

TUBE TL35 SE

User Manual

TL35 SE

InfiRay Technologies Co., Ltd.

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Specifications

Model	TL35 SE
Detector Parameters	
Type	Uncooled Vox
Resolution	384x288
Pixel Size, μm	12
NETD, mk	≤ 40
Frame Rate, Hz	50
Optical Characteristics	
Objective Lens, mm	35
Field of View, $^{\circ}$	7.5 x 5.6
Visual Magnification, \times	3.0-9.0
Digital Zoom, \times	1.0~ 3.0
Eye Relief, mm	50
Diopter Adjustment, D	-4~+4
Detection Range, m (Target Size: 1.7m \times 0.5m, P(n)=99%)	1816
Display Parameters	
Type	OLED
Resolution	1536 \times 1080
Power Supply	
Battery	Built-in 18650 battery
Max. Operating Time (at temp.=22 $^{\circ}\text{C}$), h*	9.5
External Power Supply	5V (Type C)
Physical Characteristics	
Scope Diameter, mm	25.4
Max. Recoil Power, g/s ²	1000
IP Rating	IP67
Amount of Built-in Memory, GB	32
Operating Temperature, $^{\circ}\text{C}$	-20~+50
Weight, g	< 750
Dimension, mm	310 \times 70 \times 70

*The actual service time depends on the use frequency of functions like Wi-Fi, video recording, etc.

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

You can download this User Manual at our official website: www.infirayoutdoor.com.

I. Package Contents

- TUBE TL35 SE Thermal Imaging Scope
- Eyeshade
- Picatinny rail clamp
- Portable bag
- Type-C cable
- Power adapter (for multiple countries)
- Lens cloth
- Heated target for zeroing

II. Introduction

TUBE TL35 SE is an infrared scope for outdoor hunting. Designed based on infrared thermal imaging principles, it requires no external light sources during the day and at night, in all hard weather conditions (such as rain, snow, fog, and haze). It can be used without being affected by strong light and to observe even targets behind obstacles (such as branches, grass, and shrubs). TUBE TL35 SE has a built-in power supply solution for a long operation duration, and can be widely used for hunting, observation, and positioning in low visibility conditions. TUBE TL35 SE adopts a 25.4mm standard pipe diameter that features a smaller size and lighter weight, meeting the requirements of the general clamp interface.

III. Features

- 12μm self-developed detector;
- High image quality;
- Low power consumption, long battery life;
- Standard 25.4mm pipe diameter;
- Long detection range;

- 50Hz frame rate;
- Internal memory space, supporting photo taking and video recording;
- Built-in Wi-Fi module, supporting app connection;
- Built-in compass and motion sensor;
- Optional laser rangefinding function, with a measuring range up to 1,000m;
- PIP (picture-in-picture) function;
- Pixel defect correction;
- Convenient operation interface.

IV. Components and Controls

1. Eyeshade
2. Eyepiece diopter adjustment ring
3. Zoom handwheel
4. Controller
5. Power button
6. Lens focus ring
7. Lens cap
8. Infrared lens
9. USB rubber cover
10. Type-C port
11. LED indicator

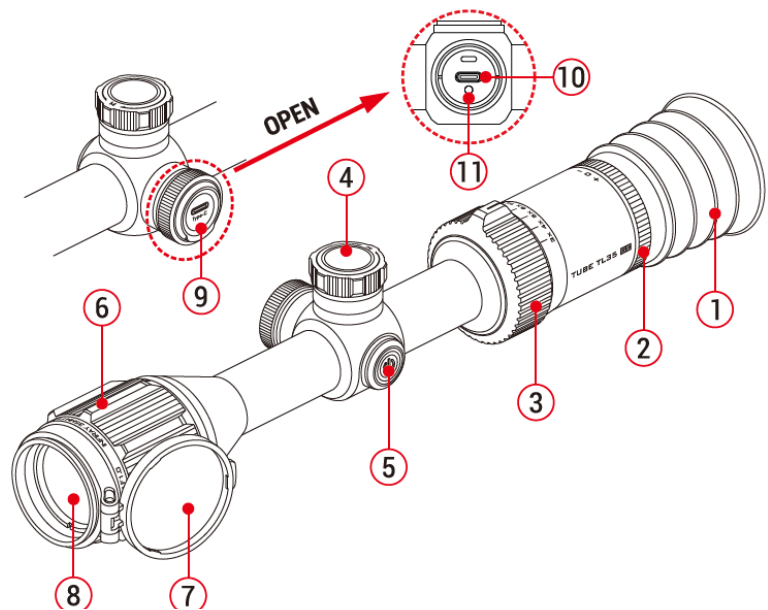


Figure 1 Parts of TUBE TL35 SE

V. Button Operation

Button	Current Status	Short Press	Long Press	Rotate
Power button	Powered off	——	Power on the device	——
	Home screen	Image calibration	Power off/Standby	——

