CABIN

Thermal Imaging Monocular

Operating Manual

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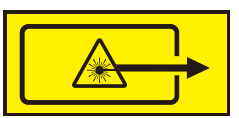
警告！
WARNING!



ENGLISH

SPECIFICATION

Model	CBL19	CBL25
Microbolometer		
Resolution, pixels	384 x 288	
Pixel size, µm	12	
NETD, mk	≤40	
Frame refresh rate, Hz	50	
Optical Specifications		
Objective Lens, mm	19	25
Field of view, degree	13.8 x 10.4	10.5 x 7.9
Optical magnification, x	2 ~ 8	2.5 ~ 10
Digital zoom, x	1 / 2 / 3 / 4	
Exit pupil diameter, mm	20	
Focusing range of eyepiece, D	-5 ~ +5	
Detection range, m (Target size: 1.7mx0.5m, P(n)=99%)	980	1300
Display		
Type	LCOS	
Resolution, pixels	1280 x 960	
Power Supply		
Battery / Capacity / Output voltage	Li-ion battery pack / 3.1 Ah / 3.6 V	
Max. battery life (t=25°C)*, h	7.5	
External power supply	5V (Type C)	
Operational Specifications		
Amount of built-in memory, GB	16	
IP rating	IP67	
APP compatibility	Support	
Operating temperature, °C	-20 ~ +50	
Dimension, mm	165 x 50 x 85	
Weight, g	≤ 380	

* Actual operation time depends on the intensity of Wi-Fi use and the built-in video recorder.

❖ Improvements may be made to the design and software of this product to enhance its useful features. Technical parameters of the device may be improved without prior notice of the customer.

PACKAGE CONTENTS

- Cabin Series Thermal Imager
- Portable bag
- IBP-2 battery pack × 2
- IBC-2 battery charger
- Power adapter
- USB cable with Type C and video output
- Hand strap
- Neck strap
- Cloth for cleaning optics
- Warranty card
- Operating manual

DESCRIPTION

Cabin Series Thermal Imaging Monocular is specially designed for outdoor night vision. Cabin has powerful performance, no matter it is day or night, and no matter how bad weather conditions are (such as rain, snow, fog, and haze, etc.). Unaffected by the strong light and requiring no external light source, it can even observe the targets hidden behind obstacles (such as branches, grass, and bushes, etc.). Cabin is small and lightweight, that is easy and comfortable to carry and operate with one hand. And its battery can be quickly removed. With exquisite functions and the built-in LED light, Cabin can be widely used for hunting, searching, and positioning under various outdoor conditions.

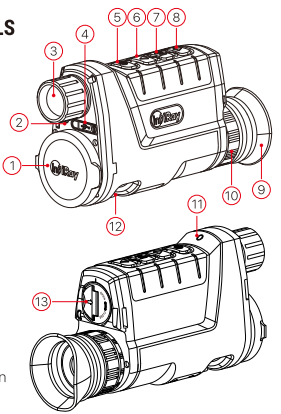
DISTINGUISHING FEATURES

- 12μm self-developed thermal detector
- High image quality
- Display off function
- Lightweight and compact
- HD micro display
- Quickly removable battery pack
- Zooming LED indicator
- Ultraclear mode for harsh weather conditions
- Stadiametric rangefinder function
- Long detection range
- Build-in memory, support photographing and video recording
- Support APP connection via Wi-Fi
- Built-in digital compass and motion sensor
- Defective pixel calibration function
- Convenient user interface

UNITS AND CONTROLS

1. Lens cap
2. Laser indicator*
3. LED light
4. Type C port
5. Power button
6. Up/Zoom button
7. Menu button
8. Down/Photo button
9. Eyeshade
10. Eyepiece adjustment
11. Power indicator
12. Lens focus knob
13. IBP-2 battery pack

* The laser and cursor function may be disabled due to the legal restrictions in your countries and regions.



Power indicator **(11)** displaying the current status of the device

Color	Status	Operating Mode
●	Normal	Power on/ fully charged
	Flashing	Standby
●	Flashing	Less than 10% battery level
●	Normal	Charging

BUTTON OPERATIONS

Button	Device status/ operation mode	Short press	Long press
Power button	The device is off.	--	Power on device
	Home screen	Calibration	Power off the device / Standby
	Standby mode	Wake up the device	--
	Shortcut menu/ Main menu	Return to the upper menu	--
	Defective pixels calibration interface	Add / delete defective pixels	--
Menu button	Home screen	Open the shortcut menu	Open the main menu
	Shortcut menu	Adjust the parameter	Exit the shortcut menu
	Main menu	Confirm parameter / enter the submenu	Save and exit to the home screen
	Laser cursor calibration interface	Enable/disable the cursor movement	Save and exit to the home screen
	Defective pixels calibration interface	Enable/disable the cursor movement	Save or cancel the calibration
Up/ Zoom button	Home screen	Magnification from ×2 - ×8	Turn the PIP function on/off
	Shortcut menu / main menu	Navigation up	--
	Laser cursor calibration/ Defective pixels calibration interface	Move the cursor up/ left by one pixel	Quickly move the cursor up/ left
Down/ Photo button	Home screen	Photographing	Start video recording
	Video recording	Photographing	Stop and save video recording
	Shortcut menu / main menu	Navigation down	--
	Laser cursor calibration/ Defective pixels calibration interface	Move the cursor down/ right by one pixel	Quickly move the cursor down/ right
Up+ Menu	Home screen	Turn the laser on /off	Turn on/off the stadiametric rangefinder function
Down+ Menu	Home screen	Turn on/off or adjust the LED light	Turn the hotspot tracking on/off

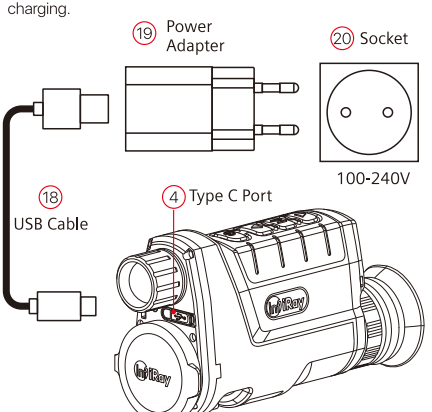
Note: Cabin's laser function is hidden by default. When used for the first time, please press and hold the **Up + Menu + Down** buttons for more than 10s to unhide the laser function after the sound of the shutter clicks.

BATTERY AND SAFTY

Cabin is supplied with a quickly removable 18650 Li-ion battery pack, which enabled the device to be used for up to 7.5h. The battery should be fully charged before first use.

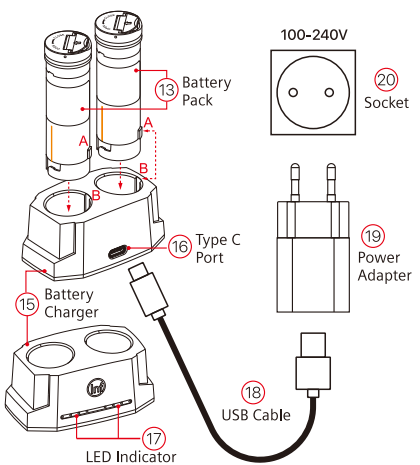
Method 1: Charging with Type-C Port

- Align the orange vertical line on the battery pack with the orange horizontal line next to the battery compartment on the Cabin, and install the battery pack into the battery compartment of the product. For details, see **Battery Pack Installation**.
- Connect the Type C end of the data cable **(18)** to the Type C port **(4)** of the product.
- Connect the other end of the data cable **(18)** to the power adapter **(19)** that comes with the product, or connect to another USB power socket with a rated output voltage not exceeding 5V.
- Plug the adapter **(19)** into a 100-240V power socket **(20)** for charging.



Method 2: Charging with Battery Charger

- Align the positioning block **(A)** of the battery pack **(13)** with the groove **(B)** of the battery charger **(15)**, and insert the battery pack **(13)** into the battery charger **(15)**.
- Connect the plug of the USB Type-C cable **(18)** to the USB connector of the power adapter **(19)**. Plug the power adapter **(19)** into a socket 100–240V **(20)** (110V for US).
- Connect the other end of the USB cable **(18)** to the Type-C port **(16)** of the battery charger **(15)**.
- After finishing the above steps, the LED indicator **(17)** on the battery charger **(15)** will display the battery charge state.
- After the battery is fully charged, remove the battery pack from the battery charger.



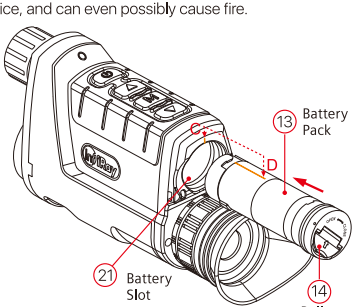
Battery charge status (see table).

LED Indicator	Battery charge status
◐	Battery level is from 1% to 25%.
● ◐	Battery level is from 25% to 50%.
● ● ◐	Battery level is from 50% to 75%.
● ● ● ◐	Battery level is from 75% to 99%.
● ● ● ●	Battery is fully charged.

Note: Two batteries can be charged at the same time: the second slot is designed for it.

Battery Pack Installation

- Turn up the puller **(14)** on the battery pack **(13)**, and align the orange line **(D)** on the battery pack **(13)** with the orange line **(C)** on the battery slot **(21)** and push the battery pack **(13)** into the battery slot **(21)**.
- When the battery pack is completely inserted into the battery slot, turn the puller **(14)** clockwise to lock the battery pack.
- Close the puller **(14)**, and the battery pack is completely installed.
- Cabin can only be powered by this battery pack. If other battery packs are used, it may cause irreparable loss, damage to the device, and can even possibly cause fire.



