

CLIP NV Series User Manual

V1.0

InfiRay Technologies Co., Ltd.

Specifications

Model	CD35
Microbolometer	
Type	HD CMOS
Resolution, pixels	1920×1080
Pixel, μm	4
Optical Specifications	
Objective lens, mm	35 / F1.4
Field of view, $^{\circ}$	9.4 × 7.1
Exit pupil distance, mm	35
Diopter, D	- 7 ~ +3
Display	
Type	OLED
Resolution, pixels	1024×768
Dimension, inch	0.39
Battery	
Battery type	CR123 (3.7V)×2/16650×2
Max. battery life (t=22 $^{\circ}$ C) *, h	3.5 (CR123) / 7 (16650)
External power supply, V	5 (Type C)
Physical Specifications	
Detection range, m	200
IP rating	IP66
Built-in memory, GB	32
Photo / Video resolution, pixels	1024×768
Operating temperature, $^{\circ}$ C	-20 ~ +50
Max. recoil power on rifled weapon,	1000 g
Weight (without batteries), g	703
Dimension, mm	195×61×61
IR illuminator	
Wavelength, nm	850 / 940
Battery type	18650
Max power, W	1.5

*Actual operation time depends on the density of Wi-Fi use and video recording functions, etc.;

*Improvements may be made to the design and software of this product to enhance its features without prior notice to the customer;

*The current version of the User Manual is available on our official website:

<https://www.infrayoudoor.com/>.

I. Package Contents

- CLIP NV Series Front Attachment
- Adapter ring
- External IR Illuminator (850nm or 940nm)
- External IR Illuminator Mount
- Bluetooth Remote Controller
- Button Cell
- IEB-2 Extra Battery (for 16650 battery)
- Type-C Cable
- Lens Cloth
- Two Wrenches (for ring and mounts)
- Quick Start Guide

II. Description:

The CLIP NV series digital night vision device is a front attachment for day scope for outdoor hunting with a built-in starlight image sensor with low-light performance. It can restore the real color and details of the observing imaging. It can be used with an IR illuminator for clear imaging at night. With the adapter ring, it can be quickly mounted and removed. It adopts two CR123 or two 16650 batteries for power supply, and users can purchase cusp batteries for replacement. It can be widely used for hunting, observation, and positioning in low visibility conditions.

III. Product Features

- Starlight image sensor with low-light performance for clear imaging at night;
- OLED display with 1024×768 resolution;
- Impact resistance structure and process, with high accuracy;
- Easy-to-remove adapter ring for quick removal and mount;
- UI designed specifically for the front attachment, suitable for a variety of common day scope;
- CR123 or 16650 battery replacement for long service life;
- Clear imaging within a range of up to 200m;
- Built-in 32G memory, supporting photo taking and video recording;
- Built-in Wi-Fi module, supporting InfiRay Outdoor app connection;

IV. Device Composition

1. Lens cap
2. Focus ring
3. Objective lens
4. Power button
5. Menu button
6. Camera button
7. Battery compartment cover
8. Type-C port
9. Bayonet-type ring
10. Eyepiece

V. Button Operations

Button	Device Status/ Current Operation Mode	Press	Press and Hold
Power button	Shutdown	——	Power on the device
	Home screen	Standby	Enter the shutdown confirmation screen
	Standby	Wake up the device	——
	Main menu screen	Navigate upwards with the menu	——
	Optical axis calibration screen	Image moves slowly (upward/left)	Image moves quickly (upward/left)
	UI move screen	UI moves slowly (upward/left)	UI moves quickly (upward/left)
	Shutdown confirmation screen	Select whether to shut down	——
Menu button	Home screen	Enter the main menu	——
	Main menu screen	Switch between ON and OFF/Switch the option parameters/Go to the submenu	Save and go back to the home screen