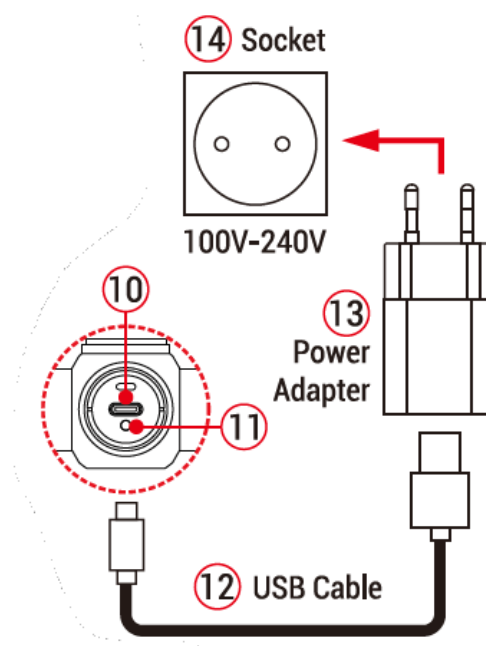
			the device	
	Standby mode	Wake up the device	_____	_____
	Single ranging on under the Home screen	Perform single ranging operation	_____	_____
	Main menu interface	Return to the previous menu without saving	_____	_____
	Defective pixel calibration interface	Add/delete defective pixels	_____	_____
Zoom handwheel	Home screen	_____	_____	Adjust the image magnification (clockwise: zoom in; counterclockwise: zoom out)
Power button + controller	Home screen	Switch between continuous/single ranging functions	Press and hold for 2s: activate/deactivate the laser distance measurement function. Press and hold for 8s: Enable/hide the reticle and its functions	_____
	Zeroing screen	_____	Freeze the picture	_____
Controller	Home screen	Press and hold to go to the shortcut menu screen;	Press and hold for 1.5s to	Rotate clockwise to switch the image mode;

		press twice to take a photo	enable/disable video recording; Press and hold for more than 3s until the main menu pops up to open the main menu	Rotate counterclockwise to adjust image brightness
	Shortcut menu interface	Adjust specific parameters of a function	Save and back to the home screen	Switch between menu options/move reticle position: Clockwise: move to the right/down direction;
	Advanced menu interface	Switch between options or go to the submenu		Counterclockwise: move to the left/up direction
	Pixel defect correction/Zeroing/Laser calibration interface	Change the moving direction		

VI. Charging the Built-in Battery

TUBE TL35 SE uses a built-in rechargeable 18650 battery pack, with battery power for up to 9.5 hours of normal operating time. The battery should be fully charged before the first use. For how to charge the battery, see **Figure n**.

- Open the **USB rubber cover (9)** to reveal the **TypeC port (10)**.
- Plug the TypeC end of the supplied **USB cable (12)** into the **Type C port (10)** of the TUBE TL35 SE;
- Connect the other end of the USB cable to the **power adapter (13)**, and insert the **power adapter (13)** into a 100-240V **power socket (14)** for charging;



- When charging, a lightning charging icon ⚡ appears on the battery icon, and the **LED indicator (11)** on the device is red. When the **LED indicator (11)** turns green, it indicates that the charging is completed;
- During use, if the battery icon turns red, it indicates that the battery level is low. Please charge the battery in time to avoid reducing the service life of the device due to the over discharge of the battery.

Safety Precautions

- When charging, please use the 5V2A power adapter compatible with the device. Using any other type of power adapter may cause irreversible damage to the battery or the adapter itself;
- If the device is not used for a long time, the battery should be partially charged, not fully charged or discharged;
- Do not charge the device immediately after it is moved to a warm environment from a cold environment. Wait for 30 to 40 minutes for preheating;
- Do not use the charger if it is modified or damaged;
- The device should be charged at a temperature of 0 °C to +40 °C. Otherwise, the battery life will be significantly reduced;
- When charging, please do not leave the battery unattended;
- Do not connect the battery to the power supply for more than 24 hours after it is already fully charged;
- It is not recommended to connect third-party devices that consume more energy than the allowed value;
- The device is equipped with a short circuit protection system, but conditions that may lead to a short circuit should be avoided;
- Use the device at the recommended operating temperature from -20 °C to +50 °C. Do not use the device beyond this temperature range or 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. Mounting and Usage

Fixed mounting

WARNING: The lens of the thermal imaging scope 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 manual is not covered under warranty.

To ensure aiming accuracy, please fix TUBE TL35 SE at a proper position on the weapon.

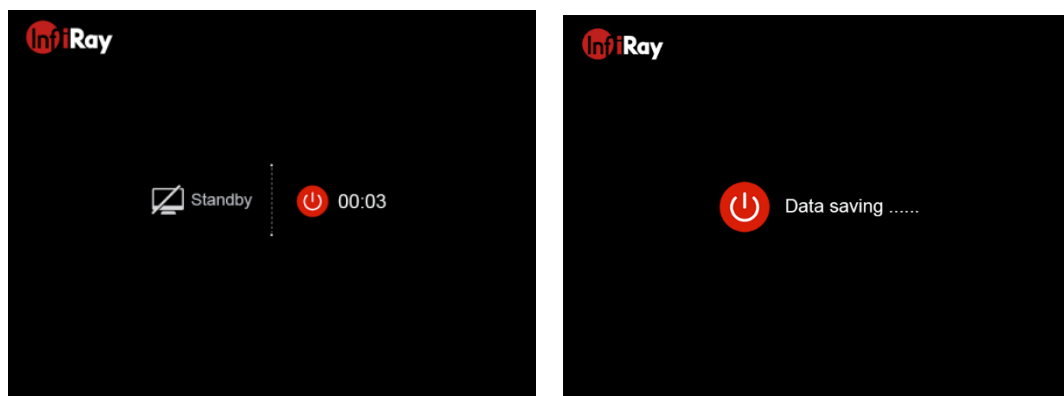
- TUBE TL35 SE needs to be fixed with an adapter clamp, such as a simple Picatinny rail clamp provided in the package. TUBE TL35 SE is designed with a 25.4mm diameter pipe and can be used with a standard clamp for 25.4mm diameter pipes. Proper tools can be used to mount TUBE TL35 SE according to the supplier's installation suggestions and steps;
- The mounting position of TUBE TL35 SE should be adjusted according to the distance between the eye and eyepiece (eye relief) as specified in the specifications and the sense of use and comfort. If you fail to follow this suggestion, the eyepiece may hurt the shooter during the shooting;
- It is recommended to mount the scope as low as possible, but keep it away from the barrel or other devices;
- It is recommended to use a torque wrench to tighten the screws of the mounting clamp, so as to avoid damaging the scope body due to being over-tightened, and the recommended torque shall not exceed 2.5Nm;
- When the scope is used for hunting, please carry out the zeroing operation first according to the instructions as specified in **Chapter IX Zeroing** in this manual;
- When using the scope at night or in a dark environment, it is recommended to use an eyeshade to avoid being found.

