ses antennes ne doivent pas être co-localisés ou fonctionner en conjonction avec tout autre antenne ou transmetteur.

Menu

1. Product overview.....	13
1.1 Appearance introduction.....	15
1.2 Buttons and operating instructions.....	17
2. Description of the main operation interface	19
2.1 Distance estimation.....	19
2.2 Scenes	22
2.3 Hot spot tracking.....	24
2.4 Network.....	25
2.5 PIP	27
2.6 Image settings.....	28
2.7 Function settings	30
2.8 System settings.....	34
2.9 Others.....	36
3. Simple Fault Diagnosis and Elimination.....	46

1. Product overview

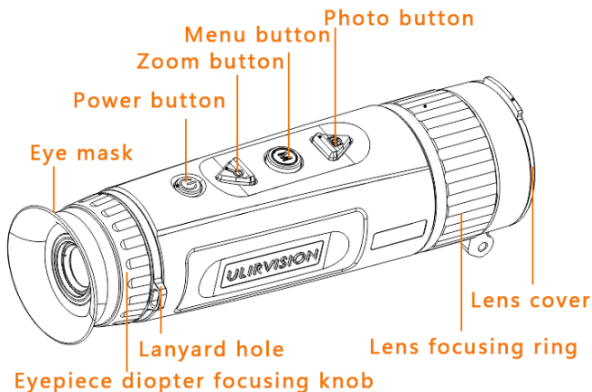
Foresight (F Series) is a portable infrared monocular telescope suitable for outdoor adventures, emergency search and rescue, environmental biological monitoring and other occasions. It features convenient operations such as hotspot tracking, digital zoom, distance estimation, PIP, which can adjust the imaging effect according to different scenes. It supports external HD screen components, exhibiting strong expandability, long battery life, and rugged durability.

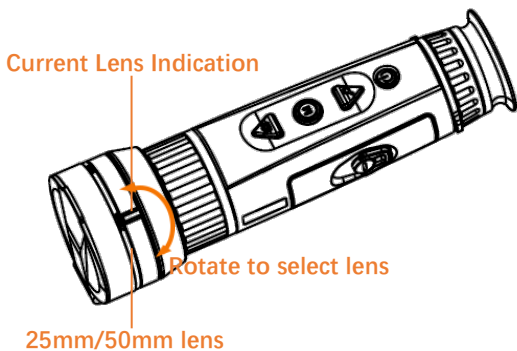
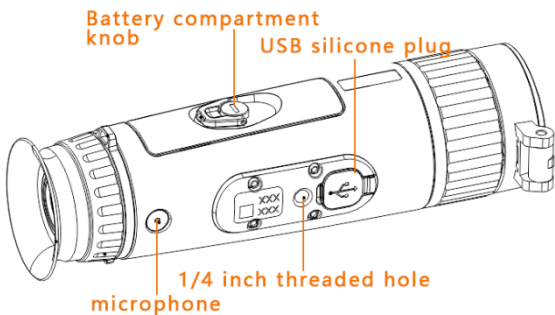
Key features:

- Optimize algorithms based on different scenarios and allow for custom parameter maintenance;
- Equipped with hotspot tagging and auto tracking functions;
- Powerful image adjustment function with enhanced details, adjustable brightness, contrast, and sharpness;
- Equipped with internal storage, supporting picture and video recording;
- Equipped with WIFI and hotspot functions, supporting quick control and sharing through the APP;

- Equipped with a PIP function, capable of 2x magnification of the target area;
- Accurate distance estimation algorithm;
- The focusing feel is comfortable, with a short focusing range for quick and clear focusing.




