

Cabin Series Operating Manual

V1.0

IRay Technology Co., Ltd.

Specifications

Model	CBL19
Microbolometer	
Type	Uncooled VOx
Resolution	384×288
Pixel size, μm	12
NETD, mk	≤40
Frame refresh rate, Hz	50
Optical Specifications	
Objective lens, mm	19
Field of view	13.8° × 10.4°
Visual amplification, ×	2-8
Digital zoom, ×	1-4
Exit pupil diameter, mm	20
Focusing range of eyepiece, D	-5 ~ +5
Detection range, m (Target size: 1.7m×0.5m, P(n)=99%)	980
Display	
Type	LCOS
Resolution	1280×960
Battery power supply	
Battery type/Capacity/Output voltage	Lithium-ion battery pack IBP-2/ 3.1Ah /3.6V
Operating duration (22 °C), h*	≤7.5
External power supply	5V (Type C)
Operational Specifications	
Ingress protection rating	IP67
Memory capacity, GB	16
APP	Support
Operating temperature, °C	-20~+50
Weight (exclusive of battery pack), g	<380
Dimension, mm	165×50×85

*Actual operation time depends on the frequency 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 features without prior notice to the customers;

You can download this Manual at InfiRay Outdoor official website: www.infirayoutdoor.com.

1. Package Contents

- Cabin Series Thermal Imager
- Hand strap
- Neck strap
- Portable bag
- IBC-2 power adapter
- IBP-2 battery pack
- Type C-USB-Video Output data cable for outputting video
- Power adapter
- Cloth for cleaning lens
- Operating Manual

2. 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.

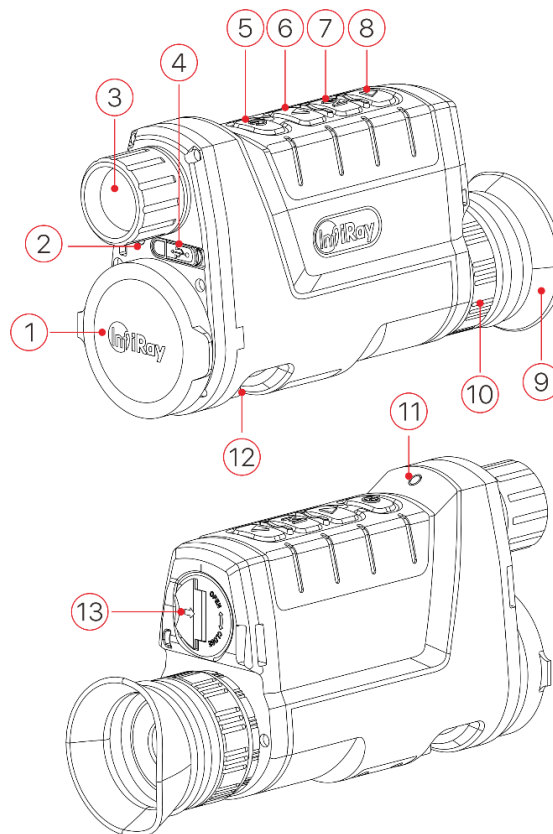
3. Distinguishing Features

- 12 μ m self-developed thermal detector
- High image quality
- Lightweight and compact
- HD display
- Quickly removable battery pack
- Zooming LED indicator

- Stadiametric rangefinder
- Long detection range
- 50Hz high frame refresh rate
- Built-in memory card, supporting photographing and video recording
- Support App connection via Wi-Fi
- Built-in digital compass and motion sensor
- Support PIP (picture in picture) mode
- Defective pixel calibration
- Convenient user interface

4. 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. Diopter Adjustment
11. Power indicator
12. Lens focus knob
13. IBP-2 battery pack



5. Button Operations

Button	Device status/ operation mode	Short press	Long press
Power button	The device is off	—	Power on the device
	Home screen	Image calibration	Power off the

			device/Standby
	Standby	Wake up the device	——
	Main menu/ Shortcut menu	Exit menu/Return to the upper menu	——
	Defective pixel 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	Enable/disable the cursor movement	Save and exit to the home screen
	Defective pixel calibration interface	Enable/disable the cursor movement	Save or cancel the calibration
Up/Zoom button	Home screen	Magnification from 2× to 8×	Turn the PIP function on/off
	Shortcut menu/ Main menu	Navigation up	——
	Laser cursor calibration/defective pixel calibration interface	Move the cursor up / left by one pixel	Quickly move 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 pixel calibration interface	Move the cursor down/ right by one pixel	Quickly move cursor down / right
Up + Menu	Home screen	Turn the laser on/off	Turn the stadiametric rangefinder on/off
Down + Menu	Home screen	Turn on/off or adjust the LED light	Turn the hotspot tracking on/off

