

# **Monocular outdoor thermal image telescope Instruction Manual**



*Light Chaser Series*

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## Preface

Respected users:

How are you! Thank you for purchasing our instrument. In order to use it in a better manner, we remind you to read the instruction for use carefully before use and keep it properly so as to look up in the future use.

## Safety Instruction

Please ensure that you have read and understood the safety precautions described in the following text before using the product so that you can operate it correctly.

The safety precautions described in the following text guides you to operate the product and its accessories correctly and safely to avoid damage and loss to you, other people and the device.



### Considerations

Please observe the following guide in order not to damage the product:

**Don't assemble or dismantle the product without permission.**

The product is a type of super precise equipment. Don't try to dismantle, assemble or remodel any part of the product. Repair of the product should be made by technical personnel designated by the company.

**Avoid damage to probe of the product**

*Note: don't put the product close to strong heat source directly (such as electric iron). Otherwise, it may damage the probe of the product.*

**Product hum**

*When the product works, there is light sound of clicking every several seconds. This is normal phenomenon that the lens captures images.*

**Warning**

The warning describes the acts that may cause harm to users. Please observe the following operation in order to avoid electric shock or personal injury.

- **If the product case is damaged, don't use it continuously.**

Please contact the local distributors or agents of the company under such condition.

- **During the process of use, if the product is found with smoke,spark and the burnt smell, please stop using at once.**

In case of such condition, the product power supply should be powered off first.After the smoke and peculiar smell disappears completely, please contact the local distributors or agents of the company.

- **Don't weld the battery without permission.**

Such operation may damage the battery and result in leakage and explosion of the battery.

- **Avoid that the battery is impacted (such as collusion and falling, etc).**

Such condition may damage the battery case or result in that the battery leaks or explode.

- **Please pull off the adapter on the power socket when charging is not made.**

The adapter may get overheated if it is connected with power supply for a long time. This may cause overheating, deformation and fire.

- **Please ensure that the plug of the adapter is inserted into the specified power socket.**

The adapter plug may be different due to the regions. Please make confirmation whether the specification of the adapter is consist with the specification of electric appliances in your region. Otherwise, this may cause overheating of the equipment, electric shock, fire, chemical leakage inside the battery, explosion and other serious consequences.

- **When the plug of the adapter or wire is damaged, stop using immediately.**

Don't change the battery unless the plug of the charger is inserted into the socket completely.

- **Do not touch the electric wire with wet hands.**

It is possible to cause electric shock when touching the electric wire with wet hands. When pulling out the electric wire, hold the electric wire head rightly to pull out the wire. Don't pull off the electric wire directly. Otherwise, the electric wire may be broken, causing electric shock and fire.

- **Forbid dip the product into water caught in rain.**

If the case contact with any liquid, please wipe it dry immediately. If water or other liquid enters the inside of the instrument, please power off the power supply at once. Continuous use may result in product damage.

- **Clean the dust on the adapter plug and the data line.**

When it is exposed to dusty and dump environment for a long time, the dirt surrounding the electric equipment will accumulate moisture. This may cause short circuit and fire.

- **Don't use abradant, isopropanol or solvent to clean the enclosure of the device.**

Such operation may cause the product case to be damaged.

- **The product temperature may increase after a long time of charging.**

You may feel scorching heat when the hands touch the sensors.

- **Problem caused by water condensation**

Don't bring the instrument into low temperature environment from high temperature environment in a short time or from low temperature environment to high temperature environment.

This may result in that the inside of the instrument and appearance produce water condensation. In such condition, the instrument should be placed into portable box or plastic bag.

Before use, make it restore to the environmental temperature and take it out to use. If the product has water condensation inside, please power it off immediately. Otherwise, the instrument may be damaged. Operation is not allowed unless the water condensation disappears.

- **Avoid that the product is impacted (such as collision and falling, etc).**

Such operation may cause the product to be damaged. Please avoid such operation.

- **Long-time storage and regular charging.**

The product should be placed at a cool and dry environment if it not used for a long time. If the product installed with battery is stored for a long time, charging should be made regularly. Otherwise, the battery will run out and the service life will be shortened.