1. 1 Appearance introduction








Product appearance

1.2 Buttons and operating instructions

Buttons	Short press (counter-clockwise)	Long press (clockwise, not long-press)
 Power button	Sleep/wake-up	Power on/off (long press for 3 seconds). Long press for 6 seconds to force shutdown
 Zoom button	Digital zoom 1, 2, 4, (8) times cycle	Custom buttons (long press for 2 seconds)
 Menu button	Switch color palette (White Hot, Black Hot, Red Hot, Fusion, Green Hot, blue red) cycle/menu	Call menu/menu to return to previous level (long press for 2 seconds)

	confirmation	
 Photo button	Take photo	Record/Stop recording (long press for 2 seconds)
Combination button () Menu button +  Zoom button)	None	Calibration (long press for 2 seconds, there will be a calibration prompt)

Note: Both power on and power off require long pressing the power button for 3 seconds.

The function of the buttons varies under different working conditions. Please refer to the prompt information in the table for operation and use of the product.

2. Description of the main operation interface

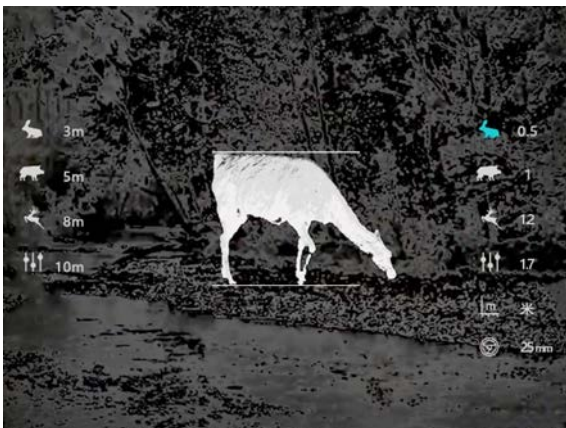
2.1 Distance estimation








Select distance estimation , confirm and directly jump to the distance estimation operation interface. Short press the menu to confirm, long press the menu to return and exit; Short press the zoom button to enter the distance estimation setting page. In the distance estimation setting interface, you can select the type of target to be measured, set the height parameter of the target type, and the measurement unit of the distance measurement return value in meters or yards. As shown in the figure below:




Distance estimation



Distance estimation - Settings menu




Rabbit 	Adjust the shape with the up and down arrows, and confirm with the menu button
Pig 	Adjust the shape with the up and down arrows, and confirm with the menu button
Deer 	Adjust the shape with the up and down arrows, and confirm with the menu button
Customize 	Adjust the shape with the up and down arrows, and confirm with the menu button
Unit of measure 	Adjust the shape with the up and down arrows, there are two units in total: meters or yards, and confirm with the menu button

2.2 Scenes


Select the scene "  " to enter the secondary menu, there are city, jungle, custom three modes.



Scenes

 City	It increases contrast, accentuates high-heat subjects, and loses some low-heat details, making it suitable for urban use
 Jungle	Wide dynamic algorithm, dark part lifting, simultaneous display of target and background details, suitable for use in the jungle
 Custom	Manually adjust and maintain brightness, contrast, sharpness

2.3 Hot spot tracking

Hot spot tracking can be turned on or off when "  " is selected, and green crosshairs will appear on the screen to automatically point to the highest grayscale value location. The cursor defaults to green, and the it is red when the color palette is green hot.



Hot spot tracking





2.4 Network



When the network " " is selected, it can be turned on or off, and the device will turn on the WIFI hotspot after it is turned on, and the hotspot icon and the current number of connections will appear on the navigation bar.