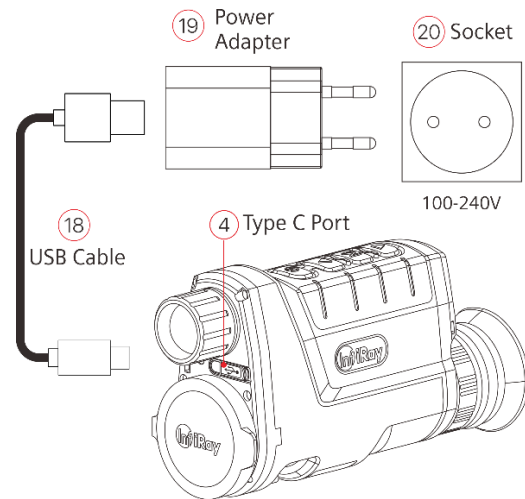
Note: Cabin's laser function is hidden by default. When using the device for the first time, please press and hold the **Up + Menu + Down** buttons at the same time for more than 10s to unhide the laser function after the sound of the shutter clicks.

6. Battery and Safety

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.

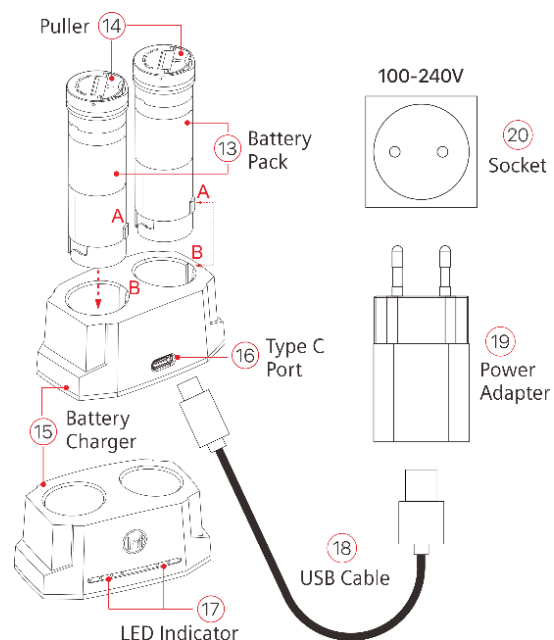
Method 1: Charging with Type-C Port

- 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 (18) of the data cable to the Type C port (4) of the product.
- Connect the other end of the data cable 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 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 (17) will indicate the charging status.



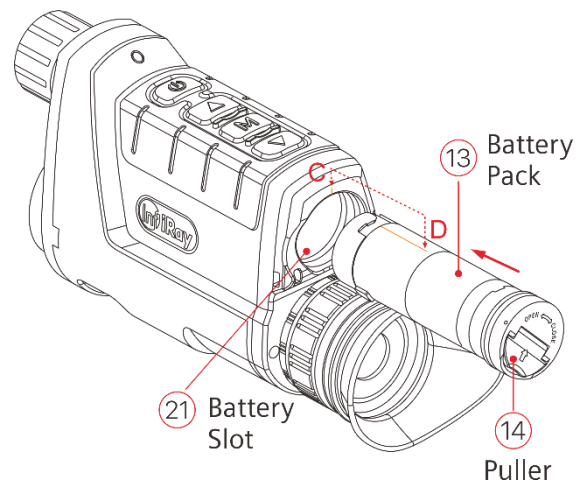
indicator (17) on the battery charger (15) will display the battery charge state.

- ● 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%
- ● ● ● ● The battery is fully charged.
- After the battery is fully charged, remove the battery pack from the battery charger.

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.

7. External Power Supply

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

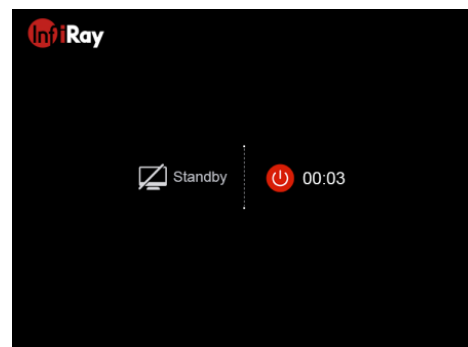
- Connect the external power supply to the Type-C port of Cabin **(4)**.
- The device will automatically switch to the external power supply and charge the internal battery pack at the same time.
- At this time, the battery icon on the display will become a charging icon , and the power indicator will turn red, 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.