## **Preliminary Acquaintance with Infrared Thermal Imager**

For a long time, infrared thermal imaging detection technology has become an important means to ensure Industrial safety in developed countries. The application field includes electric power, metallurgy, petro-chemistry, machinery, coal, traffic, fire control and national defense, etc. It can not only carries out real-time detection at high voltage, high current and high speed operation to perform real-time detection for production and instrument but also need not power off the power supply, stop the machine or stop the production to find the potential problems and prevent occurrence of malfunction. The “non contact” modern detection technology is safe, reliable and quick. It is a type of technical revolution compared with traditional contact detection method.



The infrared thermal imaging technology is widely used in the following fields:

- Power equipment, transmission, transformer line inspection;
- Hidden fire source search in fire protection;
- Personnel search and rescue in the fire, and fire command;
- Analyze the location and heat loss of leak points in heat pipes and heating equipment;
- Determining the location of the heating fault of the operating train;
- Security department night monitoring.

## Overview

This product is an infrared camera that integrates surface temperature measurement and real-time thermal image. The traditional inferred thermometer needs to measure every component one by one while it is not necessary for infrared imaging camera, thus saving time. The potential problems may be displayed on color display screen clearly. Moreover, the central point measurement cursor is used to locate quickly and accurately to measure the temperature of the target object. In order to increase the differentiation, the product is provided with a visible light camera. The thermal images and visible images are stored in the device and can be read through USB or stored in a computer to generate a report or for print.

## **Cleaning of the Products**

Please use damp cloth or weak soap to clean the enclosure of the device. Don't use abradant, isopropanol or solvent to clean. The lens and screen should be cleaned with use of cleaning agents for professional optical glasses.

## **Lens Maintenance**

Prevent damage of the infrared lens :

- Clean the infrared lens carefully. The lens is provided with refined anti-reflection coating.
- Don't clean with force to prevent damage of the anti-reflection coating.
- Use a cleaning solution for lens maintenance, such as alcohol-based commercial lens cleaners, alcohol, and a lint-free cloth or paper towel. Compressed air tanks can be used to remove loose particles.


Clean the lens:

- The compressed air tank or dry nitrogen ion gun (if applicable) may be used to blow the loose particles on the lens surface.
- Dip the lint free cloth in alcohol.
- Squeeze the excessive alcohol in the cloth or apply the lint free cloth on dry cloth lightly.

- Wipe the lens surface by making circular motion. Then discard the cloth.
- If it is necessary to repeat above step, please use new cloth to dip with the cleaning solution to wipe.

## **Charging of the Battery and Description**

### **Use USB data line to charge:**

- This product has a built-in rechargeable battery.
- When the battery level is low, the top right of the screen will display“  ”.Please charge in time through Type-C USB interface.
- Pull off the USB line after fully charging.

### **Use recharge stand to charge:**

- 1.Unscrew the battery cover and take out the batteries.
- 2.Used the charger from the original manufacturer to charge the batteries. Install the batteries properly according to the polarity as shown on the charger.
- 3.After it is fully charged, disconnect power supply for the charger, and remove the batteries.

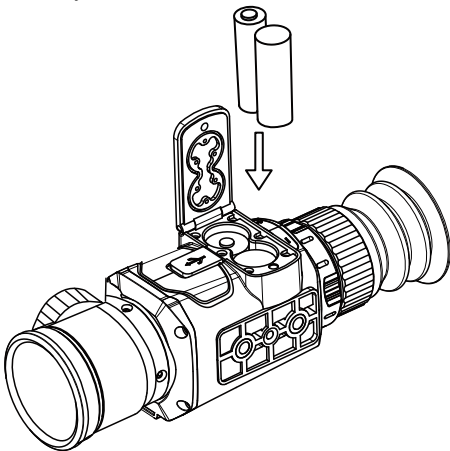


Prompt: When this product lies idle for long, it shall be charged at least every three months to prevent irreversible loss of capacity due to too low battery power arising from its own discharge as it is kept too long.