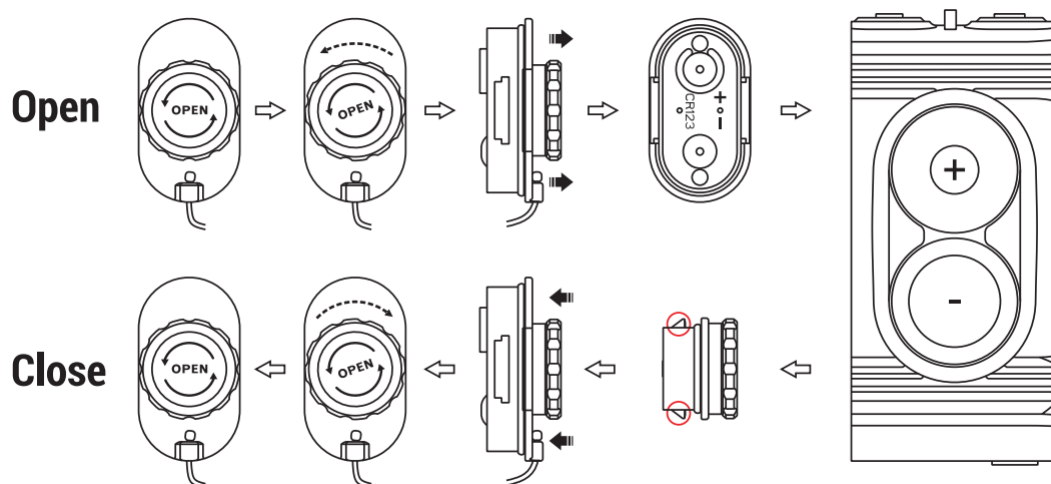
	Optical axis calibration screen	Switch axis X or Y	Save and go back to the main menu
	UI move screen	Switch axis X or Y	——
	Shutdown confirmation screen	Confirm/Cancel shutdown	——
Camera button	Home screen	Take photo	Enable/Disable video recording
	Main menu screen	Navigate downwards with the menu	——
	Optical axis calibration screen	Image moves slowly (downward/right)	Image moves quickly (downward/right)
	UI move screen	UI moves slowly (downward/right)	UI moves quickly (downward/right)
	Shutdown confirmation screen	Select whether to shut down	——
Power button + Camera button	All screens except UI move screen	——	Show UI move screen
	UI move screen	——	Back to the previous screen

VI. Battery Power Supply

The CLIP NV series is powered by two CR123 batteries or two 16650 batteries, with a normal working time of 3.5 hours and 7 hours respectively. The data cable can only be used to power the device, but not to charge the battery.

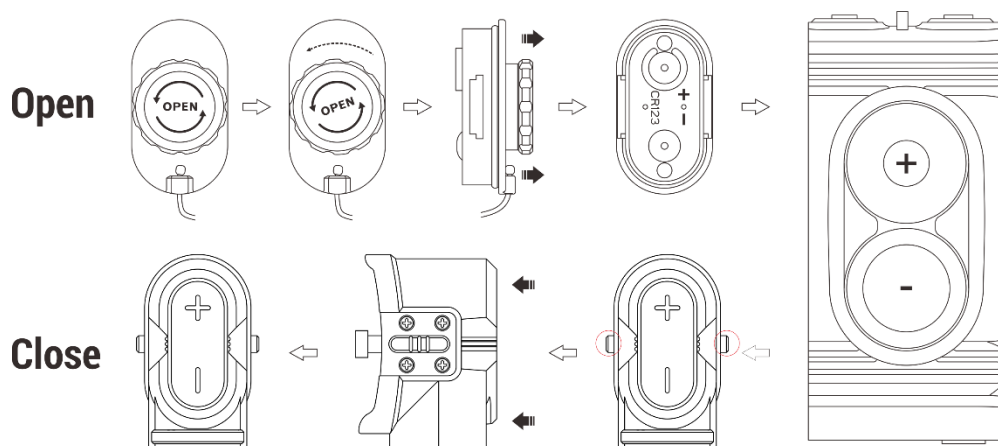
Battery Installation

Installing CR123 battery



- Open the battery compartment cover in the direction indicated (anticlockwise).
- Install two CR123 batteries or 16650 batteries according to the battery positive and negative poles indicated on the cover.
- Put the battery compartment cover back and press the cover to ensure that both sides are tightened.
- The battery level is displayed on the status bar of the screen.
- When the battery icon turns red, please replace the battery in time.
- Please shut down the device before removing the battery.

