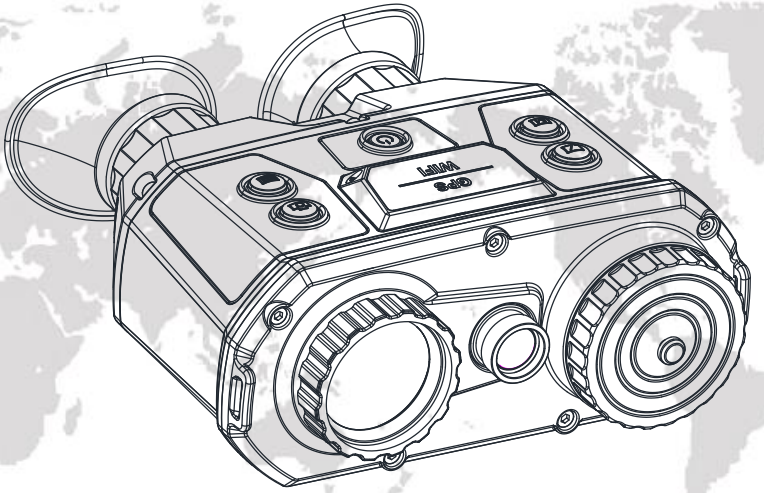
HIKVISION



Handheld Thermal Binoculars

User Manual

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User Manual

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About this Manual

This Manual is applicable to TS16 Series Dual-lens Handheld Thermal Binoculars.

The Manual includes instructions for using and managing the product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Manual is subject to change, without notice, due to firmware updates or other reasons. Please find the latest version in the company website (http://overseas.hikvision.com/en/).

Please use this user manual under the guidance of professionals.

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Regulatory Information

FCC Information

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC compliance: 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 particdular 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.

This equipment should be installed and operated with a minimum distance 20cm between the radiator and your body.

FCC Conditions

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

EU Conformity Statement

This product and, if applicable, the supplied accessories are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the Radio Equipment Directive 2014/53/EU, the EMC Directive 2014/30/EU, the RoHS Directive 2011/65/EU.



2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: www.recyclethis.info.



2006/66/EC (battery directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: www.recyclethis.info.

Warnings and Cautions

- All the electronic operation should be strictly compliance with the electrical safety regulations, fire prevention regulations and other related regulations in your local region.
- Please use the power adapter, which is provided by normal company. The power consumption cannot be less than the required value.
- Do not connect several devices to one power adapter as adapter overload may cause over-heat or fire hazard.

- Do not drop the device or subject it to physical shock, and do not expose it to high electromagnetism radiation. Avoid the equipment installation on vibrations surface or places subject to shock (ignorance can cause equipment damage).
- Do not place the device in extremely hot (refer to the specification of the device for the detailed operating temperature), cold, dusty or damp locations, and do not expose it to high electromagnetic radiation.
- The device cover for indoor use shall be kept from rain and moisture.
- Exposing the equipment to direct sun light, low ventilation or heat source such as heater or radiator is forbidden (ignorance can cause fire danger).
- Do not aim the device at the sun or extra bright places. A blooming or smear may occur otherwise (which is not a malfunction however), and affecting the endurance of sensor at the same time.

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About This Manual

This document introduces the TS16 Series Handheld Thermal Binoculars.

It covers what is handheld thermal binoculars, device powering on/off, picture management, how to set thermal view/visible light view. Besides, it shows concrete functions and descriptions of the binoculars.

Overview of Contents

This document contains the following chapters, and appendixes:

Chapter 1 Overview introduces the Handheld Thermal Binoculars, including the main description, major functions, appearance, and interface/menu description.

Chapter 2 Device Operation shows how to charge, power on/off the binoculars, and how to connect the cables.

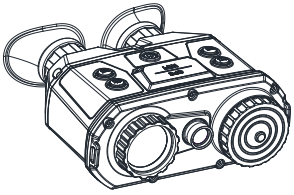
Chapter 3 Binoculars Setup describes the binoculars focus, digital zoom, brightness and contrast configuration of the image and the screen.

Chapter 4 Capture and Video shows you the way to view thermal view and visible light view, and fusion views. Besides, it shows you how to capture snapshots and record videos.

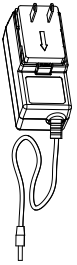
Chapter 5 Appendix lists the dimensions of the device, and the emissivity value of common materials for reference.