Network

	The current number of connections is 0
	The current number of connections is 1
	The current number of connections is 2
	The current number of connections is 3

2.5 PIP




Select PIP " " to turn on or off, after turning on, the device will open PIP, and PIP will enlarge 1/36 image of the whole picture to 1/9 of the image size, and the magnification position is the center of the whole image. The framing area is shown in the picture



PIP

2.6 Image settings

Select the image settings  to set image enhancement, brightness, contrast, and sharpness;

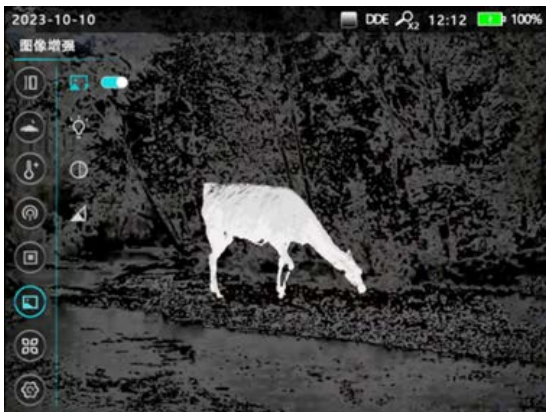








Image enhancement 	Press the Menu button to open it, and the navigation bar displays the DDE
Brightness 	Press the up and down arrows, the 0-8 gears can be adjusted
Contrast 	Press the up and down arrows, the 0-8 gears can be adjusted
Sharpness 	Press the up and down arrows, the 0-8 gears can be adjusted

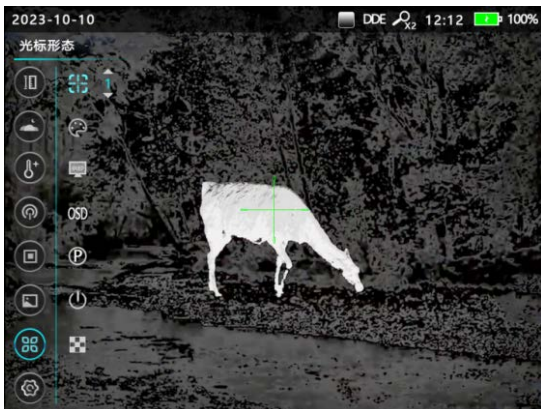
2.7 Function settings









Select  to set the cursor shape, cursor color, OLED brightness, OSD, custom button, auto shutdown, and bad pixel correction.




Select the cursor shape , press the up and down arrows to adjust. There are a total of 0 to 5 cursor shapes, with a total of 6 adjustable cursor shapes, the default is 0 with no cursor:



Cursor shape

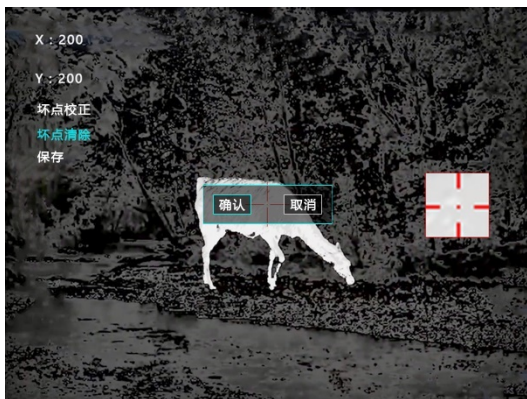
 <p>Cursor shape</p>	<p>Adjust by pressing the up and down arrows, there are a total of 0-5 forms.</p>
 <p>Color</p>	<p>There are 5 colors: green, white, black, red, and blue</p>
 <p>OLED screen adjustment</p>	<p>Up and down arrow selection, 1-5 gears to adjust OLED brightness</p>
	<div data-bbox="519 583 705 824">  </div> <div data-bbox="733 564 886 824"> <p>Set the navigation bar information display as</p> </div> <div data-bbox="534 848 629 877"> <p>needed</p> </div>
 <p>Custom buttons</p>	<p>Press the up and down arrows to adjust, including 6 functions: scene, PIP, hotspot tracking, cursor shape, image enhancement, and</p>

	distance estimation. The default PIP, and after setting, press the menu button to save.
 Auto shutdown	Auto shutdown time setting