Safety Measures

- Use this battery holder to charge the battery pack only. Otherwise it will cause irreparable damage to the battery pack or holder and even may cause fire.
- Before a long storage time, the battery pack should be partially charged, not fully charged or discharged.
- Do not charge the battery immediately after you bring it from the cold to the warm. Wait 30 to 40 minutes for it to warm up.
- Do not use the charger if it is modified or damaged.
- The device should be charged at a temperature of 0°C~+45°C. Otherwise the battery life will be significantly reduced.
- When charging, please don't leave the battery unattended.
- Do not expose the battery to high temperature or open flame.
- Do not immerse the battery in water.
- The battery pack has short circuit protection. But situations that may lead to short circuits should be avoided.
- Do not charge the battery for more than 24 hours after it is already fully charged.
- It is not recommended to connect third-party devices that consume more power than allowed.
- Do not disassemble or modify the battery pack without professional instructions; Do not knock or drop the battery pack.
- The recommended operating temperature for the device is -20°C~+50°C; Do not use the device beyond this temperature range, which may shorten the battery life.
- When the device is used under sub-zero temperature, the battery capacity drops, which is normal and does not indicate a defect.
- Please keep the battery pack out of the reach of children.

EXTERNAL POWER SUPPLY

Cabin supports external power supply, such as the portable power source (5V).

- Connect the external power supply to the Type-C port **(4)** of the device.
- The device will automatically switch to the external power supply and charge the internal battery pack at the same time.
- At this time, the battery icon on the display will become to the charging icon and the power indicator will turn orange, and then turn green after the battery is fully charged.
- If an external power supply is connected, but no battery pack is installed, the battery icon will become a USB icon and the power indicator will turn green.
- When the external power supply is disconnected, Cabin will automatically switch to the battery pack power supply and will not shut down.

OPERATION

WARNING! The lens of Cabin must not be pointed at any sources of intense energy, such as laser-emitting devices or the sun. This may damage the electronic components in the device. Damage caused by failure to comply with the operating guidelines is not covered under warranty.

- Remove the **lens cap (1)**. Press and hold the **Power button (5)** for 2s to power on the device. Then, the home screen appears after 3s.
- Rotate the **eyepiece diopter adjustment (10)** to adjust the resolution of the icons on the display. After the adjustment is completed, for the same user, when using it again there is no need to adjust the diopter again.
- Rotate the **lens focus knob (12)** to focus on the object observed.
- Set the image mode: Press the **Menu button (7)** to open the shortcut menu, and set the image palette mode, which is white-hot, black-hot, palette, red-hot, and highlight. The icon on the top status bar is updated in real-time.
- Settings of the screen brightness, image sharpness, image mode, and digital zoom (Refer to the **Shortcut Menu** section in this manual for details).

- After using, press and hold the **Power button (5)**, and the shutdown countdown screen will appear. When the countdown counts from 3 to 0, the device shuts down. Then, you can release the power button. The current status will be automatically saved after shutdown. During the shutdown data saving period, do not cut off the power, otherwise the data will not be saved.

- If you release the button before the end of the countdown, the device will be on standby. You can wake it up with a short press of the **Power button (5)**.

CALIBRATION

When the image is degraded or uneven, it can be improved by calibration. Calibration can balance the background temperature of the detector and eliminate the defects in the image.
There are three calibration modes: Automatic shutter calibration (A), Manual shutter calibration (M), and Background calibration (B).
Select the required mode in "**Calibration Mode**" of the main menu.

- **Automatic shutter calibration (A)**: The device will automatically perform shutter calibration according to the software algorithm. There is no need to close the lens cover (the internal shutter covers the sensor). Before automatic calibration, there will be a 5s countdown prompt behind the shutter icon in the status bar, that can be cancelled this calibration with a short press of the **Power button (5)** during countdown. In this mode, you can also press the **Power button (5)** for manual shutter calibration.
- **Manual shutter calibration (M)**: On the home screen, press the **Power button (5)** briefly to perform the calibration without closing the lens cap (the internal shutter covers the sensor).
- **Background calibration (B)**: Close the lens cap and short press the **Power button (5)**. A text prompt will appear on the screen as "Cover lens during calibration!". The background calibration will start after 2s. Remove the lens cap after calibration.

DIGITAL ZOOM

The Cabin series supports 1–4 times magnification of images to increase visual magnification.

- On the home screen, press the **Up/Zoom button (6)** to circularly zoom the image.
- The visual amplification corresponding to 1–4 times magnification of the Cabin CBL19 series is 2×, 4×, 6×, and 8× respectively, which are displayed in the top status bar.

PHOTOGRAPHING AND VIDEO RECORDING

The Cabin series is equipped with a built-in 16 GB memory card, which allows photographing and video recording. The image and video files will be named by date, so it is recommended to set the system date and time in the main menu ("**Main Menu > Settings > Date**"), or synchronize the system date and time in the settings page of the App before photographing and video recording. For specific steps, see the Operating Instructions for the app that can be downloaded from the official website **www.infirayoutdoor.com**.

Photographing

- On the home screen, short press the **Down/Photo button (8)** to take a photo. The image will be frozen for 0.5 seconds, and a photo icon ( )appears in the upper right corner of the screen.
- The photographed pictures are stored in the built-in memory card.

Video Recording

- On the home screen, press and hold the **Down/Photo button (8)** to start the video recording.
- A recording icon and a tooltip showing the recording time will appear in the upper right corner of the display. The time format is 00: 00:00 (hours: minutes: seconds).

- During recording, you can also take a photo by pressing the **Down/Photo button (8)**.
- Stop the recording and save the video by pressing and holding the **Down/Photo button (8).**
- Image and video files are stored in the built-in memory card after photographing and video recording are turned off.

Note

- You can enter and work on the menu during video recording.
- The maximum duration of a video recording file is 10 minutes. When it's more than 10 minutes, the video will be automatically recorded onto a new file.
- The number of files is limited by the capacity of the device's built-in memory. It is recommended to check the remaining capacity of the memory card regularly, and transfer videos and images to other media to free up the space on the memory card.
- The captured video or image does not display interface icon information.

Memory Access

When the device is turned on and connected to a computer, it will be recognized by the computer as a flash memory card, which is used to access the memory of the device and copy images and videos.

- Turn on the device and connect it to the computer through the USB cable.
- Double-click "my computer" on the desktop – double-click to open the device named "Infiray"  – then click and open the device named "Internal Storage"  .
- There are different folders named by time in memory .
- Recorded videos and photographs are saved in these folders in the format: IMG_HHMMSS_XXX. jpg (for photos) and VID_HHMMSS_XXX.mp4 (for video). HHMMSS– hour/minute/second; XXX means three-digit common file counter (for photos and videos) which is NOT reset.

STATUS BAR

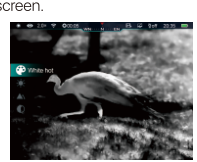
The status bar is located at the top of the image interface and displays the information related to the current operating status of the device. From left to right, there are:

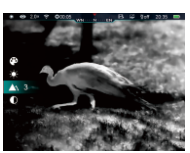
- **Current image mode** (: white hot; : black hot; : red hot; : palette; : target highlight)
- **Ultraclear mode** (: Ultraclear mode is on; : Ultraclear mode is off)
- **Current magnification** (such as 2×, 4×, 6×, 8×)
- **Wi-Fi** (: Wi-Fi is on; : Wi-Fi is off)
- **Calibration mode** (**A**: automatic shutter calibration; **M**: manual shutter calibration; **B**: background calibration. When in the A mode, a 5 seconds countdown timer 00:05 will appear after the icon instead of the letter **A** before the automatic calibration). The timer will appear only after the microbolometer temperature has stabilized (after 10 minutes of continuous operation of the device). Immediately after turning on the device, the shutter activates automatically without displaying the timer.
- **Compass** (when it is on)
- **Video output** (when it is on)
- **Auto standby** (when it is on)
- **LED light** (off: the light is off; 1/2 : the brightness of the light is level 1 or 2)
- **Time** (set time in the App "**InfiRay Outdoor**" or the **Main Menu**)
- **Battery** (: When the icon is in green, it means the power is higher than 20%. : When the icon is in red, the battery power is lower than 20%, please charge in time. : an external power source is connected to the device and charging the battery pack . : The device is powered by an external power supply and the battery pack is not installed.)

SHORTCUT MENU

You can quickly adjust the settings of some common functions through the shortcut menu, including image mode, screen brightness, image sharpness, and image contrast.

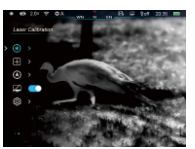
- On the home screen, press the **Menu button (7)** to go to the shortcut menu interface.
- Press the **Up/Zoom button (6)** or **Down/Photo button (8)** to switch the following options.
  - **Image mode:** After selecting this option, press the **Menu button (7)** to adjust the image mode. There are five modes: white-hot, black-hot, red-hot, palette, and highlight.
  - **Screen brightness:** After selecting this option, press the **Menu button (7)** to adjust the screen brightness among 1–5 levels.
  - **Image sharpness:** After selecting this option, press the **Menu button (7)** to adjust the image sharpness among 1–5 levels.
  - **Image contrast:** After selecting this option, press the **Menu button (7)** to adjust the image contrast among 1–5 levels.
- Press and hold the **Menu button (7)** to save the changes and return to the home screen.
- In the shortcut menu, if there is no operation within 5s, the device will automatically save the changes and return to the home screen.





MAIN MENU

- On the home screen, press and hold the **Menu button (7)** to enter the main menu.
- Briefly press the **Up/Zoom button (6)** or **Down/Photo button (8)** to switch the main menu options.
- The main menu navigation is cyclical: as soon as the last menu option of the first page is reached, the first menu option of the second page starts. When the cursor › stays at the first option on the first page, you can press the **Up/Zoom button (6)** to jump directly to the last menu option on the second page.
- Adjust the current parameters or enter the submenus with a short press of the **Menu (5) button**.
- When the cursor › reaches, the color of the icon changes blue.
- In all menu interfaces, you can press and hold the **Menu button (7)** to save the modifications and return to the home screen. And short press the **Power button (5)** to return to the upper menu without saving.
- Automatic exiting from the main menu to the home screen will occur after 15 seconds of inactivity.
- Upon exiting from the main menu, the location of the cursor is stored only for a single working session (i.e. until the device is turned off). Upon restarting the device and entering the menu the cursor will be on the first menu item.