## Installing the Battery

- (1) Turn the battery compartment knob counterclockwise to open the battery compartment cover;
- (2) Install the battery in strict accordance with the positive and negative pole directions of the battery on the battery compartment cover;
- (3) Close the battery compartment cover, and turn the battery compartment knob clockwise until it is locked up.

Note: 1. Please do not use the battery whose insulating layer is damaged; 2. If the battery's positive and negative poles are wrongly connected, the device will be unable to work, and that will damage the battery.



## Performance Index

Product model	Light Chaser-384			
Infrared				
Detector type	Vanadium oxide uncooled infrared focal plane			
Resolution ratio	384x288			
Pixel size	12μm			
Focus length	25mm	35mm	54mm	75mm
Field angle	10.5°×7.9°	7.5°×5.7°	4.9°×3.7°	3.5°×2.6°
Work band	8~14μm			
NETD	≤ 40mk@25°C,@F/1.0			
Frame rate	≤50Hz			
Focusing mode	Manual			
Detection range				
Character 1.7mx0.5mx0.3m	1181m	1653m	2550m	3542m
Vehicle 4.5mx2.0mx1.5m	3125m	4375m	6750m	9375m
Recognition distance				
Character 1.7mx0.5mx0.3m	295m	413m	638m	885m
Vehicle 4.5mx2.0mx1.5m	781m	1094m	1688m	2344m
Display				
Display screen type	OLED			
Resolution ratio	1440×1080			
Display size	0.39inches			

Electronic zoom	1×/2×/4×/8×
Dioptr regulation	±5SD
Pseudo-color	White hot, Black hot, Fire hot, Rainbow, Iron red, Cold color
Hot point track	Supported
Picture in picture	Supported
Language	Simplified Chinese, Traditional Chinese, English, Russian and German
<b>Storage</b>	
Capacity	Built-in 16G EMMC(The system takes up some space and it is 13.8G actually)
Photographing	Supported
recording	Supported
Image/video format	JPG/MP4
<b>Interface</b>	
USB interface	Charging/export image and video
<b>Power</b>	
Detachable recharge- able lithium battery	1400mAh×2(battery model 18350)
<b>General technical index</b>	
Overall power consumption	≤1.8W
Time of endurance	≥5 hours
Work temperature	-20℃ ~ +60℃
Storage temperature	-30℃ ~ +70℃
Impact	≤1000G
Protection grade	IP66

<b>Size/weight</b>	
Product size	201x66x73mm
Product weight	650g

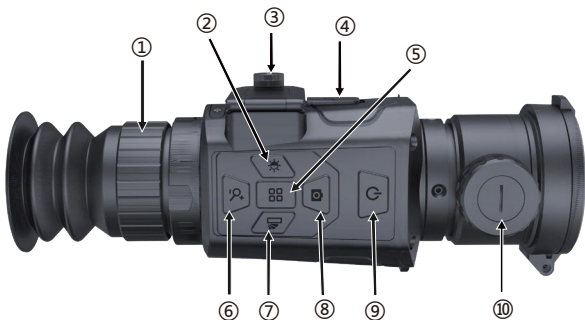
Product model	Light Chaser-640			
Infrared				
Detector type	Vanadium oxide uncooled infrared focal plane			
Resolution ratio	640×512			
Pixel size	12μm			
Focus length	25mm	35mm	54mm	75mm
Field angle	17.5°×14.0°	12.5°×10.0°	8.1°×6.5°	5.9°×4.7°
Work band	8~14μm			
NETD	≤ 40mk@25°C,@F/1.0			
Frame rate	≤50Hz			
Focusing mode	Manual			
Detection range				
Character 1.7mx0.5mx0.3m	1181m	1653m	2550m	3542m
Vehicle 4.5mx2.0mx1.5m	3125m	4375m	6750m	9375m
Recognition distance				
Character 1.7mx0.5mx0.3m	295m	413m	638m	885m
Vehicle 4.5mx2.0mx1.5m	781m	1094m	1688m	2344m