1 Overview

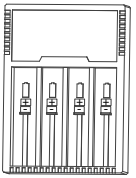
1.1 Box Content



Thermal Binoculars (×1)



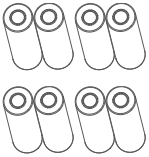
Power Adapter (×1)



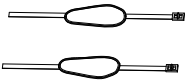
Battery Charger (×1)



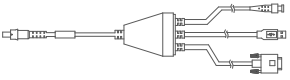
Manual (×1)



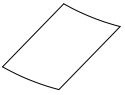
Battery (×8)



Straps (×2)



Aviation Plug Cables (×1)



Non-dust Cloth (×1)

1.2 Description

The handheld thermal binoculars (*binoculars* for short) is a pair of binoculars with both thermal observation function and target searching function. In harsh conditions, such as in total dark or under extreme low illumination, you can observe the long-distance targets with the binoculars.

The binoculars are well-designed, and easily adopted for patrol and outdoor activities in the night.

1.3 Functions

Thermal View

Device detects the real-time temperature, and display it on the screen.

Fusion

Device can display fusion of thermal view and optical view.

Palette

Device supports multiple palettes, and you can set the palette mode according to the scene.

Wi-Fi Hot Spot

Device can capture snapshots, record videos, and set parameters via APP after being connected to your phone.

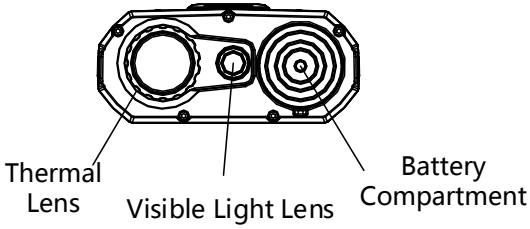
GPS Function

The device can be located with GPS system.

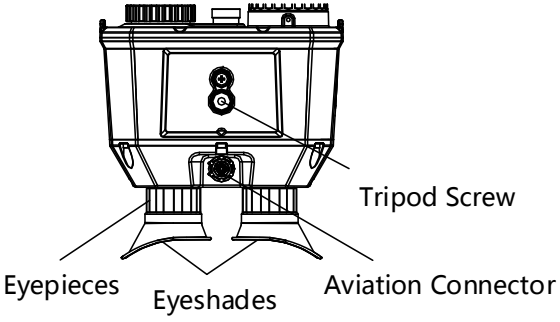
1.4 Appearance

1.4.1 Components

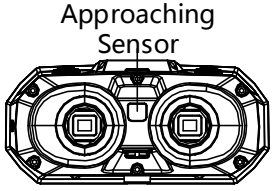
Front View



Top View



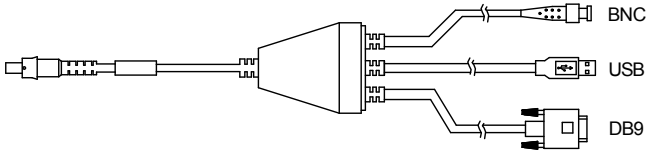
Rear View



1	Eyeshades	Cover the eyes.

2	Eyepieces	View from there.
3	Visible Light Lens	Let the visible light in.
4	Thermal Lens	Let the infrared light in.
5	Battery Compartment	The battery is here.
6	Tripod Screw	Install the binoculars on tripod.
7	Aviation Connector	Connect with the cables. See *1.4.2*.
8	Approaching Sensor	Detect whether human eyes are approaching to save power. If it detected eyes, the OLED screen turns on, otherwise the OLED screen is off.

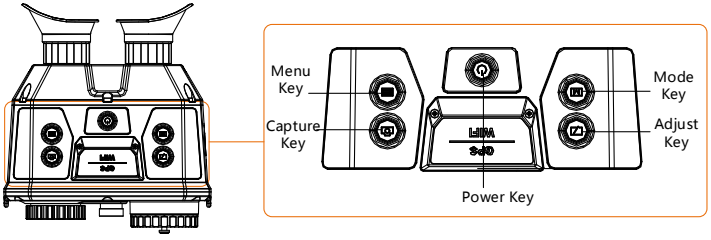
1.4.2 Cables Description



1	BNC	Connect it to the display screen.
2	USB	Connect it to your PC to backup videos/images.
3	DB9	Reserved.

1.4.3 Key Description

The main keys of the binoculars are shown below.