Composition and Description of Main Menu

Ultraclear – Selection of the Ultraclear mode

- Press and hold the **Menu button (7)** to enter the menu.
- Select the 'Ultraclear' option with the **Up (6)/Down (8)** button.
- Short press **Menu button (7)** to turn the Ultra-clear on/off.
- The icon in the status bar changes accordingly after this option is enabled or disabled.
- When the Ultraclear mode is on, the image contrast is enhanced, which is suitable for rainy, foggy and other harsh weather conditions.

Wi-Fi – Selection of the Wi-Fi function

- Press and hold the **Menu button (7)** to enter the menu.
- Select the 'Wi-Fi' option with the **Up (6)/Down (8)** button.
- Briefly press the **Menu button (7)** to switch the Wi-Fi on/off.
- The icon in the status bar changes accordingly after this option is on or off.

Video Out–Selection of the video out function

- Press and hold the **Menu button (7)** to enter the menu.
- Select the 'Video out' option with the **Up (6)/Down (8)** button.
- Briefly press the **Menu button (7)** to turn the video out function on/off.
- The icon is displayed on the status bar when it is on.

Calibration Mode– Selection of the calibration mode

There are three modes: automatic shutter calibration (A), manual shutter calibration (M), and background calibration (B).

- Press and hold the **Menu button (7)** to enter the menu.
- Select the 'Calibration Mode' option with the **Up (6)/Down (8)** button.
- Enter the submenu of the calibration function with a short press of the **Menu button (7)**.
- Short press the **Up button (6)** or **Down button (8)** to select a mode from the three choices.
  - **Automatic (A)**: Calibration requirements are determined by the software algorithm in the automatic mode. The calibration process starts automatically.
  - **Manual (M)**: The user independently determines the need for calibration based on the quality of the observed image.
  - **Background (B)**: Close the lens cover before starting the calibration.
- Short press the **Menu button (7)** to confirm the selection. The icon in the status bar changes accordingly.

Digital Compass – Selection of the Digital Compass

- Press and hold the **Menu button (7)** to enter the menu.
- Select the 'Digital Compass' option with the **Up (6)/Down (8)** button.
- Short press the **Menu button (7)** switches the compass on/off.
- The compass bearing is displayed in the top center of the image.

Motion Sensor – Selection of the Motion Sensor

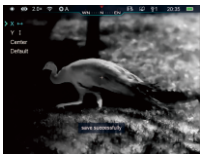
- Press and hold the **Menu button (7)** to enter the menu.
- Select the 'Motion Sensor' option with the **Up (6)/Down (8)** button.
- Switch the Motion sensor function on/off with a short press of the **Menu button(7)** .
- When enabled, relevant functions will appear on the right side of the image.
- The curved ruler on the left represents the tilt angle and the vertical ruler on the right represents the pitch angle.

Laser Cursor Calibration

When the target position pointed by the laser is not consistent with the laser cursor position, this function can be used to correct the cursor position.

- Press and hold the **Menu button (7)** to enter the menu.
- Select the 'Laser Cursor Calibration' option with the **Up (6)/Down (8)** button.
- Short press the **Menu button (7)** to enter the laser cursor calibration interface. Meanwhile, the laser indicator is switched on automatically.
- A small cross cursor appears on the screen, with the prompt information as below shown in the upper left corner:
  - X indicates the X-axis in the horizontal direction
  - Y indicates the Y-axis in the vertical direction

– Center means to return the cursor to the center of the screen.
– Default means to return the cursor to the factory default.



- Select the options with the **Up (6)/Down (8)** button, and confirm your selection with a short press of the **Menu button (7)**.
- When the **X** or **Y** is selected, the icon will become blue and continuously flashing. Then, move the cursor with a short or long press the **Up (6)/Down (8)** button. Press the **Up button (6)** to move the cursor right or up and the **Down button (8)** to move left or down. Short press to move one pixel every time and long press to move ten pixels once.
- When cursor moved to right position, briefly press the **Menu button (7)** to save the position, and the icon will stop blinking.
- Switch to another axis and repeat until the cursor is aligned with the target position indicated by the laser.
- When **Center/Default** is selected, briefly press the **Menu button (7)** to return he cursor to the center/default position.
- Press and hold the **Menu button (7)** to save and exit to the home screen.

Defective Pixels Correction

Defect pixels are pixels such as visible light spots or dark spots with stable brightness, they are either brighter or darker than surrounding pixels. Cabin series offer the possibility to remove any defective pixels on the sensor using software, as well as to cancel any deletion.

- Press and hold the **Menu button (7)** to enter the menu.
- Select the 'Defective Pixels Correction' option with the **Up (6)/Down (8)** button.
- Short press the **Menu button (7)** enter the Pixels Defect Correction interface.

- A small cross cursor appears on the center of the screen.
- The Picture in Picture (PIP) window is displayed on the lower left corner of the screen.
- The right side of the PIP shows the cursor moving direction (X-axis and Y-axis) and the number of the corrected pixels.
- Short press the **Up button (6)** or **Down button (8)** to switch between the X and Y axis. And press the **Menu button (7)** briefly to confirm your selection with the icon blinking.
- Move the cursor to align with the defective pixel with a short or long press the **Up (6)/Down (8)** button. Press the **Up button (6)** to move the cursor rightward or upward and the **Down button (8)** to move leftward or downward. Short press to move one pixel every time and long press to move ten pixels once.
- Short press the **Menu button (7)** to save and exit the cursor position and the icon stops blinking.
- Repeat until the cursor moves to the position of the defective pixel. Then correct the defective pixel with a short press of the **Power button (5).** When the pixel has been successful deleted, the **Add** message will appear on the PIP window for a short time.
- Repeat the operation to correct the other defective pixels.
- If you want to cancel the correction, press the **Power button (5)** briefly in the same position as the corrected defective pixel. The **Del** message will appear on the PIP window for a short time. But it is only limited to not exiting this correction.
- Each time you add or delete a defective pixel, the quantity of defective pixel changes accordingly.
- When the cursor moves near the lower left corner, the PIP window and the prompt information will move to the upper left corner automatically.
- After finishing the correction, press and hold the **Menu**

button (7) until a dialog box is displayed asking you whether to save the corrections.

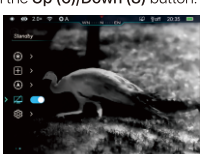
- Press the Up **(6)/Down (8) button** briefly to select an option, and short press **Menu button (7)** to confirm your selection. Select 'Yes' to save and exit, and 'No' to cancel setting and exit.

Compass Calibration – Calibrate the digital compass

- Press and hold the **Menu button (7)** to enter the menu.
- Select the 'Compass Calibration' option with the **Up (6)/Down (8)** button.
- Short press the **Menu button (7)** enter the compass calibration interface. An icon like a triaxial coordinate system appears on the screen.
- Follow the icon prompt to rotate the device along three
- axes at least 360 degrees each axis in the 15 seconds.
- After 15s, the calibration is finished and exit to the home screen.
- Press the **Power button (6)** briefly to terminate and exit the calibration without saving within 15 seconds.

Standby – Selection of the auto standby mode

- Press and hold the **Menu button (7)** to enter the menu.
- Select the 'Standby' option with the **Up (6)/Down (8)** button.
- Press the **Menu button (7)** briefly to turn the standby mode on/off.
- The icon is displayed on the status bar when it is on.
- When the standby mode is on,
- device will the automatically



enter the standby state with no operation within 15 minutes, and power off automatically after 15 minutes in the standby state.

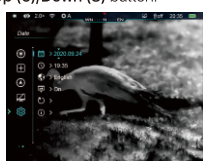
- When the Wi-Fi, recording or video output function is turned on, it will not automatically stand by.

Settings – Select the general settings

- Press and hold down the **Menu button (7)** to enter the Main Menu.
- Select the Settings menu option with the **Up (6)/Down (8)** button.
- Briefly press the **Menu button (7)** to enter the submenu.
- This menu item allows you to configure the following settings.

Date – Setting the system date

- In the Settings submenu, briefly press the **Menu button (7)** to active the Date submenu. Two triangle icons will appear above and below the value.
- Date format is displayed as YY. MM. DD format (2020.01.01).
- Select the correct value for the year, month and date with a short press of the **Up (6)/Down (8)** button.
- Switch between digits with a short press of the **Menu button (7)**.
- Save selected date and exit the submenu with a long press of the **Menu button (7)** .



Time – Setting the system time

- In the Settings submenu, briefly press the **Menu button (7)** to active the Time submenu. Two triangle icons will appear above and below the value.
- The format is displayed as HH: MM in 24-hours format .

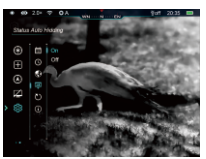
- Select the correct value for the hour and minute with a short press of the **Up (6)/Down (8)** button.
- Switch between digits with a short press of the **Menu button (7)**.
- Save selected date and exit the submenu with a long press of the **Menu button (7)**.

Language – Setting the system language

- In the Settings submenu, select the Language menu option with the **Up (6)/Down (8)** button.
- Enter the Language submenu with a short press of the **Menu button (7)**.
- Short press the **Up (6)/Down (8)** button to select language between English and Chinese.
- Confirm your selection with a short press of the **Menu button (7)**.
- Submenu exit will take place automatically.

Status Auto Hiding – Selection of automatic status hiding

- In the Settings submenu, select the Status Auto Hiding menu option with the **Up (6)/Down (8)** button.
- Press the **Menu button (7)** briefly to enter the Status Auto Hiding submenu.
- Briefly press the **Up (6)/Down (8)** button to select on or off.
- Confirm your selection with a short press of the **Menu** button **(7)**.
- Submenu exit will take place automatically.