Select Bad pixel Correction and enter the operation interface. Short press the menu button to confirm, long press the menu button to return. Adjust the coordinate positions of the X and Y axes of the crosshairs through the up and down arrows, so that the center point of the cursor overlaps with the bad pixel to be replaced, simultaneously observe whether the bad pixel is located at the center of the auxiliary observation area nine-grid, then choose the bad pixel and click confirm for replacement operation. If an accidental operation leads to abnormal image, you can choose to clear the bad pixel, and a second confirmation will be prompted after the operation. Select confirm to clear the user's saved bad pixel configuration parameters, otherwise cancel. After the above operations are completed, they need to be saved to take effect, otherwise the previous operation will be retained. The auxiliary observation area on the right side facilitates finding and


locating bad pixels. When the crosshair moves to the auxiliary observation area, the position of the auxiliary observation area will change. As shown in the figure:












Bad pixel correction operation interface

2.8 System settings



Select the system settings "", you can set the language, time, standby indicator, anti-burn, restore factory settings, formatting, system information.

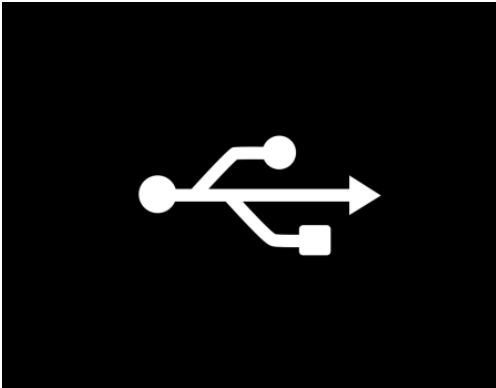
 Language setting	Provide language options in both Chinese and English
 Time setting	 , adjust by pressing the up and down arrows, short press the menu button to confirm, follow the same steps in sequence, and long press the menu to return
 Standby indicator light	After turning on, the standby indicator light will light up
 Anti-burn	Tip  : The burn defense mechanism has been triggered, long

	<p>press to zoom back to normal, and</p> <p>when turned on, the lens will be automatically turned off to protect the detector when encountering ultra-high temperature scenes</p>
	Restore factory settings
	Format the memory
	Display the factory information of the instrument, long press the menu button to return

2.9 Others

(1) USB file storage mode

When you enter file storage mode by connecting your PC via USB, the interface displays the USB connection status. When the USB is connected, all operations on the device are temporarily invalid.



USB connection status

(2) Technical parameters

384 Model	F319	F325	F335	F350	F350D
Resolution	384×288				
Pixel pitch	12μm				
Operating wavelength	8-14μm				
Thermal sensitivity NETD	≤25mk @25°C F=1.0				
Frame rate	50Hz				
lens					
Lens focal length (F-number)	19mm (F1.0)	25mm (F1.0)	35mm (F1.0)	50mm (F1.0)	25mm (F1.0)/50mm (F1.1)
FOV	13.8°× 10.4°	10.5°× 7.9°	7.5°×5 .6°	5.3°×4. 0°	10.5°×7.9 °/ 5.3°×4.0°
Minimum imaging distance	>2m	>2.5m	>3.5m	>5m	>2.5m/ >5m

Detection range	900m	1280 m	1800m	2600m	1280m/2600m
Diopter adjustment	± 5				
Eye relief	19mm				
Internal storage EMMC	32G (actual 27G, system operation occupies a portion).				
Power supply	5V DC 2A				
Battery	18650 3350mAh				
Battery operating hours	>5.5 hours (when WIFI and hotspot turned off)				
USB	USB Type-C supports charging, powering, transferring files, and transferring videos				
Operating temperature	-20~55°C				
Storage temperature	-30~65°C				
Humidity	$\leq 90\%$				
IP rating	IP67				

Size	52×18 5 mm	52×18 5 mm	52×1 85 mm	64×203m m	64×212 mm
Weight(with battery).	52×18 5 mm	52×18 5 mm	52×1 85 mm	64×203m m	64×212 mm
Shock, vibration	Packaging and transportation level				