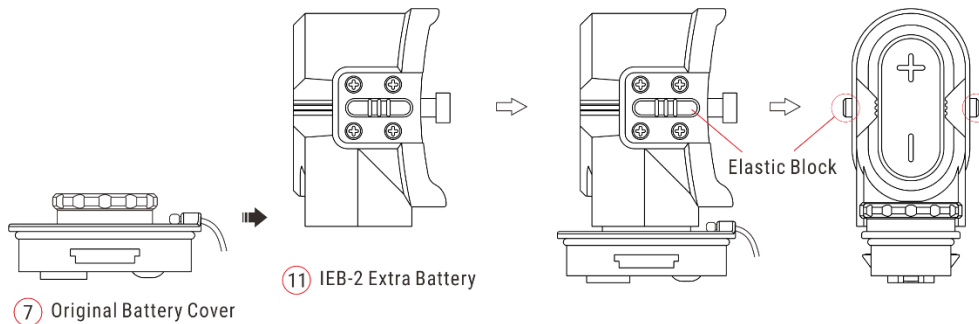
Installing CR16650 battery



- When using the 16650 battery, replace the original battery compartment cover with the IEB-2 extra battery compartment cover.
- Open the original battery compartment cover and install two 16650 batteries correctly

according to the battery positive and negative poles indicated on the cover.

- Install the IEB-2 extra battery compartment cover and press until the cover is secured.
- After installation, place the original battery compartment cover on the extra one as shown in the figure below.



- To open the extra battery compartment cover, press the elastic blocks on both sides.

Safety measures

- If the device is not used for a long time, the battery should be removed to avoid battery power loss.
- The device is equipped with a short circuit protection system, but conditions that may lead to a short circuit should be avoided.
- The recommended operating temperature for the device is from -20 °C to +50 °C. Do not use the device beyond this temperature range, or else, it may shorten the battery life.
- When the device is used under sub-zero temperature, the battery capacity drops. This is normal and does not indicate a defect.

VII. External Power Supply

The CLIP NV series supports external power supplies, such as the portable power source (5V).

- Connect an external power supply to the USB port of CLIP NV;
- Then, the device automatically switches to the external power supply but not charge the battery;
- When the external power is turned off, the device will switch to the battery for the power supply.

VIII. Installation and Usage

WARNING! The lens of the digital night vision device must not be pointed at any sources of intense radiation 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.

The CLIP NV series is a front attachment for day scope, suitable for day and night use.

Install the CLIP NV series on the day scope as follows:

- Measure the outer diameter of the eyepiece of the day scope. Select an applicable fitting ring and place it in the adapter ring.
- Install the adapter ring on the eyepiece of the day scope and lock it.
- Install the eyepiece of CLIP NV on the adapter ring, adjust it until to a proper position, and turn the bayonet-type ring of CLIP NV to fasten the eyepiece.