Power-on and Settings

- Remove the **lens cap (7)**;
- Press and hold the **power button(5)** for 2s to start the device, and wait for several seconds

to enter the home screen to complete the startup.

- Adjust the clarity of icons on the display by rotating the **eyepiece diopter adjustment ring (2)**;
- Rotate the **lens focus ring (6)** to adjust the focal length;
- Set the image mode: On the home screen, turn the **controller (4)** clockwise to switch between palette modes, including white hot, black hot, red hot, pseudo-color, and target highlighting, and the top status bar icon is updated in real time (for the description of the status bar, refer to **Chapter VIII Status Bar**);
- Set the screen brightness: On the home screen, turn the **controller (4)** counterclockwise, and the screen will display brightness 1 to 5 grades for cyclic switching, while a short prompt of the corresponding brightness icon will appear at the bottom of the display;
- Set the image sharpness: Press the **controller (4)** to open the shortcut menu to set the image sharpness (refer to **Chapter XII Shortcut Menu** for details);
- Setting the image calibration mode: Press and hold the **controller (4)** to open the main menu, and select the desired calibration mode from the main menu: Automatic(A), Manual (M), and Background (B);
- On the home screen, press the **power button (5)** for image calibration, when performing background correction, please close the **lens cap (7)** first and the background correction will be completed after 2s;
- After using the device, press and hold the **power button (5)** for 3 seconds. Then, the shutdown countdown screen appears. When the countdown icon turns from 3 to 0, a "Data saving ..." prompt interface is displayed, as shown in **Figure n**. When the data is saved, the display turns black and the device is off. **When the device is powering off and saving data, do not disconnect it from its power source. Otherwise, the data cannot be saved;**
- After the countdown, release the button and the device is in standby mode. To wake up the device, press the **power button (5)**.



VIII. Status Bar






The status bar is located at the top of the image interface, as shown in Figure n, 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. Current zeroing profile and zeroing distance (e.g., A100m);
3. Ultra-clear mode status: (👁: The ultra-clear mode is off; 👁: The ultra-clear mode is on);
4. Current visual magnification (e.g., 3.0×);
5. Calibration mode (A: Auto Calibration; M: Manual Calibration; B: Background Calibration).

In mode A, the device automatically performs shutter correction at a certain interval. When the device is just started, it automatically and continuously performs shutter correction;

6. Compass (not displayed when the compass is turned off);
7. Standby status and time (off by default)
8. Bluetooth status (✖: Bluetooth is disabled; ✖: Bluetooth is enabled but not connected to the laser rangefinding module; ✖📶: Bluetooth is connected to the laser rangefinding module);
9. Power status of the rangefinding module;
10. Wi-Fi status (📶: Wi-Fi is off; 📶: Wi-Fi is on);
11. Clock (Set it using the main menu or synchronize the time in the InfiRay Outdoor app);
12. Battery status.

Note: When the inside of the battery icon is green 🟢, the charge is more than 20% and

sufficient. When it is orange , the charge is between 10% and 20% and the device needs to be charged in time. When it is red , the charge is less than 10% and the device needs to be charged in time. When a lightning sign  appears in the battery icon, the built-in battery is being charged.

IX. Digital Zoom

The TUBE TL35 SE scope supports the 3.0–9.0 zoom function, by which you can magnify an image by 1 to 3 times.

- On the home screen, turn the **zoom handwheel (3)** to zoom in/out the image;
- When the indication line of the zoom handwheel is aligned with the corresponding



magnification of the eyepiece, the image is zoomed in according to the value pointed at by the zoom handwheel, and the status bar is updated synchronously, as shown in **Figure n.**

X. Photo Taking/Video Recording

TUBE TL35 SE is equipped with a 32GB internal memory space, which can be used to save images and videos. Image and video files are named by the time and stored in a folder named by date. It is recommended to set the system date and time in the main menu (for details, refer to **Settings > Date/Time** in **Chapter XIII. Main Menu**) before using photo taking and video recording functions, or to synchronize the system time and date in the Settings on the app (for specific operations, download the operation instructions of the App on the official website of the company).

Photo Taking

- On the home screen, press the **controller (4)** twice to take a picture. The picture freezes for 0.5s, and the camera icon appears in the upper left corner of the screen, as shown in **Figure**

n;

- The images taken are saved in the internal storage space in the format of "PIC_HHMMSS", with HH indicating hours, MM indicating minutes, and SS indicating seconds.

Video Recording

- On the home screen, press and hold the **controller (4)** for 1.5s to record a video;
- A recording icon and a prompt box showing the recording time appear in the upper right corner of the display, with the time format as 00:00:00 (hour: minute: second), as shown in **Figure n**;
- During video recording, press the **controller (4)** twice to take photos;
- You can open and operate the menu during video recording;
- Press and hold the **controller (4)** for 1.5s to stop recording and save the video;
- The videos recorded are saved in the internal storage space in the format of "VID_HHMMSS", with HH indicating hours, MM indicating minutes, and SS indicating seconds.



Note:

- The maximum duration of a video recording file is 30 minutes. When the duration is more than 30 minutes, the video will be automatically recorded onto a new file;
- The number of files is limited by the internal memory space of the device. You should check the remaining space regularly, and transfer your videos and images to other media to free up the space on the memory card.