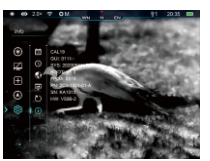


Factory Reset – Reset to the factory settings

- In the Settings submenu, select the Factory Reset menu option with the **Up (6)/Down (8)** button.
- Enter the Factory Reset submenu with a short press of the **Menu button (7)**.
- Briefly press the **Up (6)/Down (8)** button to select **Yes** or **No**.
- Confirm your selection with a short press of the **Menu button (7)**.
- The device will reboot if **Yes** is selected.
- If **No** is selected, the action will be cancelled and will return to the submenu.
- The following settings will be returned to the defaults:
  - **Image mode**: White Hot;
  - **Magnification**: 2.0 x;
  - **Calibration**: Automatic;
  - **Language**: English
  - **Ultraclear mode**: Off;
  - **Wi-Fi**: Off
  - **Video out**: Off
  - **Digital Compass**: Off
  - **Motion Sensor**: Off
  - **Standby**: Off;
  - **Status Auto Hiding**: Off

Info – Show device information

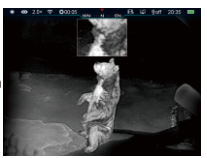
- In the Settings submenu, select the Info menu option with the **Up (6)/Down (8)** button.
- The relevant information of the device will be shown by a short press of the **Menu button (7)**.
- This item allows the user to view the following info: the product model, SYS Info, GUI version, Boot version, FPGA, PN / SN number, and Hardware version.
- Long press the **Menu button (7)** to return to the upper menu.



PICTURE IN PICTURE FUNCTION (PIP)

The PIP (Picture in Picture) function allows you to see both a magnified image in a particular window and the main image. This window shows part of the image which is enlarged to 2× in a certain area centered on the reticle of the main image.

- In the home screen, press and hold down the **Up button (6)** to switch the PIP function on /off.
- When the main image is enlarged with a short press of the **Up button (6)**, the PIP image will synchronously be enlarged two times.
- For example, when the magnification of the main image is 2×, 4×, 6×, 8×, the corresponding magnification of the PIP image is 4×, 8×, 12×, 16×.



LASER INDICATOR

Cabin provides a laser indicator, which is hidden by default.

- When using it for the first time, please press and hold the **Up button (6) + Menu button (7) + Down button (8)** for more than 10 seconds to unhide the laser function after the sound of the shutter clicks.
- On the home screen, short press the **Up button (6) + Menu button (7)** to enable or disable the laser indicator function.

STADIAMETRIC RANGEFINDER

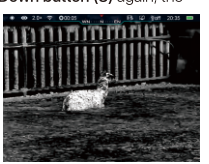
Cabin provides the stadiametric rangefinder function, which allows user to estimate the approximate distance to an object with a known size.

- In the home screen, press and hold the **Up (6) and Menu (7) button (7)** to switch the stadiametric rangefinder function on/off.
- When this function is on, two horizontal lines for measurement will appear on the display, meanwhile icons of three predefined objects and measured values will be displayed on the right side.
- Dimensions of three pre-defined objects are:
  - Deer: 1.7 m high
  - Wild boar: 0.9 m high
  - Hare: 0.2 m high
- Locate the object in the middle of the measurement lines, by pressing the **Up button (6)** or **Down button(8)**.
- Widen or lessen the measurement line to ensure that the measured object is within the line. When you adjust the width of the measurement line, the rangefinder data on the right changes accordingly.
- To change the unit of rangefinder, short press the **Menu button (7)**.
- Press and hold the **Up button (6)** and **the Menu button (7)** to exit the stadiametric rangefinder function.

LED LIGHT

Cabin series is equiped with a LED light, which can be quickly opened, adjusted, and closed.

- The LED light is disabled by default. Shortly press the **Menu button (7) + Down button (8)** to enable the LED light. At this time, the brightness is in level 2, and the status bar displays 2.
- Short press the **Menu button (7) + Down button (8)** again, the brightness will turn to level 1, and the status bar will display 1.
- Shortly press the **Menu button (7) + Down button (8)** again to turn on the LED light, and the status bar will display off.



HOTSPOT TRACKING

Cabin provides hotspot tracking function, which allows you to track the hottest object in the image.

- In the home screen, press and hold the **Menu button (7) + Down button (8)** to turn on the hotspot tracking function.
- A blue box will appear in the image and track the hottest object automatically.
- Press and hold **the Up button (6) + Menu button (7)** to exit the hotspot tracking function.

STATUS AUTO HIDING

This function is used to automatic hiding of the GUI information on the interface with reticle displayed only, so to make the image unobtrusive.

- Press and hold down the **Menu button (7)** to enter the Main Menu.
- Select the **Settings** option with the **Up (6)/Down (8)** button.
- Briefly press the **Menu button (7)** button to enter the submenu.
- Select the Status Auto Hiding menu option with the **Up (6)/Down (8)** button.
- Enter the **Status Auto Hiding** submenu with a short press of the **Menu button (7)**.
- Briefly press the **Up (6)/Down (8)** button to select On or Off.
- Confirm your selection with a short press of the **Menu button (7)**.
- When the selecting is On, the GUI icons in the interface including the status bar will be automatic hidden after 8 seconds without any operation. Only the image and the reticle will be displayed.
- The GUI information will be displayed again with the press of any button.
- Only after the GUI is displayed, the button and menu can be manipulated.

Wi-Fi FUNCTION

The device is equipped with wireless communication with mobile devices (computer, smart phone) via Wi-Fi.

- Turn the Wi-Fi function on in the main menu, referring to '**Main Menu – Wi-Fi**' .
- On your mobile device, search and select the Wi-Fi signal named CBL19_xxxxxx, among which xxxxxx is the serial number of the device.
- Enter the password and establish a connection. The initial password is 12345678.
- And then, the device can be controlled via the APP named **InfiRay Outdoor** pre-installed on your mobile device (see **Update and APP** section).

Set Wi-Fi name and password

The Wi-Fi name and password of your device can be reset in the **InfiRay Outdoor** application.

- After connected with the mobile device, click the "setting" icon ⚙ in the APP to enter the setting interface.
- In the text box, enter and submit the new Wi-Fi name (SSID) and password.
- It needs to restart the device to take the new name and password effect.

> ⚠ Note
>
> ➢ When factory Settings are restored, the Wi-Fi name and password are also restored to factory default Settings.

UPDATE AND APP TECHNOLOGY

In order to continuously improve the product performance and provide better user experience, the software program, as well as parameters and operating instruction of the device will be

constantly updated. Users can go to the official website (**www.infirayoutdoor.com**) to download and update.

The Cabin series support APP technology, and can be connected to a smartphone or tablet PC via Wi-Fi for real-time image transmission, control operations, and program updates.

About InfiRay Outdoor

- You can download and install the **InfiRay Outdoor** app on the official website (**www.infirayoutdoor.com**) or App store. Alternatively, you can download the app by scanning the following QR code.

GET IT ON Google Play

Download on the App Store

- When installation completed, open InfiRay Outdoor application.
- If your device is already connected with a mobile device, please switch on the mobile data in mobile device. After connection, the update detection is performed automatically with a prompt in the application. Click 'Now' to download the updates or click 'Later' to update later.
- InfiRay Outdoor will automatically store the last connected device. So, if your device has not connected with your mobile device, but linked to InfiRay Outdoor before, the update prompt will appear if there is an update when turning on InfiRay Outdoor. You can download the update first via mobile Wi-Fi and then connect your device with mobile device to finish the update.
- After finishing the update, the device will root.

TECHNICAL INSPECTION

It is recommended to carry out a technical inspection each time before using the device. Check the following:

- The external appearance of the device (there should be no cracks in the casing).
- The condition of the lens and eyepiece (there should be no cracks, greasy spots, dirt or other deposits)
- The state of the rechargeable battery (it should be charged).
- The controls / buttons should be in working order.

MAINTENANCE

Maintenance should be carried out at least twice a year and consist of the following actions.

- Wipe the external surfaces of metal and plastic parts of dust and dirt with a cotton cloth. Silicone grease maybe used for this.
- Clean the electrical contacts of the battery and battery slot on the device using a non-greasy organic solvent.
- Check the glass surfaces of the eyepiece and the lens. If necessary, remove dust and sand from the lenses (preferably using a non-contact method). Cleaning of the external surfaces of the optics should be done with substances designed specially for this purpose.

TROUBLESHOOTING

This table lists all the problems that may arise when operating the device. Carry out the recommended checks and troubleshooting steps in the order shown in the table. If there are defects that are not listed in the table or it is impossible to repair the defect yourself, return the device for repair service.

Malfunction	Possible reason	Correction
The thermal imager cannot start.	Battery pack is out of charge.	Charge the battery.
The device cannot be powered by external power supply.	The USB cable is damaged.	Replace USB cable
	The external power supply is insufficient.	Check external power supply (if necessary).
Image is unclear, with vertical lines and uneven background.	Calibration is required	Calibration the image as instructed by Section 9 'Calibration' of the Manual.
The image is too dark.	The screen is in low brightness level .	Adjust the screen brightness.
The GUI is clear, but the image is fuzzy.	The lens is not focused.	Rotate the lens focus knob to adjust the focus.
	There is dust or condensate on the interior or exterior optical surfaces of the lens.	Wipe off the outside optical surfaces with a soft cotton cloth. Let the imager dry by leaving it in a warm environment for 4 hours.
The device cannot connect to a smartphone or tablet.	The Wi-Fi password is incorrect.	Enter the correct Wi-Fi password.
	There are too many Wi-Fi networks that are accessible to the device.	To ensure stable Wi-Fi operation, relocate the device to an area with fewer Wi-Fi networks, or into an area with none.
Poor image quality or reduced detection distance	These problems may occur when you use the device in the harsh weathers (snow, rain, fog, etc.).	