<b>Display</b>	
Display screen type	OLED
Resolution ratio	1440×1080
Display size	0.39inches
Electronic zoom	1×/2×/4×/8×
Diopter regulation	±5SD
Pseudo-color	White hot, Black hot, Fire hot, Rainbow, Iron red, Cold color
Hot point track	Supported
Picture in picture	Supported
Language	Simplified Chinese, Traditional Chinese, English, Russian and German
<b>Storage</b>	
Capacity	Built-in 16G EMMC(The system takes up some space and it is 13.8G actually)
Photographing	Supported
recording	Supported
Image/video format	JPG/MP4
<b>Interface</b>	
USB interface	Charging/export image and video
<b>Power</b>	
Detachable rechargeable lithium battery	1400mAh×2(battery model 18350)

<b>General technical index</b>	
Overall power consumption	≤1.8W
Time of endurance	≥5 hours
Work temperature	-20℃ ~ +60℃
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Impact	≤1000G
Protection grade	IP66
<b>Size/weight</b>	
Product size	201x66x73mm
Product weight	650g

## Introduction to Product Structure



①	Diopter adjustment	②	Brightness/Hot point/ Track/Left key
③	Battery compartment	④	Type-C interface
⑤	Menu/Close UI/enter	⑥	Zoom In/Refresh/ Shutter/Down key
⑦	Pseudocolor/picture in picture/right key	⑧	Photographing/ recording/up
⑨	Power/return	⑩	Focal length adjustment

**Focal length adjustment:** Adjust the focus to make the image clearer.

**Type-C interface:** used for battery charging and connecting the computer to view device photos and video files.

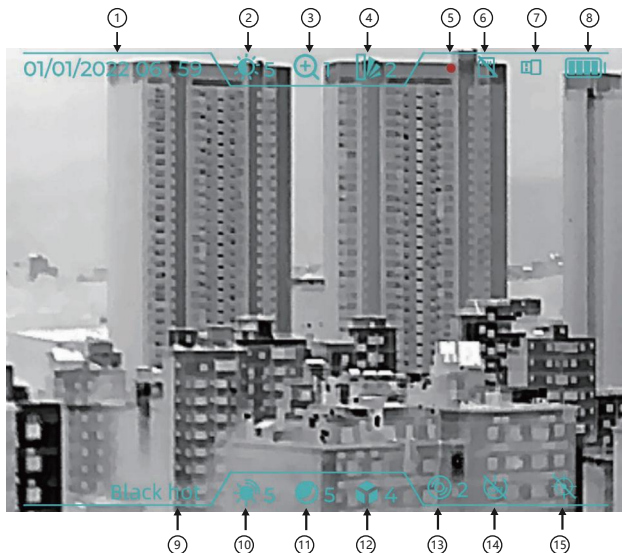
**Battery compartment:** two detachable 18350 lithium batteries.

**Diopter adjustment:** Adjust your own vision.

## Key Description

Key/state		Press	Hold down
Power key	Main interface	It can be configure as screen off or freeze frame of picture through the menu.	Pop out the shutdown prompt box to carry out shutdown.
	Menu interface	Return	——
Camera key	Main interface	Photographing	Start recording/ stop recording
	Menu interface	Upward direction	——
Brightness key	Main interface	Brightness adjustment	Hot point tracking
	Menu interface	Leftward direction	——
Zoom in key	Main interface	Zoom in(1x/2x/4x/8x)	Refresh shutter
	Menu interface	Downward direction	——
Pseudocolor key	Main interface	Pseudocolor switching	Open picture in picture/close picture in picture
	Menu interface	Rightward direction	——
Menu key	Main interface	Enter the menu	Open UI display/ close UI display
	Menu interface	Enter	Return

# Introduction to Icon of Main Interface



①	Date/Time	②	Screen brightness
③	Zoom in	④	Pseudocolor
⑤	Record	⑥	SD card full
⑦	USB connection	⑧	Battery level
⑨	Pseudocolor name	⑩	Image brightness
⑪	Image contrast	⑫	Scene mode
⑬	Correction method	⑭	Automatic shutdown
⑮	Hot point tracking		