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. Perform the following operations to copy images and videos:

- Connect the device to a computer through the USB cable;
- Power on the device;
- Double-click **My Computer**, double-click to open the device named Infray



, and then double-click to open the device name TUBE SE Storage



to access the memory;

- Folders named by date are displayed. The naming format is “YYYYMMDD” (8 digits), with YYYY indicating **year**, MM indicating **month**, and DD indicating **date**;
- The folders store the videos/images captured on the corresponding days. To copy or delete files or folders, select accordingly.

XI. Laser Ranging

TUBE TL35 SE supports external laser ranging modules. When the device is used with a laser ranging module and successfully connected with it through Bluetooth, the device supports laser ranging. Compared with stadiametric ranging, this ranging method is more accurate, with no need to find specific target objects (rabbits, wild boars, deer).

- Press and hold the power button of the ranging module for 3s to turn on the ranging module. The red indicator of the ranging module blinks before the module is connected to the device, and goes out after the module is connected to the device. After the ranging module is turned on, press its power button twice to turn on/off the visible laser of the ranging module;



- First, confirm that the machine is successfully connected with the laser rangefinding module, and the battery level of the rangefinding module appears on the right side of the Bluetooth icon in the status bar (refer to **Chapter VIII Status Bar**);
- Press and hold the **controller (4)** and the **power button (5)** on the main screen for 3s at the same time to enable the laser rangefinding;
- After the laser rangefinding is enabled, the default mode is the continuous ranging mode, as shown in **错误!未找到引用源。**. Press the **controller (4)** and **power button (5)** at the same time to switch to the single ranging mode, and press the two buttons again to switch to the continuous ranging mode;
- After switching to the single ranging mode, press the **power button (5)** to perform the single ranging operation. The current distance of the target measured by single ranging is displayed in the upper right corner of the screen, as shown in **错误!未找到引用源。**;
- After switching to the continuous ranging mode, the distance value of the current target is displayed in real time in the upper right corner of the screen.
- If you want to change the measurement unit, please go to **Settings > Units of Measure** for modification (refer to **Chapter XIII. Main Menu**);
- During continuous ranging, other functions such as photo taking and video recording are not affected;
- Press and hold the **controller (4)** and the **power button (5)** at the same time to disable the laser rangefinding;

XII. Shortcut Menu

The shortcut menu can be used for quickly changing the basic settings of some common functions, including reticle style, reticle color, image sharpness, and zeroing distance. Press and hold the **controller (4)** or press the **power button (5)** to save the changes and return to the home screen.

- On the home screen, press the **controller (4)** to open the shortcut menu;
- Turn the **controller (4)** to switch between the following options, and the icon background of the selected option is highlighted:

- **Reticle Style:** Turn the **controller (4)** to select the reticle style, and press the **controller (4)** to switch between 6 styles;
- **Reticle Color:** Turn the **controller (4)** to select the option, and press the **controller (4)** to adjust the colors, including black, white, red, and green;
- **Image Sharpness:** Turn the **controller (4)** to select the option, and press the **controller (4)** to adjust the image sharpness from levels 1 to 5;
- **Zeroing Distance:** Turn the **controller (4)** to select the option, and press the **controller (4)** to switch between the distance values saved for the current zeroing profile (e.g. For firearm type A, when you select the option, only the distance values saved for type A are available);
- Press and hold the **controller (4)** or press the **power button (5)** to save the changes and return to the home screen.

Note: When the shortcut menu is displayed, if there is no operation within 5s, the device automatically saves the changes and the home screen is displayed.

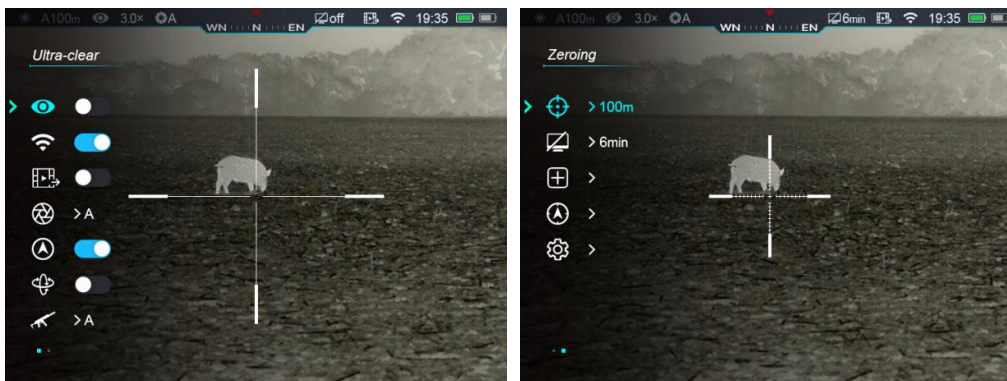


XIII. Main Menu

- On the home screen, press and hold the **controller (4)** for 3s until the main menu pops up to enter the main menu;
- Turn the **controller (4)** to switch between the options on the main menu, turn it clockwise to move down and anticlockwise to move up;
- Press the **controller (4)** to modify the parameters of the current option or go to the submenu;
- The position of the cursor ➤ indicates the selected option, the icon of which turns from




white into blue;

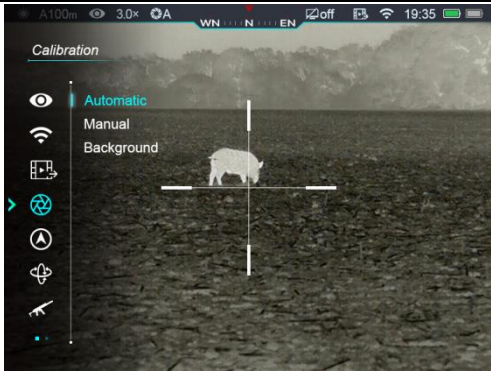



- The operations for secondary and tertiary menus are the same as above;
- On any menu screen, press and hold the **controller (4)** to save the changes and return to the home screen. Press the **power button (5)** to return to the upper menu without saving the changes;
- When there is no operation within 15s on any menu screen, the device does not save the changes and the home screen is automatically displayed;
- During the continuous operation of the scope, when exiting from the main menu, the cursor
➤ remains at the position before exiting. When you restart the scope and go to the main menu for the first time, the cursor stays at the first menu option.