Malfunction	Possible reason	Correction
Wi-Fi signal lost or is interrupted	The device is outside the Wi-Fi coverage area. There are obstacles between the device and the receiver (e.g. concrete walls.)	Relocate the device into direct line of sight of the Wi-Fi signal.
When used in low temperature conditions, the image quality is poorer than in positive temperature conditions.	In positive temperature conditions, objects being observed (surroundings and background) heat up differently because of thermal conductivity, thereby generating a high-temperature contrast. Accordingly, the image quality produced by the device will be higher. In low-temperature conditions, objects being observed (background) do, as a rule, cool down to roughly the same temperature because of which temperature contrast is substantially reduced and the image quality (detail) is poorer. This is a feature of thermal imaging devices.	

FCC STATEMENT

Labeling requirements

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.

Information to user

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Information to the user

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.

Body Operation

This device was tested for typical body-support operations. To comply with RF exposure requirements, a minimum separation distance of 0.5cm must be maintained between the user's body and the handset, including the antenna. Third-party belt-clips, holsters, and similar accessories used by this device should not contain any metallic components. Body accessories that do not meet these requirements may not comply with RF exposure requirements and should be avoided. Use only the supplied or an approved antenna.

简体中文

规格参数

产品型号	CBL19	CBL25
探测器参数		
分辨率	384×288	
像元尺寸, um	12	
NETD, mk	≤40	
帧频, Hz	50	
光学参数		
镜头焦距，mm	19	25
视场角	13.8°×10.4°	10.5°×7.9
光学变倍, ×	2 ~ 8	2.5 ~ 10
电子变倍, ×	1 / 2 / 3 / 4	
出瞳距离, mm	20	
视度调节, D	-5 ~ +5	
探测距离, m (目标：1.7m×0.5m, P(n)=99%)	980	1300
显示屏		
类型	LCOS	
分辨率	1280×960	
电池供电		
电池类型/容量/输出电压	锂离子电池包IBP-2 / 3.1Ah /3.6V	
工作时间 (22 °C), h*	7.5	
外部供电	5V (Type C)	
物理参数		
IP防护等级	IP67	
内存容量, GB	16	
APP	支持	
工作温度, °C	-20 ~ +50	
尺寸, mm	165 × 50 × 85	
重量(不含可替换电池)，g	<380	

* 实际使用时间取决于Wi-Fi以及视频录制等功能的使用强度。

❖ 为了完善产品的使用特性，其设计及软件程序可能会持续更新。

❖ 产品的技术参数如果改动，将不另行通知。

包装清单

- Cabin 系列红外热像仪
- IBP-2电池包
- IBC-2电池充电盒
- Type C 数据线
- 电源适配器
- 手腕带
- 颈带
- 镜片擦拭布
- 便携包
- 操作手册

产品概述

Cabin系列热像仪是一款手持式的红外热像仪，无论是白天还是黑夜，无论多恶劣的天气条件（如雨、雪、雾、霾等），不受强光照射影响，不需要外部光源，即使隐藏在障碍物（树枝、草丛、灌木等）后面的目标也可以被观测到。

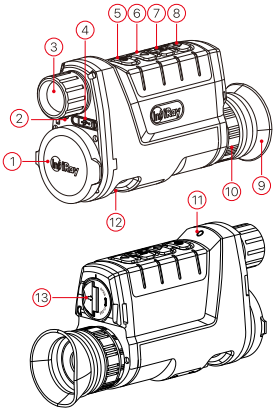
Cabin系列体积小巧，携带方便，支持单手操作；快拆式电池包，续航时间久；搭配可变焦的LED灯，可广泛用于户外各种条件下的狩猎、搜索和定位。

产品特点

- 12μm自主研发探测器
- 图像质量高
- 结构紧凑，小巧轻便
- 高清显示大屏
- 快拆电池包
- 变焦LED灯
- 支持概率测距
- 探测距离远
- 50Hz高帧频
- 内置存储空间，支持拍照、录像
- 内置Wifi模块，可连接APP
- 内置电子罗盘和运动传感器
- 支持画中画功能
- 支持盲元校正
- 操作简单友好

部件组成

1. 镜头盖
2. 激光指示灯*
3. LED灯
4. Type C 接口
5. 电源键
6. 上键/放大键
7. 菜单键 (M键)
8. 下键/拍照键
9. 眼罩
10. 视度调节环
11. 电源指示灯
12. 物镜调焦旋钮
13. IBP-2电池包



*因您所在地区的法律限制，激光和光标功能会被禁用。

LED指示灯可以显示设备的当前状态

LED灯颜色	LED灯状态	设备状态
●	常亮	设备工作中/充电完成
●	闪烁	待机
●	闪烁	电池电量不足,低于10%
●	常亮	正在充电

按键操作

按键	设备状态/当前操作模式	短按	长按
电源键	关机状态	--	开机
	主界面下	图像校正	关机/待机
	待机状态	唤醒设备	–
	快捷菜单/主菜单	返回到上一级菜单	–
	盲元校正	添加/删除盲元	–
菜单键	主界面下	打开快捷菜单	打开主菜单
	快捷菜单	调节某一功能具体参数	退出快捷菜单
	主菜单	确认参数/进入子菜单	保存并退出至主界面
	激光光标校正界面	进入/退出光标移动功能	保存并退出至主界面
	盲元校正界面	进入/退出光标移动功能	保存或取消校正
上键/放大键	主界面下	切换视放大率 ×2.0 - ×8.0	开启/关闭PIP模式
	快捷菜单/主菜单	向上切换菜单选项	–
	激光光标校准/盲元校正界面	将光标向上/左移动一个像素	向上/左快速移动光标
下键/拍照键	主界面下	拍照	开启录像
	录像时	拍照	停止并保存录像
	快捷菜单/主菜单	向下切换菜单选项	–
	激光光标校准/盲元校正界面	将光标向下/右移动一个像素	向下/右快速移动光标
上键+ 菜单键	主界面下	开启/关闭激光指示功能	开启/关闭概率测距功能
下键+ 菜单键	主界面下	开关/调节LED灯	开启/关闭热点追踪功能

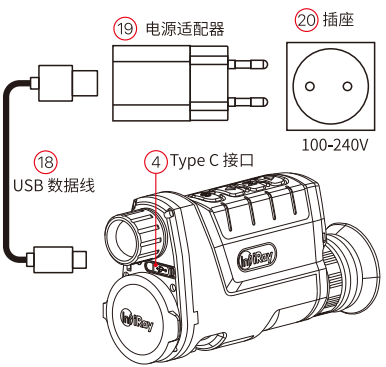
注意：Cabin的激光指示功能默认是隐藏的，首次使用时,请长按**上键+M键+下键**10s以上，听到快门嗒嗒声后松开按键，激活激光指示功能。

电池充电

Cabin系列采用可快速拆卸的外置18650锂电池包供电，正常工作时间可长达7.5小时。首次使用前，请先充满电。

方法1：Type C充电

- 将电池包上的橙色竖线对准Cabin上电池仓旁边的橙色横线，将电池包安装到产品的电池仓内，详见**电池包的安装**；
- 将数据线 **(18)** 的Type C端连接到设备的Type C接口 **(4)**；
- 将数据线 **(18)** 的另一端连接到产品自带的电源适配器 **(19)**，或者连接到另一个额定输出电压不超过5V的USB电源插座；
- 将适配器 **(19)** 插入100-240V的电源插座 **(20)** 进行充电。



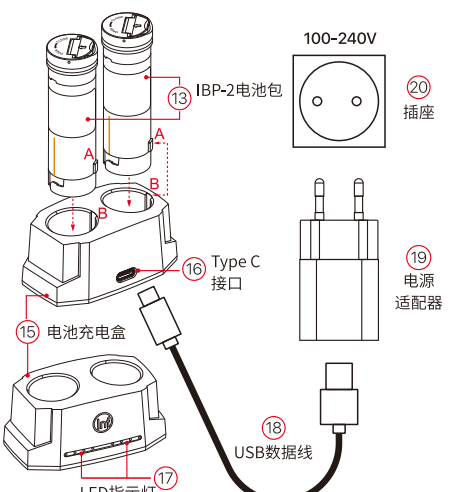
方法2：电池盒充电

- 将电池包的定位块 **(A)** 对准电池充电盒的沟槽 **(B)**，将电池包 **(13)** 插入到电池充电盒 **(15)** 内；
- 将数据线 **(18)** 的Type C端连接到电池盒的Type C端口 **(16)**；
- 将数据线的另一端连接到电源适配器 **(19)** 上，将适配器插入100-240V的电源插座 **(20)** 进行电池包的充电；
- 安装完成后，电池盒上的LED指示灯 **(17)** 将会发光或者闪烁；
- 充电完成后，取出电池包。

电池充电状态

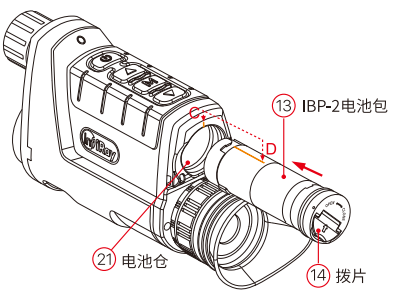
LED指示灯	电池充电状态
◐	电池充电电量 1% - 25%
● ◐	电池充电电量 25% - 50%
● ● ◐	电池充电电量 50% - 75%
● ● ● ◐	电池充电电量 75% - 99%
● ● ● ●	充电完成

注意：此电池盒可同时对两节IBP-2电池包进行充电。



电池包安装

- 翻起电池包上的拨片 **(14)**，将电池包上的橙色线 **(D)** 对准设备电池仓上方的橙色线 **(C)**，将电池包 **(13)** 推入电池仓 **(21)** 内；
- 当电池包完全插入电池仓内后，顺时针转动拨片 **(14)** 将电池包锁住；
- 合上拨片 **(14)**，完成电池包的安装；
- Cabin系列仅支持此电池包供电。如使用其他的电池包供电可能会造成无法挽回的损失，对设备造成损害，并可能引起火灾。