Startup and configuration

- Remove the lens cap;
- Press and hold the **Power** button for 2s to power on the device. Then, the home screen appears after 5s;
- Adjust the focus length by rotating the focus ring of the objective lens;
- If the UI is not in the center of the field of view, press and hold the **Power** button and **Camera button** for 2s at the same time to enable the UI move mode. Directions and key operation prompts appear on the page. Move the UI according to the prompts to make it located in the center of the field of view.
- Setting the image mode: On the home screen, press the **Menu** button to open the menu, press the **Power** button or **Camera button** to select the image mode option, and then press the **Menu** button to set the image mode, which is day, evening twilight, night in sequence, and the icon on the top status bar is updated in real-time;
- Setting the display brightness: On the menu screen, press the **Power** button or **Camera button** to select the screen display brightness option, then press the **Menu** button to adjust the screen display brightness, which can be switched from level 1 to 4;
- Calibrating the optical axis: Shoot at the target against which the day scope has been zeroed. In the event that the impact point fails to fall on that target, press the **Menu** button

to call the menu function, press the **Power** button or **Camera button** to select the “optical axis calibration” function, and press the **Menu** button to go to the page for optical axis calibration. Then, press the **Power** button or **Camera button** to move the image to allow the impact point to coincide with the reticle center of the day scope. Press and hold the **Menu** button to exit.

- Following the operations above, press and hold the **Power** button to see the device saving all the settings and shutting down after a 3s countdown. When the device is powering off and saving data, do not disconnect it from the power source. Otherwise, the data cannot be saved.

IX. Photo Taking and Video Recording

The CLIP NV series is equipped with a built-in 32GB memory card, which allows photo taking and video recording of an observed target. Image and video files will be named after time, so it is recommended to complete the system date and time settings in the advanced menu before using the photo taking and video recording function (referring to "**Advanced Menu-Time**").

Take photo

- On the home screen, press the **Camera button** to take a photo. A photo icon appears in the upper left corner of the display after the picture is stuck for 0.5s;
- The images taken are saved in the built-in memory space.

Video recording

- On the home screen, press and hold the **Camera button** to start the video recording;
- A recording icon and a prompt box showing the recording time will appear in the upper right corner of the display, with the time format as 00:00:00 (hours: minutes: seconds);
- During recording, you can also take a photo by pressing the **Camera button**;
- Stop the recording and save the video by pressing and holding the **Camera button**;
- The videos and images taken are saved in the built-in memory space.

Note:

- The menu can still be operated during video recording;
- All the images taken and the videos recorded are stored in the built-in memory card in the format of IMG_HHMMSS_XXX.jpg (image) and VID_HHMMSS_XXX.mp4 (video), with HHMMSS indicating hours/minutes/seconds and XXX indicating the serial number

of the three-digit multimedia file;


- The serial number of the multimedia file cannot be reset;

Note:

- The maximum duration of a video recording file is 10 minutes. When the duration is 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 built-in memory space of the device. You should check the remaining capacity of the memory card regularly, and transfer materials and images to other media to free up the space on the memory card.
- The interface icon information is not displayed on the captured video or image.

Memory access

When the device is powered on and connected to a computer, it will be recognized by the computer as a flash memory card. Then, you can access the memory of the device and copy images and videos.

- Connect the device to a computer through the data cable;
- Power on the device;
- Double-click "My Computer", double-click to open the device named "Infiray"  , and then double-click to open the device name "Internal Storage"

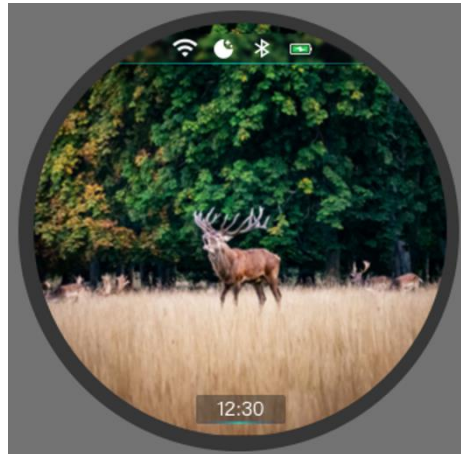


to access the memory;

- Open the memory file, and there are different folders named after time in the format of xx (day)xx (month) xxxx (year) in it;
- The folders stores the videos/images captured on the corresponding days;
- Select required files or folders to copy or delete.