For the descriptions of the menu buttons, see the table below.

	Adjust Key	Press the key to switch between **Near**, **Middle**, and **Far** in fusion mode**.** Hold the key to correct nonuniformity of display.
	Mode Key	Press the key to switch the pallets. Hold the key to adjust the digit zoom.
	Power Key	Press the key to emphasize the high-temperature target in the view in fusion mode. Hold the key to power on/off the device.
	Capture Key	Press the key to capture the view. Hold the key to start/stop recording.
	Menu Key	Press the key to switch between **White Hot** mode and **Black Hot** mode. Hold the key to enter the menu.

2 Device Operation

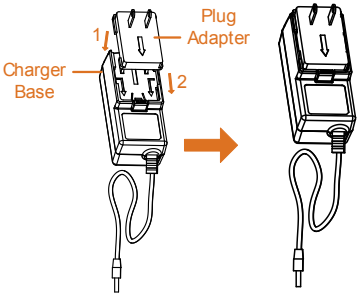
2.1 Device Charging

Purpose:

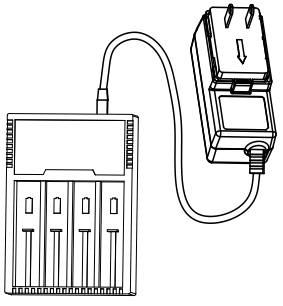
For the first use, and when the device is running low, charge the batteries with your charger.

Steps:

1. Take the proper plug adapter.
2. Push and hold it, at the mean time slide it toward the inside to assemble the power adapter.



3. Connect the power adapter to the battery charger.



4. Insert the batteries in the charger with positive/negative terminals corresponded.

   Note:

When the charger is powered on, the LCD display automatically lights up, and all the battery. The charger will detect the battery and charge it.

1	Model & battery bars	Standby mode
2	Unlighted	Power-saving mode Press any button to activate it.
3	Err	Battery is damaged.
4	Blinking	Battery is being charged.
5	Chg.Finish	Battery is fully charged.

5. Complete battery charging and disassemble the battery.

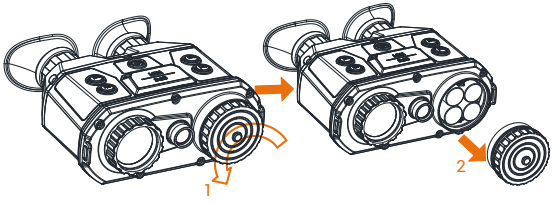
2.2 Battery Installation

Purpose:

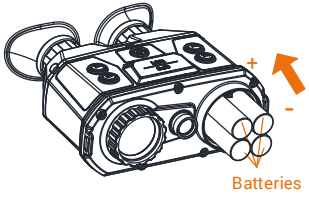
Insert the batteries into the battery compartment.

Steps:

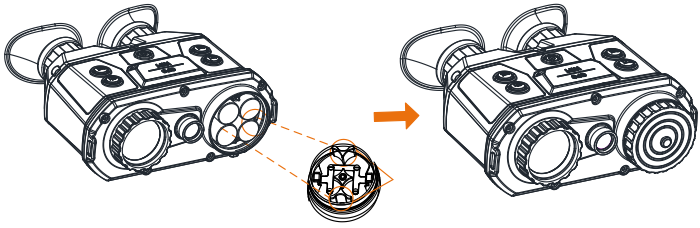
1. Rotate the battery cover anticlockwise to disassemble it.



2. Insert four batteries with positive/negative marks match with that of the battery compartment



3. Align the shape of battery cover with that of the batteries and cover the batteries.
4. Rotate the battery cover clockwise to fix it.



2.3 Power On/Off

2.3.1 Power On

Step:

When the binoculars is sufficiently charged, press the ⏻ key to power on the binoculars.

Notes:

- See the battery icon for the electricity quantity. 🔋 means battery is fully charged, and ▭ means that the battery runs low.
- When the Low power note shows, charge the battery.

2.3.2 Power Off

Step:

When the binoculars is running, hold the ⏻ key for four seconds to power off the binoculars.

2.4 Cable Connection

⚠ Attentions:

- Do NOT drag the cables when you do the connecting, or when it is connected to the binoculars.