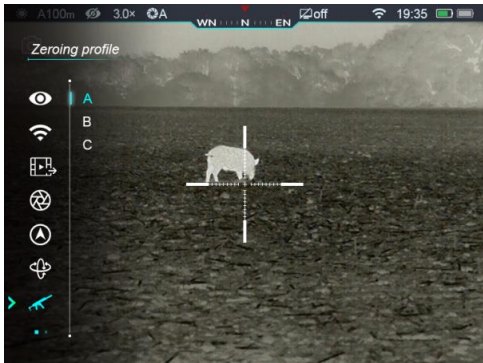



Main Menu Features and Descriptions

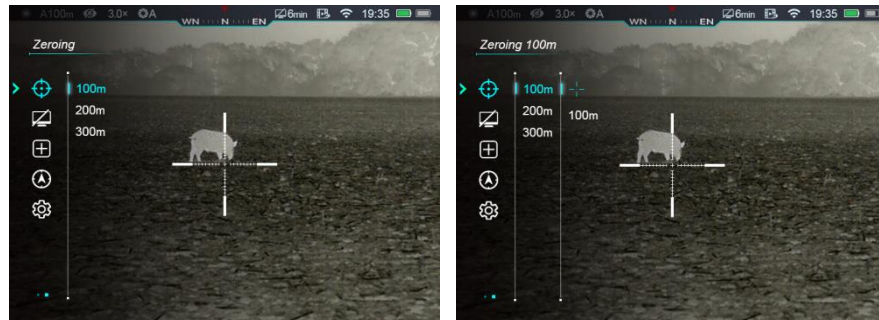
<p>PIP</p>	<p>Turn on/off PIP</p> <ul style="list-style-type: none"> ● Press and hold the controller (4) to open the main menu; ● Turn the controller (4) to select the PIP option; (When you enter the main menu for the first after the device is started, the cursor is on this option by default) ● Press the controller (4) to enable/disable PIP; ● When PIP is enabled, a floating window independent of the main screen is displayed. The window shows part of the image which is magnified by 2× in a certain area centered on the reticle of the full image. ● After magnifying the image on the home screen by turning the zoom
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	<p>handwheel (3), the image shown in the PIP window will also be magnified by 2×.</p>
<p>Ultra-clear Mode</p> 	<p>Enabling/Disabling Ultra-Clear Mode</p> <ul style="list-style-type: none"> ● Press and hold the controller (4) to open the main menu; ● Select the ultra-clear mode; ● Press the controller (4) to enable/disable Ultra-Clear Mode, during which you hear a click of shutter correction; ● When the ultra-clear mode is enabled/disabled, the icon in the status bar changes accordingly;
<p>Wi-Fi</p> 	<p>Turn on/off Wi-Fi</p> <ul style="list-style-type: none"> ● Press and hold the controller (4) to open the main menu; ● Turn the controller (4) to select the Wi-Fi option; ● Press the controller (4) to enable/disable Wi-Fi; ● When Wi-Fi is enabled/disabled, the icon in the status bar changes accordingly;
<p>Calibration</p> 	<p>Selecting Calibration Mode</p> <p>TUBE TL35 SE has three calibration modes: Automatic (A), Manual (M), and Background (B).</p> <ul style="list-style-type: none"> ● Press and hold the controller (4) to open the main menu; ● Turn the controller (4) to select Calibration; ● Press the controller (4) to open the secondary menu of Calibration; ● Turn the controller (4) to select a mode from the following three: <ul style="list-style-type: none"> - Automatic: Parameters are defined by software algorithms and images are calibrated automatically in this mode; - Manual: Images are manually calibrated according to the image effect; - Background: The lens cap must be closed before calibration. ● Press the controller (4) to confirm the selection. The icon in the status bar changes accordingly.

	
<p>Compass</p> 	<p>Enabling/Disabling Compass</p> <ul style="list-style-type: none"> ● Press and hold the controller (4) to open the main menu; ● Turn the controller (4) to select Digital Compass; ● Press the controller (4) to enable/disable Digital Compass; ● When Digital Compass is enabled, its icon is displayed in the middle of the status bar on the top.
<p>Motion Sensor</p> 	<p>Enabling/Disabling Motion Sensor</p> <ul style="list-style-type: none"> ● Press and hold the controller (4) to open the main menu; ● Turn the controller (4) to select Motion Sensor; ● Press the controller (4) to enable/disable Motion Sensor; ● When the motion sensor is enabled, its functions are 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>Bluetooth</p>	<p>Enable/disable Bluetooth</p> <ul style="list-style-type: none"> ● Press and hold the controller (4) to open the main menu; ● Turn the controller (4) to select Bluetooth;

	<ul style="list-style-type: none"> ● Press the controller (4) to enable/disable Bluetooth; ● Bluetooth has three states: Icon: Bluetooth is disabled; Icon: Bluetooth is enabled but not connected to the rangefinding module; Icon: Bluetooth is enabled and connected to the rangefinding module. In this case, you can perform laser rangefinding operations by using the combination key of the rangefinding function (for details, refer to Chapter XI Laser Rangefinding).
Rifles Selection 	<p>Selecting Rifles</p> <ul style="list-style-type: none"> ● Press and hold the controller (4) to open the main menu; ● Turn the controller (4) to select Zeroing Profile; ● Press the controller (4) to open the secondary menu of Zeroing Profile; ● Turn the controller (4) to select one from the three zeroing profiles (A, B, C); ● Press the controller (4) to confirm the selection, and return to the upper menu. 
Zeroing 	<p>Set up the zeroing profile and zeroing distance before carrying out any zeroing operation.</p> <p>TUBE TL35 SE supports any zeroing distance between 1 and 999 meters.</p> <ul style="list-style-type: none"> ● Press and hold the controller (4) to open the main menu; ● Turn the controller (4) to select Zeroing; ● Press the controller (4) to open the secondary menu of Zeroing, where zeroing distances are displayed;


- Turn the **controller (4)** to select the zeroing distance according to the distance set for the target;
- Press the **controller (4)** to confirm the zeroing distance, and open the zeroing distance submenu, including two options, that is Zeroing and Zeroing Distance.