8. Installation and Use

Power-on and 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 adjusting ring (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 (See the **Shortcut Menu** 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 by pressing the **Power button (5)**.



9. 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 shutter 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.

10. 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.

11. 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 after time, 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 picture will be stuck for 0.5s, and a photo icon appears in the upper right corner of the screen.
- The photographed images are stored in the built-in memory card.

Video Recording

- On the home screen, press and hold the **Down/Photo button** 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 photographed images and recorded videos are stored in the built-in memory card in the format: IMG_HHMMSS_XXX.jpg (image) and VID_HHMMSS_XXX.mp4 (video); HHMMSS means hours/minutes/seconds; XXX means three-digit code of the multimedia file.
- This code of the multimedia file cannot be reset.
- The maximum duration of a video recording file is 10 minutes. When it is more than 10 minutes,

the video will be automatically recorded onto a new file.

- You can operate the menu during video recording.
- The number of files is limited by the capacity of the built-in memory card of the device. 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.

- Connect the device to a computer through the data cable.
- Turn on the device.
- Double-click "My Computer" on the desktop. Double-click to open the device named "Infiray"



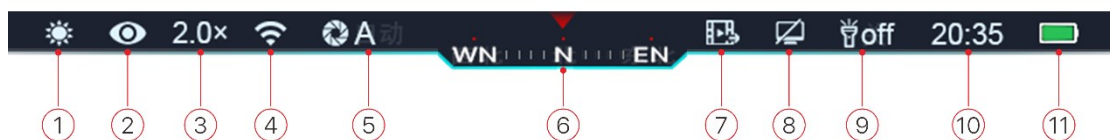
. Then, double-click to open the device named "Internal Storage"



to access the memory.

- There are different folders named by time in the format of xxxx (year) xx (month) xx (day) in memory.
 - The photographed images and recorded videos of the current day are stored in these folders.
- You can copy or delete the required files or folders.

12. 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:

- ①. Current image mode (☀️: white-hot; 🌙: black-hot; 🔥: red-hot; 🎨: palette; 🐦: highlight)
- ②. Ultraclear mode status (🚫👁️: the ultra-clear mode is OFF; 👁️: the ultra-clear mode is ON)

- ③. Visual amplification (such as 2.0×)
- ④. Wi-Fi status (📶: Wi-Fi is OFF; 📶: Wi-Fi is ON)
- ⑤. Calibration mode (a countdown timer 🕒00:05 will appear instead of the letter A in the automatic calibration mode with 5 seconds remaining until 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.
- ⑥. Compass (when the compass is on)
- ⑦. Video output status (when it is on)
- ⑧. Auto standby (when it is on)
- ⑨. LED light status (OFF upon startup by default)
- ⑩. Clock (set in the main menu or synchronize the time in the InfiRay Outdoor App)
- 11. Battery pack indication (When the inside of the icon is in green 🟢, it means that the power is higher than 20%; When it is in red 🔴, it means that the battery power is low, please charge it in time; When a lightning sign ⚡ appears in the middle of the icon, it indicates that the external power supply is powering the device and this icon will be displayed as a USB icon 📡.)

13. 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



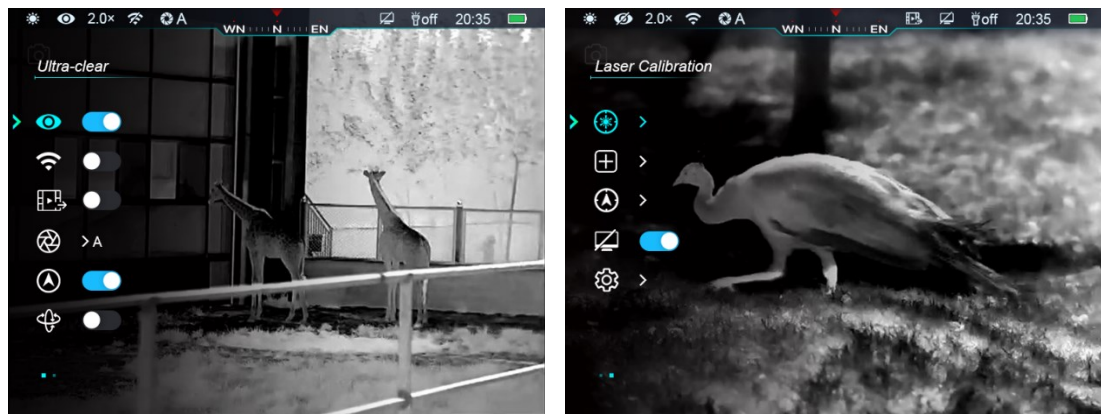
adjust the screen brightness among 1-5 levels.