安全措施

- 仅可使用此电池盒对电池包充电，否则会对电池包或者电池盒造成无法挽回的损失，并可能引起火灾。
- 当电池长时间不用，需对电池包进行部分充电，而不应该完全充电或完全放电；
- 当电池从寒冷的环境带到温暖的环境后，不要立即对它进行充电，需等待预热30～40分钟；
- 禁止使用被损坏或者改造的充电器进行充电；
- 设备应在0°C~+45°C的温度下充电，否则电池寿命会显著降低；
- 充电时，请不要让电池处于无人看管状态；
- 请勿将电池暴露在高温或者明火中；
- 请勿将电池浸入水中；
- 虽然电池包带有短路保护功能，但还是要避免任何导致短路的情况出现；
- 在完全充电后，请勿将电池与电源连接超过24小时；
- 不建议将能量消耗大于允许值的第三方设备连载一起；
- 请勿随意拆卸或更改电池包；请勿敲打或摔落电池包；
- 设备建议使用温度为-20°C~+50°C，不要在超过此温度范围内使用产品，这可能会缩短电池寿命；
- 当设备在零下温度下使用时，电池包容量会下降，这是正常现象，并不是有缺陷；
- 请将电池包置于儿童接触不到的地方。

外部电源供电

Cabin系列支持外部电源供电，如移动电源（5V）。

- 将外部电源连接到Cabin的Type C接口 **(4)**；
- 设备将自动切换到外部电源供电，同时对内部电池包进行充电；
- 此时显示屏上的电池图标将会变成充电图标，电源指示灯为橙色，当充电完成时显示为绿色；
- 如果连接外部供电，但是没有安装电池包，电池图标将会变成USB 图标，电源指示灯为绿色；
- 当外部电源断开时，Cabin系列会自动转到电池包供电，不会关机。

开机运行

警告！请勿将红外热像仪的镜头对准任何高强度的辐射源，如激光发射装置或太阳等。这可能会损坏设备中的电子元件。因不遵守操作指南而造成的损坏不在保修范围内。

- 打开**镜头盖（1）**；长按**电源键（5）**2秒，设备启动，等待3秒进入主

界面，完成启动；

- 旋转目镜的**视度调节环(10)**，直至目镜中图像的图标显示清晰可见；调整完成之后，对于同一用户来说，再次使用时，无需再次进行视度调节；
- 转动**物镜调焦旋钮(12)**调节焦距，使其聚焦到被观察的物体；
- 设置图像模式：短按**菜单键键(7)**进入快捷菜单，设置图像色板模式，依次是白热-黑热-伪彩-红热-目标凸显，顶部状态栏图标实时更新；
- 设置显示屏亮度、图像锐度、图像模式、电子变倍等功能（详见本手册中的**快捷菜单功能**）；
- 使用完成后，长按**电源键(5)**，出现关机倒计时界面。当倒计时图标从3数到0时设备关机，松开按键。
- 关机后当前状态将会被自动保存，在关机数据保存期间，请勿切断电源，否则数据将无法保存。
- 在倒计时结束前松开按键，设备将进入待机状态，可以通过短按**电源键(5)**唤醒设备。

状态栏说明

状态栏位于图像界面的顶端，显示设备的当前操作状态相关的信息，从左到右依次是：

- **当前图像模式**（：白热模式；：黑热模式；：红热模式；：伪彩模式；：目标凸显模式）
- **超清模式状态**（：超清模式开；：超清模式关）
- **当前视放大率**（如2.0×、4.0×、6.0×、8.0×）
- **当前Wi-Fi状态**（：Wi-Fi开；：Wi-Fi关）
- **当前校正模式**（**自动**：自动快门校正；**手动**：手动快门校正；**背景**：背景校正。在自动校正模式下，在自动校正前5s，会有倒计时提示，并显示于校正图标后面00:05）。当设备刚开启时，会自动连续进行快门校正，但不会有倒计时提示，只有在设备完全稳定（大约在连续操作10分钟）后，才会有自动快门校正的倒计时提示。
- **电子罗盘**（开启时显示）
- **视频输出状态**（开启时显示）
- **自动待机**（开启时显示）
- **LED灯状态**（：off：关；：1/2：亮度等级；出厂默认为关）
- **时间**（在**主菜单**中设置或者在InfiRay Outdoor的应用程序中同步时间）
- **电池电量**（当内部图标为绿色时，表示电量高于20%，电量充足；当内部图标为红色时，表示电量低于20%，请及时充电；当图标中间出现闪电标识时，表示外部电源正在供电，同时对电池包进行充电；当图标显示为USB图标时，表示使用外部电源供电，但是设备未安装电池包）

图像校正

当图像发生劣化或者不均匀时，可以通过图像校正功能进行改善。图像校正可以使机芯内的探测器的背景温度得以平衡，以消除图像中的缺陷。

校正的方式有自动快门校正、手动快门校正和背景校正三种方式。用户可以通过“**主菜单-校正模式**”选择所需要的模式。

- **自动快门校正**：设备会根据软件算法自动快门校正，无需盖上镜头盖（设备自动关闭内部快门）。设备在进行自动快门校正前，会在状态栏快门图标的后面有5s倒计时提示。倒计时期间，短按**电源键(3)**取消此次自动快门校正。在此模式下，用户也可以通过短按**电源键(3)**进行手动快门校正。
- **手动快门校正**：在主界面下，短按**电源键(3)**进行手动快门校正，无需盖上镜头盖（设备自动关闭内部快门）。
- **背景校正**：在主界面下，短按**电源键(3)**进行背景校正，主界面出

现文字提示“背景校正前，请盖上镜头盖”，2s后进行背景校正，校正完成后，打开镜头盖。

电子变倍

Cabin系列支持对图像进行1-4倍放大。

- 主界面下，循环短按上键（6），进行图像的循环缩放；
- 相应的视放大率显示于顶部状态栏中；
- CBL19系列1-4倍的放大分别对应的视放大率分别是2×，4×，6×，8×。

拍照录像

Cabin系列内置16GB存储空间，支持拍照录像功能。所记录的图像和视频文件会以时间命名保存在存储空间里，所以建议在使用拍照录像功能前，先在主菜单中完成系统日期和时间的设置（参考“**主菜单-设置-日期设置**”），或者通过在**InfiRay Outdoor**的设置选项中，完成系统日期和时间的同步，具体操作可以通过公司网站下载APP的操作说明。

拍照

- 主界面下，短按**下键/拍照键(8)**，进行拍照，画面会卡顿0.5S，并在屏幕右上角出拍照图标（ ），拍照结束后，图标消失；
- 所拍摄的照片被保存在内置存储空间中。

录像

- 主界面下，长按**下键/拍照键(8)**，进行视频录制；
- 显示屏左上角出现录制图标和时间的提示框，时间格式为00:00:00（小时：分钟：秒）；

- 在录像过程中，短按**下键/拍照键(8)**可以进行拍照操作；
- 长按**下键/拍照键（8）**，停止并保存视频录制；
- 所拍摄的视频和照片会被保存在内置的存储空间里。

注意

- 视频录制过程中依然可以对菜单进行操作；
- 视频录制的时间以分钟的形式累加直至停止录制；
- 视频录制文件的最大持续时间为10分钟，超过10分钟，视频将被记录到一个新文件中；
- 文件的数量受到设备内置内存容量的限制。定期查看存储空间的余量，将素材和照片传输到其他媒体以释放内存卡上的空间；
- 所有拍摄的视频或者照片均不显示界面图标信息。

内存访问

当设备开机且连接到电脑时，设备会被计算机识别为闪存卡，用于访问设备内存，进行图片和视频拷贝。

- 通过数据线将设备连接到电脑上；
- 设备开机运行；
- 双击电脑桌面上“我的电脑”-找到名称为“Infiray”的设备，并双击打开 Infiray -双击打开名称为“Internal Storage”的设备 Internal Storage 14.6 GB 可用，共 14.6 GB，访问内存；
- 打开内存后出现以时间命名的不同文件夹 20200327，命名方式是xxxx(年)xx(月)xx（日）；
- 文件夹里存储的是当天拍摄的照片和录制的视频，照片是以IMG_HHMMSS_XXX.jpg的格式，视频VID_HHMMSS_XXX.mp4(视频)保存到内置的存储卡上；HHMMSS-小时分钟秒；XXX -三位通用文件的流水码。
- 选择需要的文件或者文件夹进行拷贝或删除。

快捷菜单

快捷菜单可以对一些常用功能的基本设置进行快速调节，包括图像模式、屏幕亮度、图像锐度、图像对比度四项功能。

- 主界面下，通过短按**菜单键(7)**，进入快捷菜单界面；
- 进入快捷菜单后，短按**上键(6)**、**下键(8)**对如下功能进行切换：
  - **图像模式**：选择此项后，短按**菜单键(7)**对图像模式进行循环调节，依次是白热、黑热、红热、伪彩、目标凸显五种模式；
  - **屏幕亮度**：选择此项后，短按**菜单键(7)**进行图像亮度1-5级调节；
  - **图像锐度**：选择此项后，短按**菜单键(7)**进行图像锐度1-5级调节；
  - **图像对比度**：择此项后，短按**菜单键(7)**进行图像对比度1-5级调节；