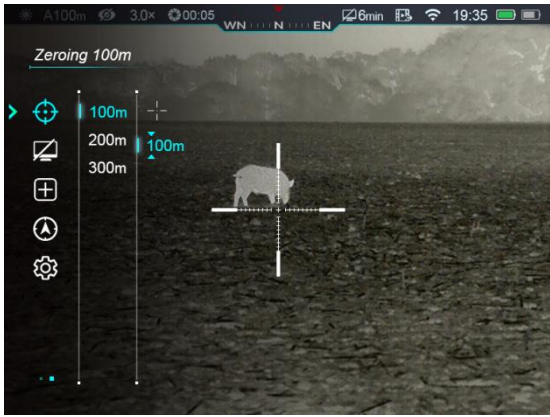





Zeroing

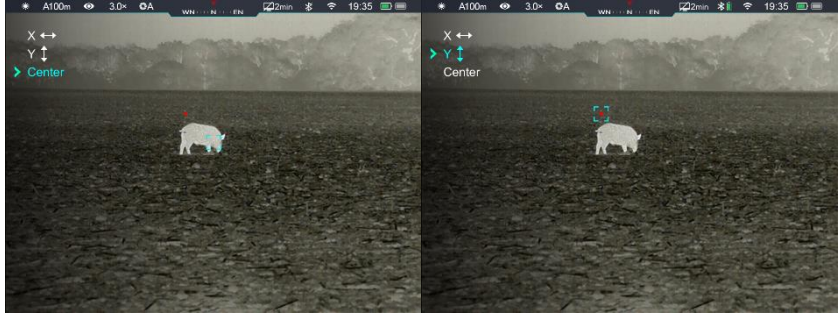



- If the preset zeroing distance is consistent with that displayed on the device, you can perform zeroing directly following the steps as below:
- Turn the **controller (4)** to select Zeroing⁻¹⁻;
- Press the **controller (4)** to go to the Zeroing interface;
- The X and Y coordinates of the reticle are displayed on the top left corner of the screen;
- Aim the reticle center of the scope at the bull's eye at the target distance and shoot, and then observe the position of the actual point of impact;
- Keep the aiming position still, and press and hold the **controller (4)** and the **power button (5)** at the same time to freeze the picture. Meanwhile, the freezing icon is displayed on the screen;
- Turn the **controller (4)** to move the reticle position until the reticle center coincides with the position of the point of impact. Release the screen freeze and shoot again. Adjust the reticle center position based on the position of the point of impact, until the reticle center aims at the position of the

		<p>point of impact.</p> <ul style="list-style-type: none"> ● After zeroing, press and hold the controller (4) to save the zeroing result. At this time, the countdown message "saving... 5" and the "saved successfully" prompt are displayed. 
	<p>Resetting Zeroing Distance</p>	<ul style="list-style-type: none"> ● If the zeroing distance is not consistent with the preset target distance, this option can be used for setting the zeroing distance; ● Select an invalid zeroing distance, press the controller (4) to open its submenu; ● Turn the controller (4) to select Zeroing Distance; ● Press the controller (4) to activate the zeroing distance reset function, and then two small triangle symbols are displayed above and below the number $\overset{\nabla}{0}_{\triangle}$; ● Turn the controller (4) to set the value of the current position, which can be switched between 0 and 9; ● Press the controller (4) to switch between the positions of hundreds, tens, and ones digits; ● After setting, press and hold the controller (4) to save the changes and exit. The cursor returns to the zeroing option, and meanwhile the zeroing distance changes accordingly; ● In addition, the status bar is updated according to the new