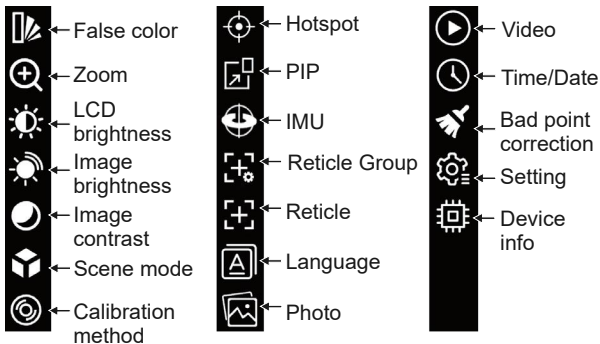
The icons will be displayed in the interface at the following conditions:

recording icon: hold down the recording key to video.

USB connection icon: when the data cable is connected to the computer;

SD card full icon: when the storage space is less than 100M.

## Menu Description



**False color:** White hot, black hot, fire hot, rainbow, iron red, cold color.

**Zoom :** Electronic amplification 1X, 2X, 4X, 8X.

**LCD brightness:** The display brightness can be adjusted to 1~10 levels.

**Image brightness:** The brightness of the infrared image can be adjusted to 1~10 levels.

**Image contrast:** The contrast of infrared image can be adjusted to 1~10 levels.

**Scene mode:** Standard, City, Jungle, or Custom modes can be selected. In the custom mode, setting can be made for image detail intensity (1~10) and denoising intensity (1~15) according to the value.

**Calibration method:** The infrared image correction method can be set as manual calibration, automatic calibration and scene calibration.

**Hotspot:** The hot point tracking of infrared images can be set as on or off.

**PIP:** The picture in picture function is set as on or off in infrared image mode.

**IMU:** Pitch angle and roll angle display, set on or off.

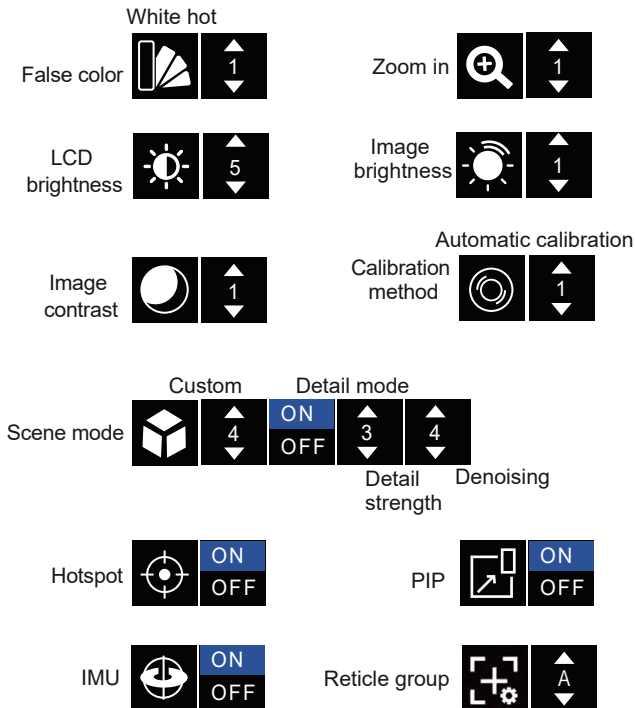
**Reticle group:** 6 components can be set, A, B, C, D, E, F.

### **Operation method:**

- Press the menu key to enter the menu;
- Press the camera key or zoom in key (up or down) to select the desired setting item, and press the pseudo color key to enter the setting;
- When setting a value, press the zoom in key (decrease) or camera key (increase). After the setting is completed, press the power key to return.