- 在快捷菜单下，10s内无按键操作或长按**菜单键(7)**保存当前修改并退回至主界面。

主菜单功能

- 主界面下，长按**菜单键(7)**，进入主菜单界面；
- 短按**上键(6)**、**下键(8)**切换菜单功能选项；
- 主菜单的功能选项是周期性循环的：当光标›到达第一页的最后一个菜单选项，继续短按**下键(8)**，会自动翻到第二页的第一个选项；当光标位›于第一页的第一个选项，短按**上键(6)**，可以直接跳到第二页的最后一个选项；
- 短按**菜单键(7)**，对当前项的参数进行修改或者进入二级菜单；
- 光标›所在的位置表示选中项，图标会由白色变成蓝色；
- 二级、三级菜单界面的操作同上；
- 在所有菜单界面下，长按**菜单键(7)**保存修改并退回主界面，短按**电源键(5)**不保存修改直接返回上一级菜单界面；
- 在所有菜单界面下，15s内无按键操作，自动退回到主界面；

- 在热像仪持续工作期间，从主菜单退出时，光标保留在退出前的位置。当热像仪重新启动时，首次进入主菜单时，光标位于第一个菜单选项上。

主菜单功能及描述

超清模式——开启/关闭超清模式

- 长按**菜单键(7)**进入主菜单界面；
- 选择“超清模式”功能选项；
- 短按**菜单键(7)**开启/关闭超清模式；
- 超清模式可以使热像仪在大雾、雨雪等恶劣天气环境下，图像细节更丰富，开启时，状态栏图标提示。

Wi-Fi——开启/关闭Wi-Fi

- 长按**菜单键(7)**进入主菜单界面；
- 选择“Wi-Fi”功能选项；
- 短按**菜单键(7)**开启/关闭Wi-Fi功能；
- Wi-Fi开启时左上角状态栏有Wi-Fi图标显示。

视频输出——开启/关闭视频输出功能

- 长按**菜单键(7)**进入主菜单界面；
- 通过短按**上键(6)**或**下键(8)**，选择“视频输出”功能选项；
- 短按**菜单键(7)**开启/关闭模拟视频输出功能；
- 开启时右下角会出现视频输出的图标。

校正模式——选择图像校正的模式

Cabin系列提供三种校正模式：自动快门校正(A)、手动快门校正(M)和背景校正(B)。

- 长按**菜单键(7)**进入主菜单界面；
- 短按**上键(6)**或**下键(8)**，选择“校正模式”功能选项；
- 短按**菜单键(7)**，进入该选项的二级菜单；
- 短按**上键(6)**或**下键(8)**，在以下三种模式中选择一个：
  - **自动快门校正**：由软件算法决定的，使用过程中会自动进行校正；
  - **手动快门校正**：由用户根据观察到的图像效果来决定是否进行校正；
  - **背景校正**：在校正前，需盖上镜头盖。

- 短按**菜单键(7)**确认选择，状态栏中的图标也会随之变化。

电子罗盘——开启/关闭电子罗盘功能

- 长按**菜单键(7)**进入主菜单界面；
- 短按**上键(6)**或**下键(8)**，选择“电子罗盘”功能选项；
- 短按**菜单键(7)**开启/关闭电子罗盘功能；
- 罗盘开启后，会在图像顶部中央位置显示罗盘方位。

运动传感器——开启/关闭运动传感器功能

- 长按**菜单键(7)**进入主菜单界面；
- 短按**上键(6)**或**下键(8)**，选择“运动传感器”功能选项；
- 短按**菜单键(7)**开启/关闭运动传感器；
- 开启后，相关功能显示于图像右侧，其中水平表示代表倾角，垂直标尺表示俯仰角。

激光光标校准

当激光**指示灯(2)**所指向的目标位置与屏幕中光标位置不一致时，可以通过此功能对光标位置进行校正。

- 长按**菜单键(7)**进入主菜单界面；
- 短按**上键(6)**或**下键(8)**，选择“激光光标校准”功能选项；
- 短按**菜单键(7)**，进入激光光标校准界面，同时激光指示灯自动开启；
- 屏幕中央出现激光指示图标，左上角出现如下图所示的内容提示：
  - X：表示 X 轴方向即横向；
  - Y：表示 Y 轴方向即纵向；
  - 回归中心：使光标回屏幕中心；
  - 出厂默认：使光标回到默认设置。

- 短按**上键(6)**、**下键(8)**进行选项切换；短按**菜单键(7)**确认选择；
- 选择 X 轴或 Y 轴方向时，选中项图标会持续闪烁，通过**上键(6)或下键(8)**对光标进行移动，**上键(6)**控制光标左移或上移，**下键(8)**控制光标右移或下移，短按移动一个像素，长按可以使光标每次 10 个像素连续移动；
- 移动完成后，短按**菜单键(7)**保存并退出，图标停止闪烁；
- 当选择回归中心/出厂默认 时，短按**菜单键(7)**，光标回归屏幕中心或者出厂设置的位置；
- 将光标移动到激光所指示的位置后，长按**菜单键(7)**保存位置并退出至主界面。

盲元校正——对图像坏点进行校正

热像仪在使用过程中，可能会出现有缺陷的像素，如图像上可见的不变亮度的亮点或暗点，此时需借助盲元校正功能删除这些有缺陷的像素。

- 长按**菜单键(7)**进入主菜单界面；
- 短按**上键(6)**或**下键(8)**，选择“盲元校正”功能选项；
- 短按**菜单键(7)**，进入盲元校正界面；

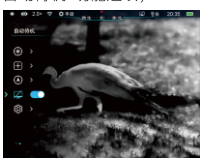
- 在盲元校正界面，屏幕中央出现小的十字光标，同时自动开启PIP功能，默认位置在左下角；
- 在PIP的小窗口右侧分别显示光标的移动方向：X轴、Y轴以及已校正的盲元数量；
- 短按**上键(6)**、**下键(8)**，可切换选择X或Y轴，短按**菜单键(7)**，进入当前坐标；
- 短按**上键(6)**、**下键(8)**进行当前选择的坐标方向移动，上键控制光标向左/向上移动，下键控制光标向右/向下移动；
- 移动完成后，短按**菜单键(7)**保存并退出，图标停止闪烁；
- 重复上述操作可对光标进行重复移动，直到将光标移动到盲元位置；
- 当光标移动到盲元位置后，短按**电源键(5)**，添加并校正盲元，PIP中闪现**"添加"**字样，表示盲元添加成功，依次类推进行其他盲元点的校正；
- 同一盲元位置，再次短按**电源键(5)**，撤销该处的盲元校正，PIP中闪现**"删除"**字样；
- 每次添加或删除盲元时，盲元数量也会随之发生变化；
- 当光标移动到PIP附近时，PIP及右侧内容将自动移到左上角；
- 校正完成后，长按**菜单键(7)**，出现提示框，询问是否保存此次校正，短按**上键(6)**、**下键(8)**切换选择，短按 **菜单键(7)**确认选择；选择**"是"**确认保存并退出；选择**"否"**，取消保存并退出。

罗盘校准——对电子罗盘进行校准

- 长按**菜单键(7)**进入主菜单界面；
- 短按**上键(6)**或**下键(8)**，选择"罗盘校准"功能选项；
- 短按**菜单键(7)**，进入罗盘校准界面，屏幕中央出现一个类似三轴坐标系的提示图标；
- 15秒内，完成对设备沿着图标所示的三个轴向进行旋转，每个轴向至少旋转一周360°；
- 15秒后默认校准结束并自动退出。

自动待机——开启/关闭自动待机功能

- 长按**菜单键(7)**进入主菜单界面；
- 短按**上键(6)**或**下键(8)**，选择"自动待机"功能选项；
- 短按**菜单键(7)**，开启/关闭自动待机功能；
- 开启后，状态栏会由图标提示，并且在15分钟内无任何按键操作，设备将会自动进入待机状态；
- 当处于Wi-Fi开启、视频录制或者模拟视频输出过程时，将不会自动待机。



常规设置——设置系统的日期、时间、语言，查询系统信息等

- 长按**菜单键(7)**进入主菜单界面；
- 短按**上键(6)**或**下键(8)**，选择"常规设置"功能选项；
- 短按**菜单键(7)**，进入常规设置的二级菜单，对如下选项进行设置；

日期设置——设置系统日期

- 在常规设置的二级菜单界面下，选择日期设置选项，短按**菜单键(7)**激活日期的重置功能，日期是按照年/月/日的形式呈现的；

- 激活后，会发现在年的数值上下出现一对三角符号，表示可以对年的数值进行设置；
- 短按**上键(6)或下键(8)**设置正确的数值；
- 短按**菜单键(7)**，进行年、月、日之间的切换,三角符号的位置也会随之移动；
- 设置完成后，长按**菜单键(7)**保存并退出日期设置。

时间设置——对系统时间进行设置

- 在常规设置的二级菜单界面下，选择时间设置选项，短按**菜单键(7)**激活时间的重置功能，日期是按照小时/分钟的形式呈现的；
- 激活后，在小时的数值上下出现一对三角符号；
- 短按**上键(6)或下键(8)**设置正确的数值；
- 短按**菜单键(7)**，进行小时和分钟的切换,三角符号的位置也会随之移动；
- 设置完成后，长按**菜单键(7)**保存并退出时间设置。

语言选择——选择系统语言

- 在常规设置的二级菜单界面下，选择语言选择选项；
- 短按**菜单键(7)**进入语言的子菜单，Cabin系列提供英语和简体中文两种语言；
- 短按**上键(6)或下键(8)**，进行两种语言的切换；
- 短按**菜单键(7)**确认选择，并保存返回上级菜单。

自动掩藏——开启/关闭UI自动掩藏功能

- 在常规设置的二级菜单界面下，选择自动掩藏选项；
- 短按**菜单键(7)**打开该功能的子菜单；
- 短按**上键(6)**或**下键(8)**，选择开或者关；
- 短按**菜单键(7)**确认选择，并返回至上一级菜单。