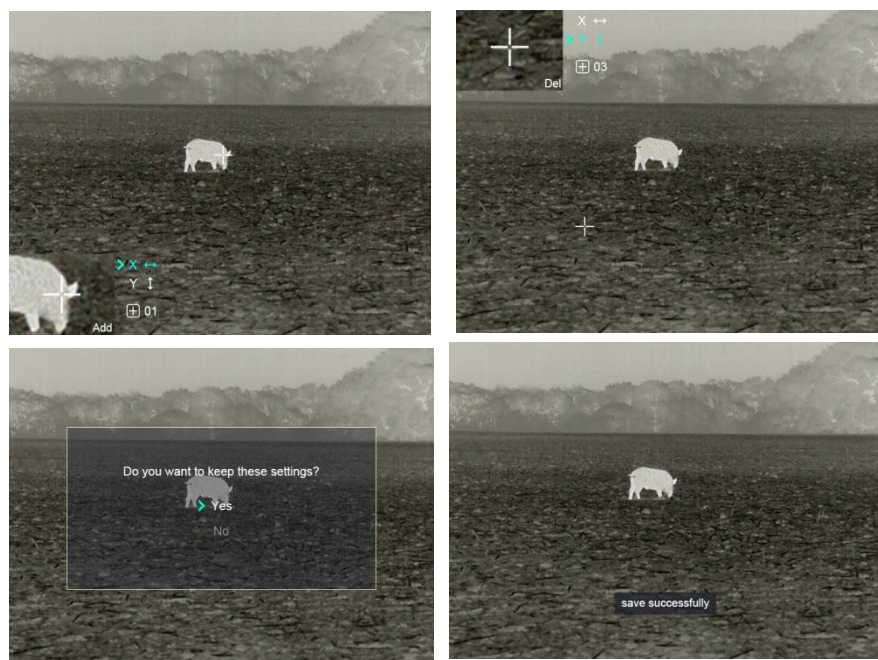
	<p>zeroing distance;</p> <ul style="list-style-type: none"> ● After the zeroing distance is saved, enter the zeroing function for zeroing (for details, refer to Zeroing Settings > Zeroing Function in Chapter XIII. Main Menu). After zeroing, press and hold the controller (4) to save the zeroing results. In the saving process, the 5s countdown message "data saving... 5" is displayed. After successful saving, the "saved successfully" prompt is displayed. 
<p>Standby</p> 	<p>Setting Standby Status and Time</p> <ul style="list-style-type: none"> ● Press and hold the controller (4) to open the main menu; ● Turn the controller (4) to select Standby; ● Press the controller (4) to open the submenu of Standby, including four options: 2min, 4min, 6min, and off; ● Turn the controller (4) to select as needed; ● Press the controller (4) to confirm the selection, and then the selected option is displayed in the top status bar; ● If Off is selected, the standby function is disabled. <p>Note:</p> <ul style="list-style-type: none"> - The standby mode is activated automatically when the device is tilted up or down at an angle of more than 70 ° and left or right at an angle of more than 30 °; - When the device is in the shooting status (horizontally positioned), the




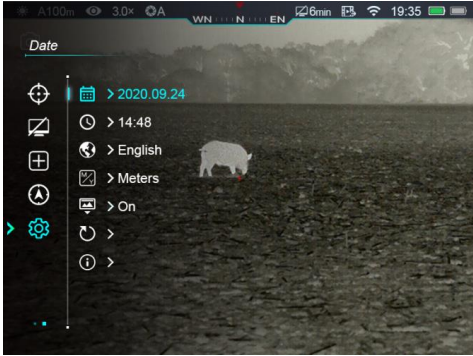



	<p>standby mode is disabled.</p> 
<p>Laser Calibration</p> 	<p>The laser rangefinding function needs to be calibrated before using</p> <ul style="list-style-type: none"> ● Press and hold the power button of the rangefinding module for 3s to power on the rangefinding module, and then press the power button twice to enable the visible laser of the rangefinding module; ● Turn on the Bluetooth of the device and wait for the device to connect the rangefinding module successfully; ● On the home screen, press and hold both the controller (4) and power button (5) for 3s to enable the laser rangefinding function; ● Press and hold the controller (4) to open the main menu; ● Turn the controller (4) to select Laser Calibration; ● Press the controller (4) to go to the Laser Calibration page, as shown in 错误!未找到引用源。 n (left). The red "x" indicates the position aimed at by the visible laser (it is actually displayed as a red dot); ● Press the controller (4) to switch among X, Y, and Center to adjust the position of the indication box. Align the center of the indication box with the position of the target aimed by the visible laser. Press and hold the controller (4) to save the laser calibration result, as shown in 错误!未找到引用源。 (right). Perform the following operations: <ul style="list-style-type: none"> - X: Turn the controller (4) clockwise to move the indication box rightward; turn the controller (4) counterclockwise to move the indication box leftward; - Y: Turn the controller (4) clockwise to move the indication box



	<p>downward; turn the controller (4) counterclockwise to move the indication box upward;</p> <p>-Center: Press the power button (5) to center the indication box on the screen.</p>  <p>Figure n. Laser Calibration</p>
<p>Pixel Defect Correction</p> 	<p>When using the scope, you may see pixel defects, such as visible light spots or dark spots with stable brightness. To address this problem, use the Pixel Defect Correction function to remove the pixel defects.</p> <ul style="list-style-type: none"> ● Turn the controller (4) to select Pixel Defect Correction; ● Press the controller to go to the Pixel Defect Correction interface. A small cross cursor appears in the center of the screen and the PIP function is automatically enabled, which is displayed in the lower left corner of the screen by default; ● The right side of the PIP window shows the pointer moving direction: X-axis, Y-axis, and scale of pixel defect correction; ● Press the controller (4) to switch between the X-axis and the Y-axis; ● Turn the controller (4) to move along the direction selected, turn it clockwise to move the cursor rightward or downward, or turn it anticlockwise to move the cursor leftward or upward; ● Press the controller again to save the movement settings in this direction and switch to the other axis; ● You can repeat the preceding steps to change the cursor location until it reaches the position of the pixel defect; ● When the cursor moves to the position of the pixel defect, press the power

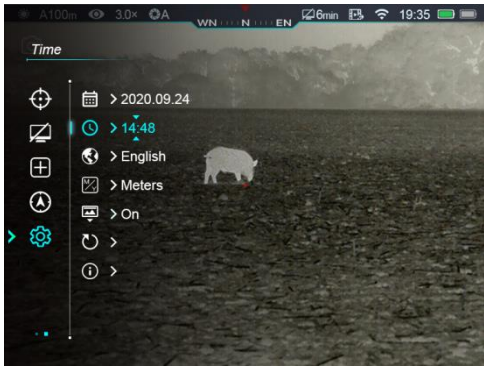



button (5) to add and correct it. When Add is displayed in the PIP window, it indicates that the pixel defect has been added, and the number of corrected defective pixels is increased by one. This process can be repeated for correcting other pixel defects;