- **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.




Note: In the shortcut menu, if there is no operation within 5s, the device will automatically save the changes and return to the home screen.




14. Main Menu




- On the home screen, press and hold the **Menu button (7)** to enter the main menu.
- Press the **Up/Zoom button (6)** or **Down/Photo button (8)** to switch the menu options.
- The function options of the main menu are cyclical: as soon as the last menu option of the first tab is reached, the first menu option of the second tab 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.
- Press the **Menu button (7)** to modify the parameters of the current option or go to the next level of the menu.
- When the cursor > reaches, the icon of the option will change from white to 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.
- Under all menu interfaces, the device will return to the home screen when there is no operation within 15s.
- During the continuous operation of Cabin, when exiting from the main menu, the cursor > remains at the position before exiting. When you restart the thermal imager and go to the main menu for the first time, the cursor stays at the first menu option.



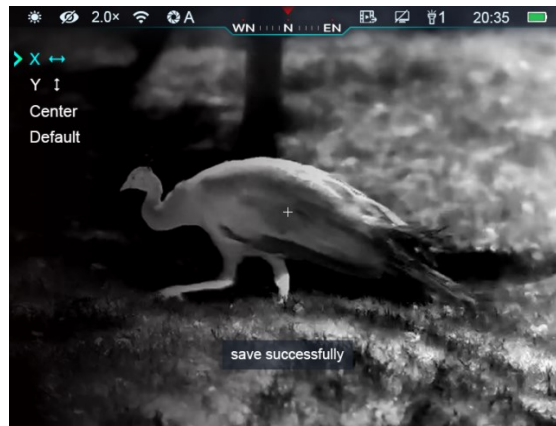
Composition and Description of Main Menu

<p>Ultra-clear</p> 	<p>Enabling/Disabling the ultra-clear mode</p> <ul style="list-style-type: none"> ● Press and hold the Menu button (7) to enter the main menu. ● Select Ultra-clear (selected by default on the menu after startup). ● Short press the Menu button (7) to enable or disable ultra-clear mode, during which you will hear a click of shutter calibration. ● The icon in the status bar changes accordingly after this option is enabled or disabled.
<p>Wi-Fi</p> 	<p>Enabling/Disabling Wi-Fi</p> <ul style="list-style-type: none"> ● Press and hold the Menu button (7) to enter the main menu. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to select the Wi-Fi option. ● Short press the Menu button (7) to enable or disable Wi-Fi. ● The icon in the status bar changes accordingly after this option is enabled or disabled.
<p>Video Output</p> 	<p>Enabling/Disabling video output</p> <ul style="list-style-type: none"> ● Press and hold the Menu button (7) to go to the main menu interface. ● Short press Up/Zoom button (6) or Down/Photo button (8) to select the Video Output option. ● Short press the Menu button (7) to enable or disable analog video output. ● The icon in the status bar changes accordingly after this option is enabled or disabled.

<p>Calibration</p> 	<p>Selecting calibration mode</p> <p>Cabin provides three calibration modes: automatic shutter calibration (A), manual shutter calibration (M), and background calibration (B).</p> <ul style="list-style-type: none"> ● Press and hold the Menu button (7) to go to the main menu interface. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to select the Calibration Mode option. ● Short press the Menu button (7) to enter the secondary menu of the calibration function. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to select a mode from the three choices. <ul style="list-style-type: none"> - Automatic (A): Defined by software algorithms and images are calibrated automatically in this mode. - Manual (M): Images are calibrated by the user according to the image effect. - Background (B): The lens cap needs to be covered on the camera with a lens cap in this mode. ● Short press the Menu button (7) to confirm the selection. The icon in the status bar changes accordingly. 
<p>Digital Compass</p> 	<p>Enabling/Disabling the digital compass</p> <ul style="list-style-type: none"> ● Press and hold the Menu button (7) to go to the main menu interface. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to select the Digital compass option. ● Short press the Menu button (7) to enable or disable the digital compass