X. Status Bar



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



1. Wi-Fi status (🚫 : Wi-Fi is off; 📶 : Wi-Fi is on)

2. Current image mode (☀️ : Day Mode; 🌙 : Twilight Mode; 🌃 : Night Mode)

3. Bluetooth status


4. Power status of the battery When the inside of the icon is in green , it means that the power is higher than 20%, indicating that the battery power is sufficient; when it is in red , it means that the battery power is low; when the USB logo appears in the middle of the icon, it means that it is being powered by an external power supply.

5. Clock (displayed at the bottom). You can set the date and time in the settings menu, or download the InfiRay Outdoor APP to synchronize phone time to the device.





XI. Advanced Menu:





- On the home screen, press and hold the **Menu button** for 3s to open the main menu;
- Press the **Power button** or **Camera button** to switch the main menu options, press the **Camera button** to move down, and press the **Power button** to move up;
- The options in the main menu are cyclical: when the cursor > reaches the last option on the first page, press the **Camera button** and it will turn to the first menu option on the second page. When the cursor > is at the first option on the first page, press the **Power button** and it can skip directly to the last menu option on the second page;
- Press the **Menu button** to modify the parameters of the current option or go to the next level of the menu;
- Press and hold the **Menu button** to exit the advanced menu;
- The position of the cursor indicates the selected option, the icon of which will change from


white to blue;

- During the continuous operation of the scope, when exiting from the advanced menu, the cursor  remains at the position before exiting. When you restart the scope and go to the advanced menu for the first time, the cursor stays at the first menu option.

Main Menu Features and Descriptions

<p>Display Brightness</p> 	<p>Adjusting the display brightness</p> <ul style="list-style-type: none"> ● Press and hold the Menu button to go to the advanced menu screen; ● Press the Power button or Camera button to select the Display Brightness option; ● Press the Menu button to adjust the display brightness from level 1 to 4.
<p>Image Mode</p> 	<p>Adjusting the display brightness</p> <ul style="list-style-type: none"> ● Press and hold the Menu button to go to the advanced menu screen; ● Press the Power button or Camera button to select the Image Mode option; ● Press the Menu button to switch the image mode among day, evening twilight, and night.
<p>WiFi</p> 	<p>Enabling or disabling Wi-Fi</p> <ul style="list-style-type: none"> ● Press and hold the Menu button to go to the advanced menu screen; ● Press the Power button or Camera button to select the Wi-Fi option; ● Press the Menu button to enable or disable Wi-Fi; ● The icon on the status bar changes accordingly after this mode is turned on or off.
<p>Bluetooth</p> 	<p>Enabling or disabling Bluetooth</p> <ul style="list-style-type: none"> ● Press and hold the Menu button to go to the advanced menu screen; ● Press the Power button or Camera button to select the Bluetooth option; ● Press the Menu button to enable or disable Bluetooth; ● The icon on the status bar changes accordingly after this mode is turned on or off.

<p>Battery Type</p> 	<ul style="list-style-type: none"> ● Press and hold the Menu button to go to the advanced menu screen; ● Press the Power button or Camera button to select the Battery Type option; <p>Press the Menu button to switch between 3.0V or 3.7V;</p>
<p>System Time</p> 	<p>Setting the system time</p> <ul style="list-style-type: none"> ● Press and hold the Menu button to go to the advanced menu screen; ● Press the Power button or Camera button to select the System Time option; ● Press the Menu button to go to the time reset function interface, where the time is presented in the form of "yyyy/mm/dd hh:mm"; ● Press or press and hold the Power button or Camera button to set the correct year, month, day, hour, and minute; ● Press the Menu button to switch among the year, month, and day; ● After the setting is completed, press and hold the Menu button to save and exit the date reset function.
<p>Device Information</p> 	<p>Querying device information</p> <ul style="list-style-type: none"> ● Press and hold the Menu button to go to the advanced menu screen; ● Press the Power button or Camera button to select the Device Information option; ● Press the Menu button to query the relevant information about the current scope; ● Press and hold the rotary encoder (7) to exit and return to the upper menu.
<p>Factory Reset</p> 	<p>Restoring factory default settings</p> <ul style="list-style-type: none"> ● Press and hold the Menu button to go to the advanced menu screen; ● Press the Power button or Camera button to select the Factory Reset option; ● Press the Menu button to go to the Factory Reset confirmation screen; ● Press the Power button or Camera button to select "Yes" for restoring