When entering the scene mode and selecting the custom mode, press the menu key again to pop up the detail mode settings. Press the brightness key or pseudo color key (Left or right) to select the

detail mode, detail intensity, or denoising intensity. After selecting it, press the zoom in key (decrease) or camera (increase) to set the numerical value. After setting is completed, Press the power key to exit (when the detail mode is selected as off, it is edge mode setting), as shown in the following figure.





**Reticle:** Select the type of scoring line, the color of the line, and set the dividing line position through the X and Y axis, and select the magnifying multiple, as shown below.

**Operation method:** Press the camera key or zoom key (up or down) to select the branch line, type, color, distance, freezing, zooming, and dividing line position, and press the power key to exit the dividing line settings.

- **Reticle:** Select the reticle and press the menu key to set the score line. 5 fixed branch lines can be set up in the branch line.

If score 1 is selected, set the type, color and distance position of score. After setting, Hold down the power key to pop up "Save parameter window?" and select OK. At this time, the parameters of score 1 have been set, as shown in the following figure.

- **Type:** Select the type, press the menu button for setting, and set 6 types of schemes.
- **Color:** Select the color, set the menu button for setting, you can set white, black, red, green, blue, cyan, 6 types of score color.
- **Distance:** Select the distance, press the menu key to enter, use the pseudo color or brightness key (select the numbers left and right), the camera key (increase the value) to Zoom in key (reduce the value), set the complete and press the menu key to exit again.
- **Freeze:** Select the freezing and press the menu key to open or pass. In the freezing, infrared images are static.
- **Zoom:** Select magnifying, press the menu button to set, you can

choose to zoom in 1x, 2x, 4X, 8X.

- X, Y axis: Press the menu key to enter, press the camera key (increase) or the zoom in key (decrease) to set the Y value, press the pseudo color (increase) or the brightness key (decrease), set the x value.



A1-1m — Reticle Group: A  
Type:1  
Distance:1m

**Language:** Set the language of the device, including simplified Chinese, traditional Chinese, English, Russian and German.

### Operation method:

Select the language Press the pseudo color key, then press the menu key to enter the language setting, press the camera key or the zoom in key (up or down) to select the language, and press the menu key to confirm and exit the language setting, as shown in the following figure.



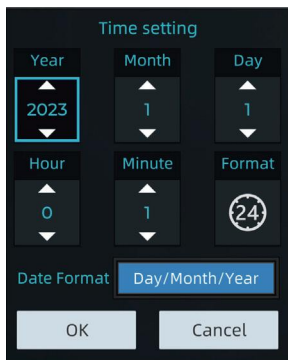
**Photo:** Photo list, view photos.

**Video:** Video list, view video.

**Time/Date:** Set the date (year, month, day) and time (hour, minute), time format (12 hours, 24 hours), and date format (year/month/day, day/month/year, month/day/year).

**Operation method:** Select the time/date, press the pseudo color key, then press the Menu key to enter, press the brightness key or the pseudo color key (left or right) to select the year, month, day, hour, minute, time format and date format.

Press the zoom in key (decrease) or the camera key (increase) to set the date and time. The time format and date format are converted by pressing the menu key. After the setting is completed, select "OK" and press the menu key to save and exit the setting, as shown in the following figure.



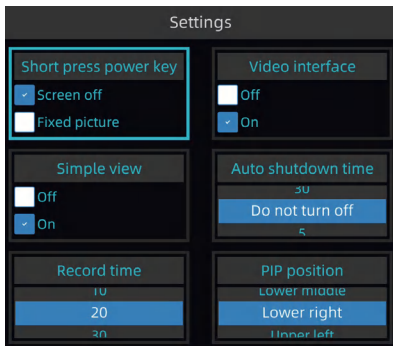
**Bad point correction:** Manual bad point correction. Press the pseudo color key and menu key to enter, press the camera key or the zoom in key (up or down) the brightness key or the pseudo color key (left or right) to adjust the cursor position, press the Menu key to confirm the removal of bad spots, and press the power key to exit the correction.

**Settings:** Set the power button short press function, recording interface, simple interface, automatic shutdown time, recording duration, and picture in picture position.