	<p>function.</p> <ul style="list-style-type: none"> ● After the digital compass is enabled, its icon will be displayed in the middle of the status bar on the top.
<p>Gravity Sensor</p> 	<p>Enabling/Disabling the gravity sensor</p> <ul style="list-style-type: none"> ● Press and hold the Menu button (7) to go to the main menu interface. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to select the Gravity Sensor option. ● Short press the Menu button (7) to enable or disable the gravity sensor. ● After the motion sensor is enabled, its functions will be displayed on both sides of the screen. ● The curved ruler on the left represents the tilt angle and the vertical ruler on the right represents the pitch angle. 
<p>Laser cursor calibration</p> 	<p>If the actual location differs from the location marked by the laser pointer, you can use this function to calibrate the laser pointer.</p> <ul style="list-style-type: none"> ● Press and hold the Menu button (7) to go to the main menu interface. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to select the Laser Pointer Calibrate option. ● Short press the Menu button (7) to enter Laser Pointer Calibrate options. The laser indicator is enabled automatically. ● The laser pointer appears in the middle of the screen and the prompts shown in the following figure are displayed in the upper left corner. <ul style="list-style-type: none"> - 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 the cursor to the center/default position.
- Press and hold the **Menu button (7)** to save and exit to the home screen.







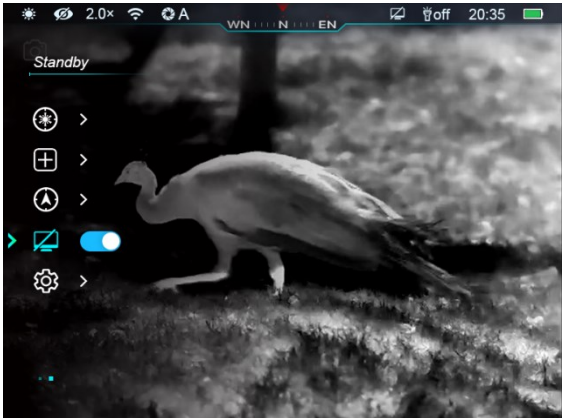



Pixels Defect Correction








- When using Cabin, you may see defective pixels, such as visible light spots or dark spots with stable brightness. To address this problem, use the Pixel Defect Calibration function to remove the defective pixels.
- Press and hold the **Menu button (7)** to go to the main menu interface.
 - Short press the **Up/Zoom button (6)** or **Down/Photo button (8)** to select the Pixels Defect Correction option.




- Short press the **Menu button (7)** to 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 window shows the cursor moving direction (X-axis and Y-axis) and the number of the corrected pixels.
- Short press the **Up/Zoom button (6)** or **Down/Photo button (8)** to switch between the X and Y axes. Then short press the **Menu button (7)** to enter the current coordinate.
- Short press the **Up/Zoom button (6)** or **Down/Photo button (8)** to move on the current coordinate. If you press the **Up/Zoom button (6)**, the pointer moves leftward or upward. If you press **Down/Photo button (8)** the pointer moves rightward or downward.
- After finishing moving the pointer, short press the **Menu button (7)** to save the setting and exit. The icon stops blinking.
- You can repeat the preceding steps to change the pointer location until it reaches the position of the blind pixel.
- After moving the pointer to the position of the blind pixel, short press the **Power button (5)** to add and calibrate the blind pixel. “Add” is displayed in PIP, indicating that blind pixel is successfully added. Repeat the operation to calibrate other blind pixels.
- At the blind pixel calibrated in the previous step, you can delete it by short-pressing the **Power button (5)** again. “Del” is displayed in PIP.
- Each time you add or delete marking a blind pixel, the quantity of defective pixel changes accordingly.
- When the pointer moves near PIP, PIP and the content on the right will move to the upper left corner automatically.
- After finishing calibration, long press the **Menu button (7)**. A dialog box is displayed, asking you whether to save the calibration. Short press the




	<p>Up/Zoom button (6) or Down/Photo button (8) to select an option. Then short press the Menu button (7) to confirm your selection. Select “Yes” to confirm the setting and exit and “No” to cancel the setting and exit.</p> 
<p>Compass Calibration</p> 	<p>Calibrating the digital compass</p> <ul style="list-style-type: none"> ● Press and hold the Menu button (7) to go to the main menu interface. ● Short press the Up/Zoom button (6) or Down/Photo button (7) to select the Compass Calibration option. ● Short press the Menu button (7) to 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. 
<p>Standby</p> 	<p>Setting the standby state and duration</p> <ul style="list-style-type: none"> ● Press and hold the Menu button (7) to enter the main menu interface. ● Short press the Up button (6) or Down button (8) to select the Standby