	<p>factory settings or "No" for canceling the operation;</p> <ul style="list-style-type: none"> ● Press the Menu button to confirm the selection. ● If "Yes" is selected, the scope will re-start automatically; ● If "No" is selected, the operation is canceled and then return to the advanced menu. <p>After the Factory Reset is selected, the following functions will be restored to default settings:</p> <p style="padding-left: 40px;">Day mode</p> <p style="padding-left: 40px;">Display brightness 2</p> <p style="padding-left: 40px;">Wi-Fi: Off</p> <p style="padding-left: 40px;">Bluetooth: Off</p> <p style="padding-left: 40px;">Battery type: 3.7V</p> <p style="padding-left: 40px;">Time: 2020.1.1 00:00</p>
<p>Optical Axis Calibration</p> 	<p>Calibrating the optical system</p> <p>Perform day scope zeroing, and then shoot at the target against which the day scope previously has been calibrated. In the event that the impact point fails to fall on that target, move the image as per the following steps to make the impact point coincide with the reticle center of the day scope. Specific operations are as follows:</p> <p style="padding-left: 40px;">Press and hold the Menu button to go to the advanced menu screen;</p> <p style="padding-left: 40px;">Press the Power button or Camera button to select the Optical Axis Calibration option;</p> <p style="padding-left: 40px;">Press the Menu button to open the Optical Axis Calibration screen;</p> <p style="padding-left: 40px;">Press or press and hold the Power button or Camera button to move the image.</p> <p style="padding-left: 40px;">Press the Menu button to switch between the horizontal or vertical directions of the image movement;</p> <p style="padding-left: 40px;">After the setting is completed, press and hold the Menu button to save and exit the optical axis calibration function.</p>

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XII. Wi-Fi

The CLIP NV series has a built-in Wi-Fi module. The device can connect wirelessly to a mobile apparatus (laptops or smartphones) via Wi-Fi.

In the advanced menu, enable Wi-Fi. For detailed operations, refer to "**Advanced Menu-Wi-Fi**".

After the Wi-Fi of the scope is enabled, search for the Wi-Fi signal with the name "Infiray_XXXXXXX" on the mobile device, among which XXXXXX is a 6-bit serial number composed of digits and letters.


Select the Wi-Fi, enter the password, and connect. The initial password is 12345678;

After Wi-Fi access, you can control the scope via the mobile app.

Setting Wi-Fi name and password

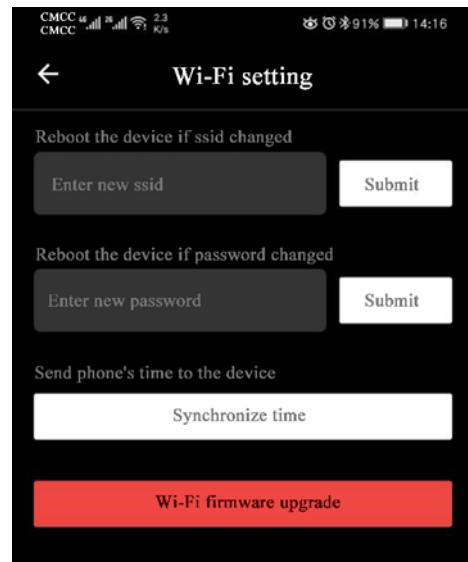
The CLIP NV series allows you to change the name and password of the Wi-Fi in the app.