- Short press the power button: It can be configure as screen off or freeze frame of picture through the menu.
- Video interface: Set whether to bring UI display information when recording;

- Simple interface: It can be set to turn on or off the simple interface.
- Automatic shutdown time: May set no shutdown, 5 minutes, 10 minutes, 20 minutes, 30 minutes.
- Recording duration: Set the duration of each video file, including 5 minutes, 10 minutes, 20 minutes and 30 minutes;
- Position of picture in picture: Set the position of picture in picture in the center, which can be set as upper right, upper mid, upper left, lower right, lower mid and lower left.

**Operation method:** Press the brightness key or pseudo color key (left or right) to select the Short press the power button. recording interface, simple interface, automatic shutdown time, recording duration, and the position of the picture in the picture. After selecting it, press the camera key or zoom in key (up or down) to set it. Once the setting is completed, press the power key to exit.



**Device info:** View the device model, hardware version, firmware version, application version, storage space, You can also update applications, reset parameters, and carry out format for the device as shown in the figure below.

- Application update: Update software.
- Reset parameters: restore the factory settings.
- Format: Clear disk memory (mainly stored images, videos).

**Note:** After the initial device or reset parameters, the language selection will pop up when starting up, and the Home screen can be entered by selecting the language.



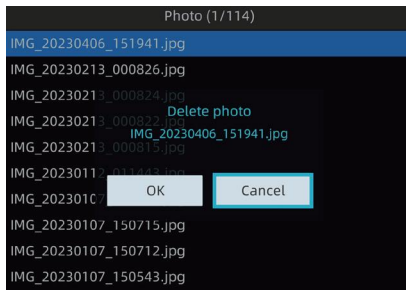
## Photos and Videos

**View photos:** Select photos from the menu, open the photo list and press the menu key to view photos. When viewing a photo, press the brightness key to view the previous photo, and press the pseudo color key to view the next photo, Press the power key to exit.

**Photo deletion:** In the photo list, pressing the brightness key will pop up a prompt to delete the photo. Select "OK" and press the menu key to delete the photo.

**View video:** In the menu video, open the video list and press the menu key to view the video.

**Delete video:** In the video list, pressing the brightness key will prompt you to delete the video. Select "OK" and press the menu key to delete the video.



## Introduction to Pseudo-color

Used to change the pseudocolor display of infrared images on the display screen. Some pseudo-color are more suitable for specific applications and can be set as needed.

The pseudo-color is divided into six colors: white hot, black hot, fire hot, rainbow, iron red and cold color.

These pseudo-colored work best under condition with high thermal contrast, allowing for additional color contrast between high and low temperatures.

Choose the right pseudo-colored to display the details of the target object. For pseudo-colored of rainbow, iron red and cold colors, the coloration outweighs the display colors, which are very suitable for high thermal contrast, and are used to improve the color contrast between high temperature and low temperature. However, white hot and black hot provide uniform linear color.

The following is the same object, but choose a picture taken by different pseudo-colored :





White hot



Black hot



Fire hot



Rainbow



Iron red



Cold color



# ABOUT US

ABOUT US

## EVERVIEW



When it comes to quality, we ensure that every product meets the highest standards so that every customer can experience our commitment to excellence. When facing customers, we always put their needs and satisfaction first and provide a service experience that exceeds expectations.

### Our Mission

Customer first, excellent quality



Become the world's leading technical solution provider in the field of night vision and thermal imaging, lead the future with innovation, become a model of sustainable development in the industry, and promote industry progress.

### Our Vision

Innovation driven, sustainable development



We adhere to the principles of honesty and transparency, make products serve customers, give back to customers with quality, continue to innovate, and promote technological development.

### Our Values

Integrity, responsibility, win-win, enterprising



Customer first, excellent quality,  
innovation-driven, sustainable  
development, integrity, responsibility, win-  
win, enterprising.



### Working Hours

Monday - Friday 7/24 Hours  
Saturday 09:00 - 18:00  
Sunday 09:00 - 18:00

Emergency:  
(+44) 7731 6209233  
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Time: 7/24 Hours

### Our Gallery