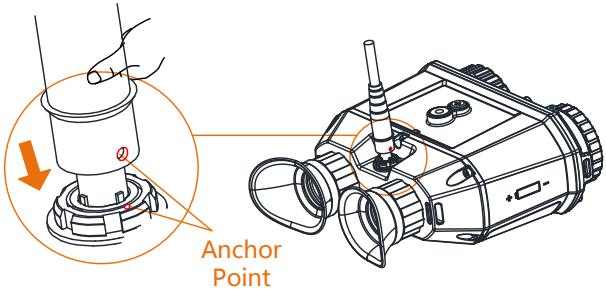
- To plug in/out the cable, hold the cable end and then plug in/out it. Do NOT twist the cables, or the pins inside may be damaged.

Purpose:

Connect the binoculars with the aviation cable, and you can connect the device to your PC via USB interface or the display via the BNC interface.

Step:

Connect the aviation cable with the aviation Interface. Make sure the anchor points match with each other and insert the cable.



To disconnect the cable, lift the cable.

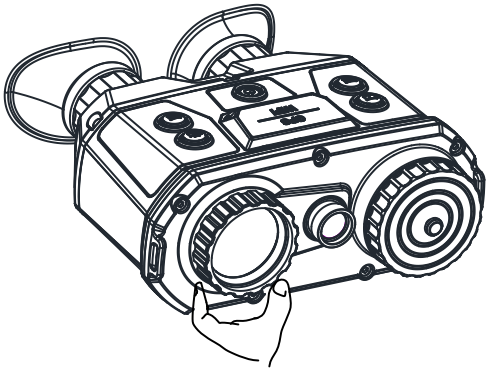
2.5 Focus

Notes:

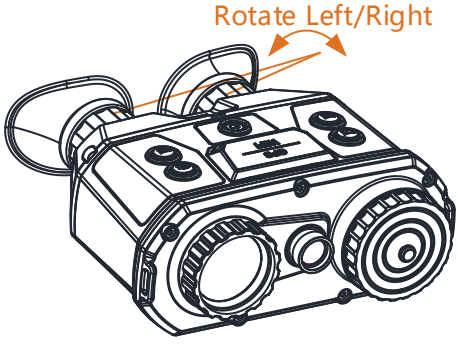
Do NOT touch the lens directly with your finger, or place any sharp objects near them.

Steps:

1. Slightly rotate the focus wheel to focus the objective lens.



2. Slightly rotate the focus wheel to focus the objective lens.



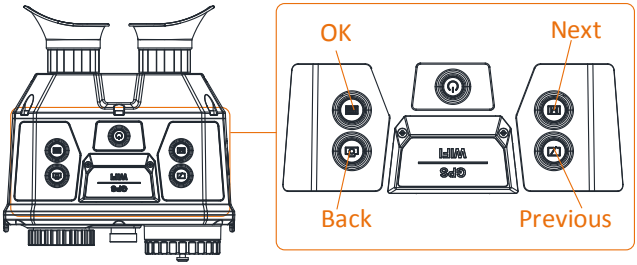
3 Binoculars Setup

3.1 Menu Description

Step:

Hold the button to show the menu.

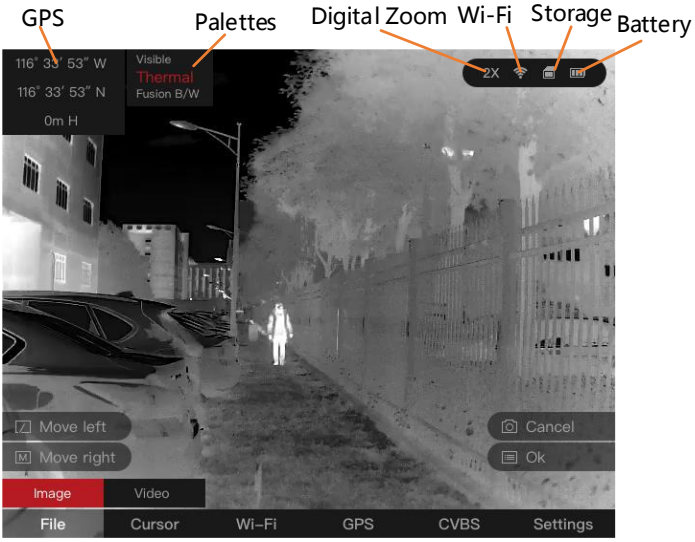
In the menu, the direction keys, OK key, and the Exit key are shown below.