- After the scope is connected to the mobile

device, locate the "Settings" icon  in the **Infiray Outdoor** image screen and tap it to open the "Settings" screen;

- In the text box, enter and submit 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.



XIII. Bluetooth Remote Control



The CLIP NV series supports Bluetooth peripherals and Bluetooth remote control with buttons (including a power button, menu button, and camera button). The function of the Bluetooth remote control button is consistent with that of the CLIP NV device.

- Enable Bluetooth of the device (referring to **Main Menu-Bluetooth**);
- Press and hold the **Power** button on the Bluetooth remote control for 15s to 30s until the Bluetooth icon shows "Connected". Then the Bluetooth remote control can be used.
- After connecting to the device, if the signal is lost, the Bluetooth remote control will continuously search the device for one minute to reconnect.
- If the device disconnection lasts for one minute, the Bluetooth remote control will automatically shut down.

XIV. Product Update and Description to App

The CLIP NV series supports control with an app. You can transmit images in real time, operate the device, and update the program by connecting a smartphone or laptop via Wi-Fi.

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

You can also test and update the firmware program of the product via the InfiRay Outdoor app or download it on our official website.

About InfiRay Outdoor

- You can download and install the InfiRay Outdoor app on the official website (www.infirayoutdoor.com) or in an app store. Alternatively, you can scan the QR code below to download it for free.



- After installing the app, open it.
- If your device has been connected to a mobile device, enable mobile data on it. After the device accesses the Internet, an update prompt will be displayed automatically. Click **Now** to download the latest version immediately or click **Later**.
- InfiRay Outdoor APP saves the last connected device automatically. Therefore, once you open InfiRay Outdoor APP, it automatically detects an update in the background even when the scope is not connected to a phone or laptop. If an update is available and the mobile device accesses the internet, you can download the update first. After the download is completed, the scope will be connected to the mobile device, and the version will be updated automatically.
- After the update is installed, the device will restart and enter the operation mode.

XV. 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).

XVI. 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 lens (preferably using a non-contact method). Use a specialized wiping tool and solvent to clean the optical surfaces.

XVII. Troubleshooting

The following table lists all 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, return the device to the vendor or supplier for troubleshooting.

Faults	Possible Causes	Solutions
The scope cannot be started.	The battery is out of charge.	Charge the battery.
The device cannot be powered by using an 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.
Images are unclear, vertical lines are present, or the background is not even.	Calibration is required.	Calibrate the images as instructed in Section IX of the user manual.

Images are too dark.	The display is not bright enough.	Adjusting the display brightness
Icons are clear but images are blurry.	The lens is not focused.	Rotate the lens focus ring to adjust the focus.
	The inner or outer optical surface of the lens is dusted or iced.	Wipe the outer optical surface by using a soft cotton cloth or leave the scope to dry in a warm and dry environment for more than 4 hours.
The scope cannot focus.	Configuration error.	Set the scope according to the contents as specified in " Installation and Usage ". Check the outer surface of the objective lens and eyepiece, and if necessary, wipe off any dust and frost on it. In cold weather, a special antifogging coating can be applied (such as those used on eyeglasses or car rearview mirrors).
The device cannot connect to a smartphone or computer.	The Wi-Fi password is incorrect.	Enter the correct password.
	There are too many Wi-Fi networks in the range of the device, which may cause interference.	To enable stable network access, you are advised to move the device to an area with a limited number of Wi-Fi networks, or an area without Wi-Fi coverage.
Wi-Fi signals are lost or interrupted.	The device is beyond Wi-Fi coverage. There is blocking (such as concrete walls) between the	Move the device to a place where you can receive Wi-Fi signals.

	device and the receiver.	
The observed target disappears.	You are observing the target through the glass.	Observe the target directly without the presence of glass.
The image quality is poor or the detection range shortens.	These problems are likely to occur when you use the device in harsh weather (such as snow, rain, and fog).	