	<p>Settings option.</p> <ul style="list-style-type: none"> ● 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 function is on, the device will automatically enter the standby state with no operation within 15 minutes, and power off automatically after 15 minutes in the standby state. ● Note: When Wi-Fi, recording or video output function is turned on, it will not automatically stand by. 
<p>Settings</p> 	<p>Set the date, time, language, and automatic status hiding, restore to factory settings, and query device information.</p> 
<p>Date</p> 	<p>Setting the system date</p> <ul style="list-style-type: none"> ● Short press the Menu button (7) to enter the secondary menu of Settings. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to select the Date option.

		<ul style="list-style-type: none"> ● Short press the Menu button (7) to activate re-setting the date. The date is in the format of YY/MM/DD. ● Short press or press and hold the Up/Zoom button (6) or Down/Photo button (8) to set the year, month, and day. ● Short press the Menu button (7) to switch between the year, month, and day. ● After setting the date, press and hold the Menu button (7) to save and exit. 
	<p>Time</p> 	<p>Setting the system time</p> <ul style="list-style-type: none"> ● Short press the Menu button (7) to enter the secondary menu of Settings. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to select the Time option. The 24-hour view is used with hour and minute displayed. ● Short press the Menu button (7) to activate re-setting the time. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to set the hour and minute. ● Short press the Menu button (7) to switch between the hour and minute. ● After setting the time, press and hold the Menu button (7) to save and exit.

		<ul style="list-style-type: none"> ● After setting time, the time in the status bar changes accordingly. 
	<p>Language</p> 	<p>Selecting the language</p> <ul style="list-style-type: none"> ● Short press the Menu button (7) to enter the secondary menu of Settings. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to select the Language option. Short press the Menu button (7) to enter its secondary menu. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to switch between English and Simplified Chinese. ● Short press the Menu button (7) to confirm the selection and exit to return to the home menu. 
	<p>Status Auto Hiding</p>	<p>Enabling/Disabling automatic status hiding</p> <ul style="list-style-type: none"> ● Short press the Menu button to enter the secondary menu

		<p>of Settings.</p> <ul style="list-style-type: none"> ● Short press the Up/Zoom button (6) or Down/Photo button (8) to select Automatic Status Hide. Short press the Menu button (7) to enter its secondary menu. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to enable or disable this function. ● Short press the Menu button (7) to confirm the selection and exit to return to the main menu. 
	<p>Factory Reset</p> 	<p>Restoring factory default settings</p> <ul style="list-style-type: none"> ● Short press the Menu button (7) to enter the secondary menu of Settings. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to select the Factory Reset option. Short press the Menu button (7) to enter its secondary menu. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to select “Yes” or “No”. “Yes” means to restore factory settings and “No” means canceling the operation. ● Short press the Menu button (7) to confirm the selection. ● If “Yes” is selected, the device will shut down automatically. ● If “No” is selected, the operation is canceled and the upper menu is displayed.

		<p>After Factory Reset is selected, the following functions will be restored to default settings:</p> <ul style="list-style-type: none"> - Image mode: White-hot - Ultraclear mode: Off - Visual amplification: 2.0× - Shutter calibration: A - Compass: Off - Standby: Off - Analog video: Off - Wi-Fi: Off - Gravity sensor: Off - Language: English - Automatic status hiding: Off 
	<p>Info</p> 	<p>Querying device information</p> <ul style="list-style-type: none"> ● Short press the Menu button (7) to enter the secondary menu of General Settings. ● Short press the Up/Zoom button (6) or Down/Photo button (8) to select the Version Information option. ● Short press the Menu button (7) to query information about the current device. ● Short press the Menu button (7) or the Power button (5) to exit to return to the upper menu. 

15. Picture In Picture (PIP)

Picture-in-Picture (PIP) provides a floating window independent of the full screen. This window shows part of the image which is enlarged to 2× in a certain area centered on the reticle of the main image.

- On the home screen, press and hold the **Up/Zoom button (6)** to enable or disable PIP.
- After enlarging the image on the home screen by short-pressing the **Up/Zoom button (8)**. The image shown in the PIP window will also be enlarged to 2×. For example, the image magnification on the home screen is 2.0×, 4.0×, 6.0×, 8.0×, and the corresponding magnification value of the image displayed in the PIP small window should be 4.0×, 8.0×, 12.0×, 16.0×.