See the figure below for the menu interface.

Note:

The figure below is only for reference, the font size is readjusted for better viewing.



3.2 Local Output

Before you start:

Connect the binoculars to the display unit via CVBS interface of the aviation plug. Refer to Section *2.4*.

Purpose:

View the binoculars image on the display unit for details.

Steps:

1. Hold the key to show the menu of binoculars.
2. Press the key and key to move the cursor and open **CVBS ON/OFF** submenu.
3. Press the key to confirm.

Note:

To disable the local output, go to **CVBS ON/OFF** submenu and press the key.

3.3 File Export

Before you start:

Connect the binoculars to your PC via USB interface of the aviation plug. Refer to Section *2.4*.

Purpose:

Export the videos and snapshots with your PC.

Steps:

1. In your PC, go to the **Removable Disk**.
2. Double-click to open the disk. View or copy the videos or snapshots.
3. Disconnect the binoculars with the PC.

3.4 Display Settings

3.4.1 Display Brightness & Contrast

Adjust the brightness and contrast of the screen display.

Note:

This adjustment also affects the brightness and contrast of menu, icons, etc.

- Screen Brightness

Steps:

1. Hold the key to show the menu of binoculars.
2. Press the key and key to move the cursor to **Settings** submenu.
3. Press the key to confirm.
4. Press the key and key to move the cursor to **Display Brightness** submenu.
5. Press the key to confirm.
6. Press the key and key to set the brightness value. The higher, the brighter.

- Screen Contrast

Steps:

1. Hold the key to show the menu of binoculars.

2. Press the key and key to move the cursor to **Settings** submenu.
3. Press the key to confirm.
4. Press the key and key to move the cursor to **Display Contrast** submenu.
5. Press the key to confirm.
6. Press the key and key to set the contrast value. The higher, the more contrasting.

3.4.2 Image Brightness & Contrast

Adjust the brightness and contrast of the image.

Note:

This adjustment only affects the brightness and contrast of image.

- Image Brightness

Steps:

1. Hold the key to show the menu of binoculars.
2. Press the key and key to move the cursor to **Settings** submenu.
3. Press the key to confirm.
4. Press the key and key to move the cursor to **Image Brightness** submenu.
5. Press the key to confirm.
6. Press the key and key to set the brightness value. The higher, the brighter.

- Image Contrast

Steps:

1. Hold the key to show the menu of binoculars.
2. Press the key and key to move the cursor to **Settings** submenu.
3. Press the key to confirm.
4. Press the key and key to move the cursor to **Image Contrast** submenu.
5. Press the key to confirm.
6. Press the key and key to set the contrast value. The higher, the more contrasting.

3.4.3 Cursor Display

Purpose:

Display the cursor on the live view, and the distance towards the target can be measured.

Steps:

1. Hold the key to show the menu of binoculars.
2. Press the key and key to move the cursor to **Cursor** submenu.



3. Press the key to confirm.
4. Manually move the binoculars, align the horizontal line with the target bottom and measure the distance to the target.
5. Hold the key to exit.

Note:

To disable the cursor, go to **Cursor** submenu and press the key.

3.4.4 Digital Zoom

Purpose:

Enable the digital zoom function to enlarge the image display.

Steps:

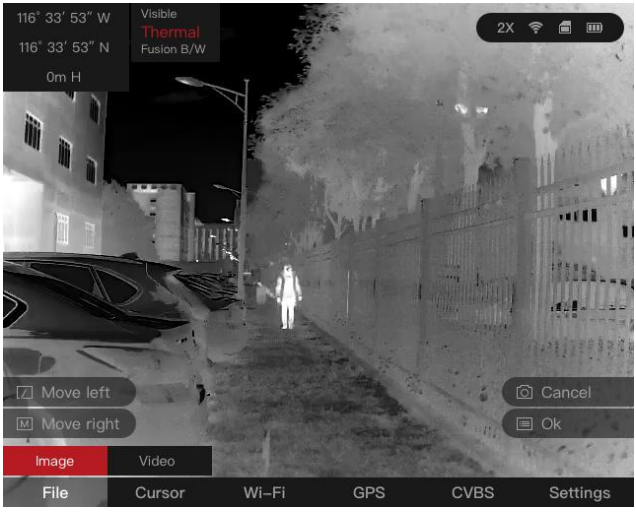
1. Hold the M key to switch the digital zoom of binoculars. The value of digital zoom can be set to 1X, 2X, 3X, 4X.