恢复出厂设置——恢复到出厂时的设置

- 在设置的二级菜单界面下，选择恢复出厂设置选项；
- 短按**菜单键(7)**进入该功能的子菜单；
- 短按**上键(6)**或**下键(8)**，选择**是**或者**否**，并短按**菜单键(7)**确认选择；
- 如选择“是”，设备会自动重启；如选择“否”，取消并返回至上一级菜单界面；
- 选择恢复出厂设置后，如下功能将会恢复至默认状态：
  - **图像模式**：白热；
  - **校正模式**：自动；
  - **超清模式**：关
  - **模拟视频**：关
  - **运动传感器**：关
  - **自动掩藏**：关
  - **视放大率**：2.0×；
  - **系统语言**：English；
  - **Wi-Fi**：关
  - **罗盘**：关；
  - **自动待机**：关

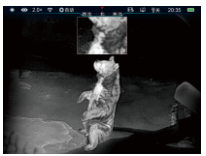
设备信息——查询设备的相关信息

- 在常规设置的二级菜单界面下，选择系统信息选项；
- 短按**菜单键(7)**查询该设备的相关信息，包括产品型号、GUI版本号、软硬件版本号以及PN\SN码等；
- 短按**菜单键(7)**或**电源键(5)**退出并返回上级菜单。

画中画(PIP)功能

画中画功能，就是在主图像的上方同时显示一个的单独“小窗口”，小窗口显示的是选取主图中以十字分划为中心的某一区域被2倍放大的部分图像。

- 在主界面下，长按**上键(6)**，开启/关闭PIP功能；
- 当短按**上键(6)**对主界面图像进行放大之后，PIP小窗口中的图像也会被同步2倍放大。例如，主界面中的图像放大倍率为2.0×、4.0×、6.0×、8.0×，PIP小窗口显示的图像对应的放大倍率值应该是4.0×、8.0×、12.0×、16.0×。



激光指示功能

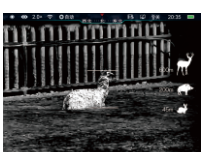
Cabin系列带有激光指示功能，此功能默认隐藏。

- 第一次使用时，请长按**上键(6)+M键(7)+下键(8)** 10s以上，听到快门咔擦声后，激活成功。
- 激光功能激活后，在主界面下，短按**上键(6)+菜单键(7)**，开启或关闭激光指示功能；

概率测距功能

Cabin系列具备概率测距功能，此功能可以推算出一个已知大小的目标的大概距离。

- 在主界面下，长按**上键(6)+菜单键(7)**，开启概率测距功能；



- 开启后，会在图像中部出现两根测量用的横线，并在右侧显示三个预设物体的图标以及测量距离的数值；
- 提供三个预定义的目标数值，分别是：
  - 鹿：1.7m高
  - 野猪：0.9m高
  - 野兔：0.2m高
- 调整设备使目标放在显示区域的中央，通过短按或者长按**上键(6)、下键(8)**，调节测量线的宽度使目标完全位于测量线之间，上键加宽，下键缩小；
- 在调整测量线的宽度过程中，左侧的测距数值也会随之变化；
- 如要更改测量单位，请短按**菜单键(7)**，进行修改；
- 长按**上键(6)+菜单键(7)**退出概率测距功能。

LED灯照明

Cabin系列带有LED灯，可辅助照明。

- LED灯出厂默认状态为关闭，短按**下键(8)+菜单键(7)**，打开LED灯，默认亮度等级为二档，开启后状态栏LED灯图标显示为 ☼2；
- 再次短按**下键(8)+菜单键(7)**，亮度调为1挡，状态栏的图标显示为 ☼1；
- 再次短按**下键(8)+菜单键(7)**，关闭LED灯，状态栏的图标显示为 ☼关。

热点追踪功能

Cabin系列具备热点追踪功能，可以对当前图像中最热的物体进行追踪。

- 在主界面下，长按**下键（8）+菜单键（7）**，开启热点追踪功能；
- 开启后，会在图像中出现热点追踪的蓝色方框，自动追踪场镜中最热的物体；
- 再次长按**下键（8）+菜单键（7）**关闭热点追踪功能。

GUI自动掩藏功能

此功能支持自动掩藏界面中的GUI内容，只保留功能性光标，如激光光标、热点追踪光标等，从而使图像无遮挡。

- 在主菜单中，开启自动掩藏功能，具体操作详见本手册中**“主菜单-系统设置-自动掩藏”**功能介绍；
- 当自动隐藏功能开启后，如在8秒内无按键任何操作，界面上的GUI图标包括状态栏都将自动隐藏，只显示图像界面；
- 短按或者长按**任意键**，可重新调出GUI信息；
- 只有GUI信息显示之后，方可对按键或者菜单进行操作。

Wi-Fi功能

Cabin系列内置Wi-Fi模组，可以通过Wi-Fi与移动设备(电脑、智能手机)进行无线连接。

- 在主菜单中，开启Wi-Fi功能，具体操作详见本手册中**“主菜单-Wi-Fi设置”**功能介绍；
- 当设备的Wi-Fi开启后，在移动设备上查找名称为“CBL19_XXXXXX”的Wi-Fi信号，其中XXXXXX是6位由数字和字母组成的流水码。
- 选择该Wi-Fi信号，输入密码并连接，初始密码为12345678；
- Wi-Fi连接成功后，可以通过移动设备上提前安装的InfiRay Outdoor 的应用APP对设备进行操控、更新。

设置Wi-Fi名称和密码

Cabin系列支持用户在**InfiRay Outdoor**中修改设备的Wi-Fi名称和密码。

- 当设备与移动设备连接之后，打开InfiRay Outdoor应用程序，并在图像界面中，找到“设置”的图标 ⚙ ；
- 点击图标并进入设置界面；
- 在文本框中输入并提交新的Wi-Fi名称（ssid）和密码；
  提交完成后，需要重启设备才能生效。

⚠ 注意

➢ 恢复出厂设置后，Wi-Fi的名称、密码以及系统时间也会被恢复到出厂默认的设置。

产品更新及APP说明

为了完善产品使用性能，设备的软件程序、性能参数等会持续更新，用户可自行去官网**www.infirayoutdoor.com** 进行下载与更新。

Cabin系列热成像仪支持APP技术，可以通过Wi-Fi连接到智能手机或平板电脑，进行图像的实时传输、控制操作，用时用户也可以通过**Infiray Outdoor**应用程序检测并更新产品的固件程序。

关于InfiRay Outdoor

- 用户可以去官网（**www.infirayoutdoor.com**）或者在应用商店（如苹果、小米、华为等）里搜索**InfiRay Outdoor** 进行APP的下载与安装。
- 安装完成后，打开**InfiRay Outdoor** 应用程序；

- 安装完成后，打开Infiray Outdoor应用程序；
- 如果您的设备已连接到移动设备上，请打开移动设备上的移动数据网络。当设备连接到互联网后，会自动跳出更新提示，点击“Now”进行下载更新，或者“Later”稍后更新；
- Infiray Outdoor会自动存储最后一次连接的设备，所以在热像仪没有连接手机或者平板电脑的情况下，打开Infiray Outdoor也会自动进行后台更新检测。如果有更新，在移动设备已连互联网的情况下，您可以先下载更新，下载完成后，将热像仪连接到移动设备可自动进行更新；
- 待更新安装完成后，设备将重新启动，并进入工作状态。
- 关于InfiRay Outdoor 的操作手册也可以去官网进行下载。

技术检查

建议在每次使用前对设备进行一次技术检查。

- 检查设备的外观(外壳无裂纹)。
- 检查镜片及目镜状况(无裂纹、油污、污垢或其他沉淀物)
- 检查电池的状态(应提前完成充电)和电气接触(不应存在盐或氧化)。

产品维护

产品维护应至少每年进行两次，并包括以下内容。

- 用一块棉布擦拭金属和塑料部件的外部表面，清除灰尘和污垢，擦拭过程中可能会用到硅脂。
- 使用不油腻的有机溶剂清洁电池的电接点和电池槽。
- 检查目镜和镜头的玻璃表面。如有必要，清除镜片上的灰尘和沙子(最好使用非接触式方法)。光学表面的清洁应该使用专业的擦拭工具和溶剂来完成。

故障排除

下面这张表列出了操作设备时可能出现的所有问题。按照列表中的建议进行检查和修理。如果出现了表中没有列出的故障，或者无法自己修复缺陷，应该将设备返厂或者供货商进行检修。

故障	可能的原因	解决办法
热像仪无法启动	电池没电	充电
不能进行外部电源供电	USB线损坏	更换USB线
	外部电源电量不足	如有必要，检查外部电源
图像不清晰、出现异常或背景不均匀	需要校正	根据此手册的说明进行图像校正
图像太黑	屏幕亮度低	调节屏幕亮度低
界面图标是清晰的，但是图像是模糊的	镜头没有对焦	拨动镜头调焦旋钮进行调焦
	镜头内部或者外部光学表面有灰尘或者结冰	用软绵布擦拭外部光学表面，或者让设备在温暖干燥的环境静止4小时以上
无法与智能手机或者电脑连接	Wi-Fi密码不正确	输入正确的密码
	设备所在的范围内，Wi-Fi网络太多，可能会造成干扰	为了确保稳定的Wi-Fi运行，可以将设备转移到Wi-Fi网络较少的区域，或者转移到没有Wi-Fi网络的区域。
Wi-Fi 信号消失或者被中断.	设备不在Wi-Fi覆盖范围内；或者设备和接收器之间有障碍物(如混凝土墙)。	将设备重新安置到能直接看到Wi-Fi信号的地方。
图像质量差或者探测距离缩短	这些问题可能由于在恶劣天气条件下(雪、雨、雾等)使用造成的。	
当在低温条件下使用时，环境的成像质量比在正温度条件下差	在零上的温度条件下，被观察的物体(环境和背景)由于导热系数不同而升温不同，从而产生高温反差，因此图像质量将会更高。 在低温条件下，被观察到的物体(背景)通常会冷却到大致相同的温度，这是因为温度对比度大大降低，图像质量(细节)较差，这是热成像设备的一个特点。	