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/Zoom button (6) + Menu button (7) + Down/Photo button (8)** for more than 10 seconds, and the laser indicator is enabled after hearing a shutter click.
- On the home screen, short press the **Up/Zoom button (6) + Menu button (7)** to enable or disable the laser indicator;



17. Stadiametric Rangefinder

Cabin provides the stadiametric rangefinder function, which allows you to calculate the overall

distance from an object with a known size.

- On the home screen, press and hold the **Up/Zoom button (6)** and the **Menu button (7)** to enable stadiametric rangefinder.
- After this function is enabled, two lines used for measuring will appear in the image, and icons of three pre-configured 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

- Adjust the device to make it in the middle of the image by pressing the **Up/Zoom button (6)** or **Down/Photo 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/Zoom button (6)** and the **Menu button (7)** to exit stadiametric rangefinder.

18. LED Indicator

Cabin provides LED indicator, which can be quickly opened, adjusted, and closed.

- The LED indicator is disabled by default. Shortly press the **Menu button (7)** + **Down/Photo button (8)** to enable the LED indicator. At this time, the brightness is in level 2, and the status

bar displays .

- Short press the **Menu button (7)** + **Down/Photo button (8)** again, the brightness will turn to level 1, and the status bar will display .

- Shortly press the **Menu button (7)** +



Down/Photo button (8) again to disable the LED indicator, and the status bar will display



19. Hotspot Tracking

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

- On the home screen, press and hold the **Menu button (7) + Down/Photo button (8)** to enable hotspot tracking.
- After this function is enabled, a blue box will appear in the image and track the hottest object automatically.
- Press and hold the **Up/Zoom button (6)** and the **Menu button (7)** to exit hotspot tracking.



20. Automatic Hiding

This function is used to hide GUI with reticle displayed only, so that there is no blocking on the image.

- In the main menu interface, short press the **Up/Zoom button (6)** and the **Menu button (7)** to select “Settings”.
- Short press the **Menu button (7)** to enter the secondary menu of “Settings” and short press the **Up/Zoom button (6)** and **Down/Photo button (8)** to select the “Automatic Status Hiding” function.
- Short press the **Menu button (7)** to enter the secondary menu of “Automatic Status Hiding”. Then select “On” or “Off”.
- After automatic status hiding is enabled, all GUI elements including the status bar will be automatically hidden and only the image is displayed if there is no operation within 8s.
- Short press or press and hold any button to invoke GUI.

- You can operate the buttons and the menu only after GUI information is displayed.


21. Wi-Fi

Cabin has a built-in Wi-Fi module. The device can connect to a mobile apparatus (computer or smart phone) via Wi-Fi.

- Enable Wi-Fi in the main menu, referring to "**Main Menu-Wi-Fi Settings**".
- After Wi-Fi is enabled, search for the Wi-Fi signal named CBL19_XXXXXX, among which XXXXXX is a serial number composed of six digits and letters.
- Select the Wi-Fi and enter the password. The initial password is 12345678.
- After Wi-Fi access, you can control the device via the mobile App.

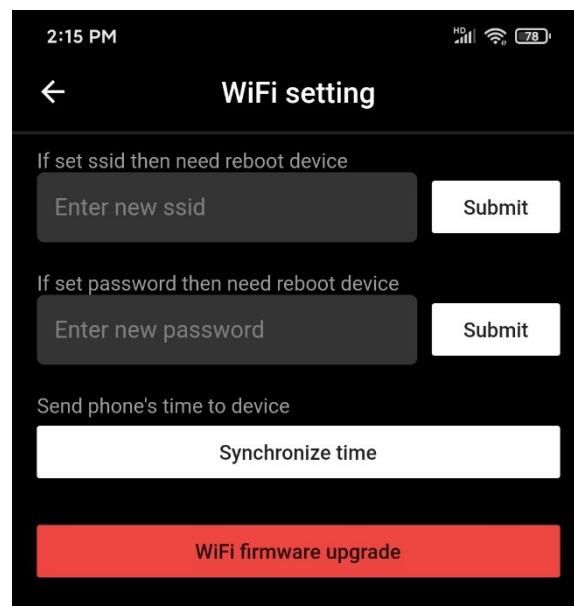
Setting Wi-Fi name and password

Cabin allows you to change the name and password of the Wi-Fi in the App.