3.4.5 OSD Setting

Steps:

1. Hold the ☰ key to show the menu of binoculars.
2. Press the ◪ key and M key to move the cursor to **Settings** submenu.
3. Press the ☰ key to confirm.
4. Press the ◪ key and M key to move the cursor to **OSD** submenu.
5. Press the ☰ key to switch on/off OSD.

3.5 Palettes Settings



Purpose:

The binoculars has dual-lens: thermal and visible light lens. You can set the thermal/optical view to show thermal channel, visible light channel, or both them combined. For thermal view, you can set the palettes.

Step:

1. In the live view interface, press the [M] key to display the palettes menu.
2. Press the [M] key to switch the view mode.

Thermal	In thermal mode, the device displays the thermal view. Press the [M] key to switch between white hot and black hot mode.
Visible	In visible mode, the device displays the view of visible light channel.
Fusion B/W	It displays the combined view of thermal channel and optical channel in black and white.
City	Applicable to city environment.
Jungle	Applicable to jungle environment.
Desert	Applicable to desert environment.
Sea	Applicable to sea environment.
Snow	Applicable to snow environment.

Result:

After setting the palette, the current palette, next palette, and the previous palette are shown in the upper right corner.



3.6 Wi-Fi

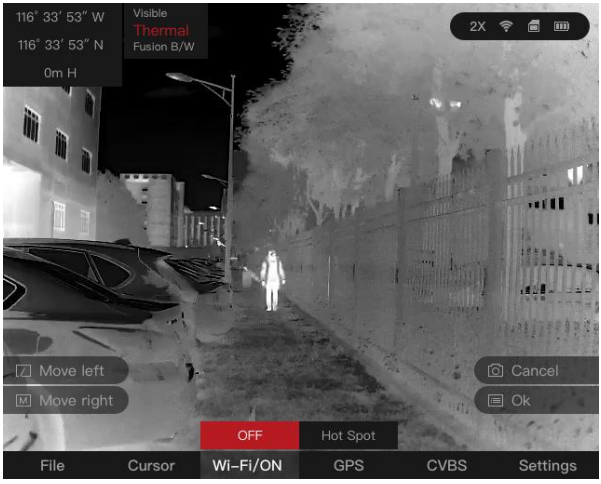
Purpose:

Connect your phone to the binoculars via Wi-Fi, you can configure the parameters and realize functions of the device.

Steps:

1. Hold the [≡] key to show the menu of binoculars.

2. Press the key and key to move the cursor and open **Wi-Fi** submenu.
3. Press the key to switch on Wi-Fi.



4. Setting the Wi-Fi name and password of your phone or the router as follow:
   - Wi-Fi Name: WLAN-IPTP.
   - Wi-Fi Password: abcd1234.
5. Search the "iVMS-4500" on App Store (iOS System) or Google Play TM (Android System) to download and install the app.
6. Open the APP and connect your phone with the device. You can view the interface of binoculars on your phone.

3.7 Hot Spot

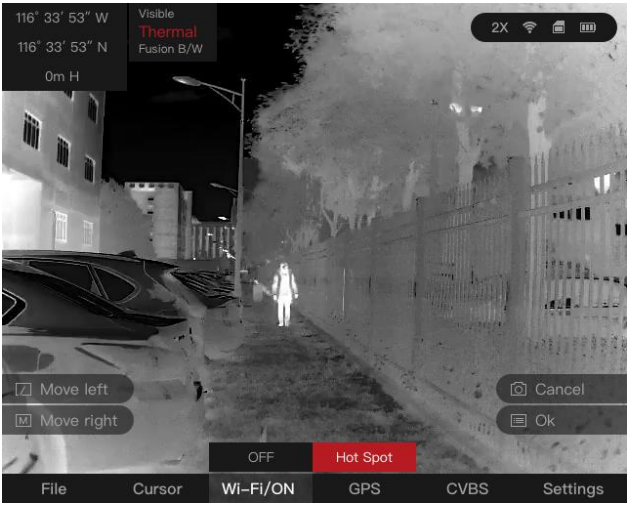
Purpose:

Connect your phone to the hot spot of the binoculars, you can configure the parameters and realize functions of the device.