640 Model	F625	F635	F650	F650D
Resolution	640×512			
Pixel pitch	12μm			
Operating wavelength	8-14μm			
Thermal sensitivity NETD	≤25mk @25℃ F=1.0			
Frame rate	50Hz			
Lens				
Lens focal length (F-number)	25mm (F1.0)	35mm (F1.0)	50mm (F1.0)	25mm (F1.0) /50mm (F1.1)
FOV	17.5°×13.1°/3.1°	12.5°×9.4°	8.8°×6.6°	17.5°×13.1°/8.8°×6.6°
Minimum imaging distance	>2.5m	>3.5m	>5m	>2.5m/>5m
Detection range	1280m	1800m	2600m	1280m/2600m

Diopter adjustment	± 5
Eye relief	19mm
Internal storage EMMC	32G (actual 27G, system operation occupies a portion).
Power supply	5V DC 2A
Battery	18650 3350mAh
Battery operating hours	>4 hours (when WIFI and hotspot turned off)
USB	USB Type-C supports charging, powering, transferring files, and transferring videos
Operating temperature	-20~55°C
Storage temperature	-30~65°C
Humidity	$\leq 90\%$

IP rating	IP67			
Size	52×185 mm	52×185 mm	64×203m m	64×212mm
Weight (with battery).	≤435g	≤450g	≤480g	≤590g
Shock, vibration	Packaging and transportation level			

1280 Model	F950	F950D
Resolution	1280×1024	
Pixel pitch	12μm	
Operating wavelength	8-14μm	
Thermal sensitivity NETD	≤25mk @25℃ F=1.0	
Frame rate	50Hz	
Lens		
Lens focal length (F-number)	50mm (F1.0)	25mm (F1.0) /50mm (F1.1)
FOV	17.5°×14.0°	34.2°×27.6°
Minimum imaging distance	>5m	>2.5m/>5m
Detection range	2600m	1280m/2600m
Diopter adjustment	±5	

Eye relief	19mm	
Internal storage EMMC	32G (actual 27G, system operation occupies a portion).	
Power supply	5V DC 2A	
Battery	18650 3350mAh	
Battery operating hours	>4 hours (when WIFI and hotspot turned off)	
USB	USB Type-C supports charging, powering, transferring files, and transferring videos	
Operating temperature	-20~55°C	
Storage temperature	-30~65°C	
Humidity	≤90%	
IP rating	IP67	
Size	64×203mm	64×212mm
Weight (with battery).	≤480g	≤590g

Shock, vibration	Packaging and transportation level
---------------------	------------------------------------

3. Simple Fault Diagnosis and Elimination

For common problems arising during operation, please refer to the following table. If the problem cannot be settled, please cut off the power of the device and contact our technical department.

Failures	Causes and Solutions
The device can't start	<p>The battery is uninstalled or improperly installed.</p> <p>→ Insert the battery or re-install the battery.</p> <p>The battery power runs out.</p> <p>→ Replace or charge the battery.</p> <p>Device shutdown for protection.</p> <p>→ Wait 5 seconds and then restart.</p>

The device shuts down automatically	The battery power runs out →Replace the battery.
Battery power runs out fast	<p>Ambient temp is too low or too high.</p> <p>The rechargeable battery is not fully charged.</p> <p>→Recharge the rechargeable battery.</p> <p>The life of battery is almost over, about 300 cycles of charge and discharge for the type of battery.</p> <p>→Replace rechargeable battery.</p>
No thermal image displayed	The lens cap is not open→Open the lens cap.

Zhejiang ULIRVISION Technology Co., Ltd.

E-mail : overseas@ulirvision.com

Tel: +86(0)571 8720 9881

Fax: +86(0)571 8512 5358

Add: 8F/9F/10F/17F, Block C, No. 581 Huoju Avenue, Puyan
Street, Binjiang District, 310000 Hangzhou, Zhejiang, China