- After the device is connected to the mobile device, locate the “Settings” icon  in the **InfiRay Outdoor** interface and tap it to enter.
- In the text box, enter the new Wi-Fi name (SSID) and password.
- After submitting the change, reset the device to activate the setting.

Caution! After the device is restored to the factory setting, the name and password of the

Wi-Fi will also be restored to the default factory setting.



22. Product Update and Description to App

Cabin supports control with an App. You can transmit images in real time, operate the device, and

update the program by connecting a smartphone or tablet via Wi-Fi.

You can download the user manual of InfiRay Outdoor at our official website (www.infirayoutdoor.com).

You can also obtain and update the firmware program of the product on our official website.

About InfiRay Outdoor

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



- After installing the App, open it.
- If your device has been connected to a mobile device, enable mobile data on it. After Internet access, an update prompt will be displayed. Click “Now” to download the latest version immediately or click “Later”.
- InfiRay Outdoor App saves the last connected device. Therefore, once you open InfiRay Outdoor App, it automatically detects an update in the background even when Cabin is not connected to a phone or tablet. If an update is available and the mobile device accesses the internet, you can download the update first. After Cabin is connected to the mobile device, the version will be updated automatically.
- After the update is installed, the device will restart and start working.

23. Technical Inspection

Perform a technical inspection to check the following items each time before you use the device:

- Exterior of the device (no crack on the enclosure)
- Lens and eyepiece (no crack, oil, stain, or other sediments)
- Status of the rechargeable battery (fully charged in advance) and electrical contact (no salinization or oxidation)

24. Product Maintenance

The device must be maintained in the following ways at least twice each year:

- Wipe the surface of metal and plastic parts to clear off dust and dirt by using a cotton cloth. Apply silicone grease if required.
- Use non-greasy organic solvent to wash the electric contact and slot of the battery.
- Check the glass surface of the eyepiece and lens. If necessary, clear off the dust and sand on the lenses (preferably using a non-contact method). Use a professional wiping tool and solvent to clean the optical surfaces.

25. Troubleshooting

The following table lists problems that are likely to occur during device operation. Check and address problems by referring to this table. If faults not included in this table occur or you cannot fix the fault, please return the device to the vendor or supplier for troubleshooting.

Fault	Possible Cause	Solution
The thermal imager cannot start.	The battery is out of charge.	Charge the device.
The device cannot be powered by external power supply.	The USB cable is damaged.	Replace the USB cable.
	The external power supply is insufficient.	If necessary, check the external power supply.

<p>Images are unclear, vertical lines appears, or the background is not even.</p>	<p>Calibration is required.</p>	<p>Calibrate the images as instructed by the user manual.</p>
<p>The images are too dark.</p>	<p>The screen is not bright enough.</p>	<p>Adjust the brightness of the screen.</p>
<p>Icons are clear but images are blurry.</p>	<p>The lens is not focused.</p>	<p>Rotate the lens focus knob to adjust the focus.</p>
	<p>The inner side of the lens or the optical surface is dusted or iced.</p>	<p>Wipe the optical surface by using a soft cotton cloth or leave the device to dry in a warm and dry environment for more than 4 hours.</p>
<p>The device cannot connect to a smartphone or computer.</p>	<p>The Wi-Fi password is incorrect.</p>	<p>Enter the correct Wi-Fi password.</p>
	<p>There are too many Wi-Fi networks that are accessible to the device.</p>	<p>To enable stable network access, you are advised to move the device to an area with a limited number of Wi-Fi networks, or to an area without Wi-Fi coverage.</p>
<p>Wi-Fi signals are lost or interrupted.</p>	<p>The device is beyond Wi-Fi coverage. There is blocking (such as concrete walls) between the device and the receiver.</p>	<p>Move the device to a place where you can receive Wi-Fi signals.</p>
<p>The observed target disappears.</p>	<p>You are observing the target through the glass.</p>	<p>Observe the target directly without the presence of glass.</p>
<p>The image quality is poor or the rangefinder distance shortens.</p>	<p>These problems are likely to occur when you use the device in harsh weathers (such as snow, rain, and fog).</p>	

When the device is used at a low temperature, the imaging quality is poorer than that at normal temperature.

At temperatures above 0°C, temperature-rise varies with the observed objects (environment and background) due to different heat conductivity coefficients. As a result, high-temperature contrast occurs and the image quality is better.

At low temperatures below 0°C, the observed targets cool down to a similar temperature because of reduced temperature contrast.

Therefore, the image quality (details in particular) is poor, which is a characteristic of thermal imaging devices.