Steps:

1. Hold the key to show the menu of binoculars.
2. Press the key and key to move the cursor to **Wi-Fi** submenu.
3. Press the key to confirm.

4. Press the key and key to move the cursor to **Hot Spot** submenu.
5. Press the key to confirm.



6. Turn on the WLAN of your phone and connect to the hot spot.
   - Hot Spot Name: HIK-IPTS Serial No.
   - Hot Spot Password: Serial No.
7. Search the "iVMS-4500" on App Store (iOS System) or Google Play TM (Android System) to download and install the app.
8. Open the APP and connect your phone with the device. You can view the interface of binoculars on your phone.

3.8 GPS

Steps:

1. Hold the key to show the menu of binoculars.
2. Press the key and key to move the cursor to **GPS** submenu.
3. Press the key to switch ON or OFF.

3.9 Reset Default Settings

Purpose:

Restore the device to default settings.

Steps:

1. Hold the key to show the menu of binoculars.
2. Press the key and key to move the cursor to Settings submenu.
3. Press the key to confirm.
4. Press the key and key to move the cursor to Reset submenu.
5. Press the key to confirm.

4 Capture and Video

4.1 Capture Settings

4.1.1 Capture Snapshots

Step:

In the live view mode, press the key to capture a snapshot.

When capturing succeeded, it shows **Capture succeeded.**

When capturing failed, it shows **Capture failed.**

4.1.2 View Snapshots

Steps:

1. Hold the key to show the menu of binoculars.
2. Press the key and key to move the cursor to **File>Image** submenu.
3. Press the key to confirm.
4. Press the key and key to select snapshot.
5. Press the key to view the selected snapshot.

4.1.3 Delete Snapshots

Attention:

Once a snapshot is deleted, it can NOT be recovered. Do this operation with attention.

Steps:

1. Hold the key to show the menu of binoculars.
2. Press the key and key to move the cursor to **File>Image** submenu.
3. Press the key to confirm.
4. Press the key and key to select snapshot.
5. Hold the key to delete the selected snapshot.

Or

You can delete the snapshot while viewing the live view.

4.2 Video Settings

4.2.1 Video Recording

Steps:

1. In the live view mode, hold the key to record videos.
   When the recording time shows on the top, it starts to record.
2. When the desired video is recorded, hold the key to stop recording.

4.2.2 Video Playback

Steps:

1. Hold the key to show the menu of binoculars.
2. Press the key and key to move the cursor to **File>Video** submenu.
3. Press the key to confirm.
4. Press the key and key to select video.
5. Press the key to play the selected video.

4.2.3 Delete Snapshots

Attention:

Once a snapshot is deleted, it can NOT be recovered. Do this operation with attention.

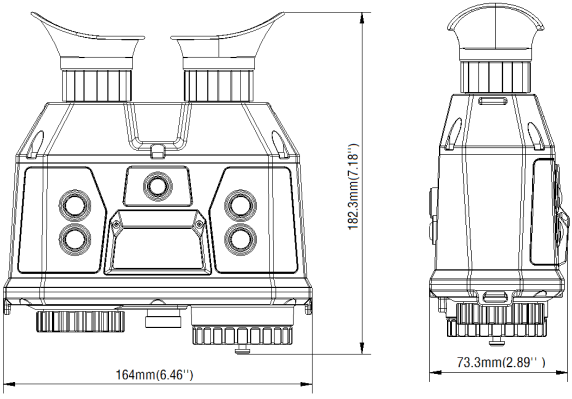
Steps:

1. Hold the key to show the menu of binoculars.
2. Press the key and key to move the cursor to **File>Video** submenu.
3. Press the key to confirm.

4. Press the key and key to select video.
5. Hold the key to delete the selected video.

5 Appendix

5.1 Dimensions



5.2 Common Material Emissivity Reference

Material	Emissivity
Human Skin	0.98
PCB	0.91
Cement Concrete	0.95
Ceramics	0.92
Rubber	0.95
Paint	0.93
Wood	0.85
Asphalt	0.96
Brick	0.95
Sand	0.90
Soil	0.92
Cotton	0.98
Cardboard	0.90
White Paper	0.90
Water	0.96



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