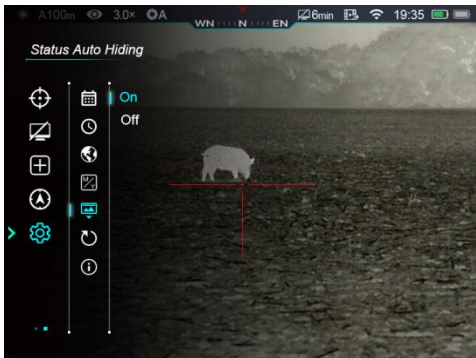

- At the position of the same defective pixel, press the **power button (5)** again to cancel the correction at this position. If the word "Del" blinks in the PIP, it indicates that the defective pixel is deleted successfully and the number of corrected defective pixels is reduced by one;
- Each time you add or delete a pixel defect, the number of pixel defects changes accordingly;
- When the cursor moves near the PIP window, PIP and the content on the right move to the upper left corner automatically;
- After finishing the correction, press and hold the **controller (4)**, and a prompt is displayed asking if you want to save the settings. Turn the **controller (4)** to select Yes or No as needed;
- Press the **controller (4)** to confirm the selection;
- When Yes is selected, the countdown message **Saving...5** is displayed. When **Saving successful** is displayed, the settings are saved. You can then return to the home screen.




<p>Compass Calibration</p> 	<p>Calibrating Compass</p> <ul style="list-style-type: none"> ● Turn the controller (4) to select Compass Calibration from the main menu; ● Press the controller to open the Compass Calibration interface. The calibration icon is displayed; ● Rotate the scope along the three axes indicated by the icon, with each axis rotating at least 360°; ● The calibration ends after 15s by default and the interface closes automatically. 		
<p>Settings</p> 	<p>Set the date, time, language, measurement unit, status auto hiding, factory reset, equipment information query, etc. Press and hold the controller (4) to go to the main menu, and turn the controller (4) to switch to the "Settings" option. This step is skipped in the descriptions.</p>  <table border="1" data-bbox="422 1794 1339 2036"> <tr> <td data-bbox="422 1794 608 2036"> <p>Date</p>  </td><td data-bbox="608 1794 1339 2036"> <p>Setting System Date</p> <ul style="list-style-type: none"> ● Press the controller (4) to open the secondary menu of Settings; ● Turn the controller (4) to select Date; </td></tr> </table>	<p>Date</p> 	<p>Setting System Date</p> <ul style="list-style-type: none"> ● Press the controller (4) to open the secondary menu of Settings; ● Turn the controller (4) to select Date;
<p>Date</p> 	<p>Setting System Date</p> <ul style="list-style-type: none"> ● Press the controller (4) to open the secondary menu of Settings; ● Turn the controller (4) to select Date; 		

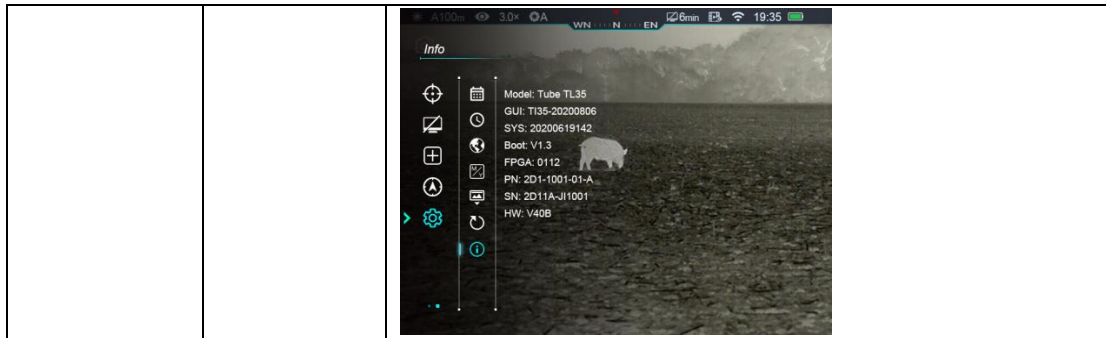
		<ul style="list-style-type: none"> ● Press the controller (4) to activate the date reset function, with the date in the format of YY/MM/DD; ● Press the controller (4) to switch between year, month, and date; ● Turn the controller (4) to set the correct year, month, and date; ● After setting, press and hold the controller (4) to save changes and exit the date reset function. 
	<p>Time Setup</p> 	<p>Setting System Time</p> <ul style="list-style-type: none"> ● Press the controller (4) to open the secondary menu of Settings; ● Press the controller (4) to select Time. The 24-hour clock system is used with the hour and minute displayed; ● Press the controller (4) to activate the time reset function; ● Press the controller (4) to switch between the hour and minute; ● Turn the controller (4) to set the correct hour and minute; ● After setting, press and hold the controller (4) to save changes and exit the time reset function; ● After setting the time, the icon in the status bar is updated accordingly.

		
	<p>Language</p> 	<p>Selecting Language</p> <ul style="list-style-type: none"> ● Press the controller (4) to open the secondary menu of Settings; ● Select Language, and press the controller (4) to open the secondary menu of Language; ● Turn the controller (4) to switch between English, Russian, and German; ● Press the controller (4) to confirm and save the selection, and return to the menu interface. 
	<p>Units of Measure</p> 	<p>Selecting the Units of Measure</p> <ul style="list-style-type: none"> ● Press the controller (4) to open the secondary menu of Settings; ● Select Units of Measure, and press the controller (4) to open the secondary menu of Units of Measure; ● Turn the controller (4) to switch between Meters and Yards; ● Press the controller (4) to confirm and save the selection,

		<p>and exit the interface.</p> 
	<p>Status Auto Hiding</p> 	<p>Enabling/Disabling Status Auto Hiding</p> <ul style="list-style-type: none"> ● Press the controller (4) to open the secondary menu of Settings; ● Select Status Auto Hiding, and press the controller (4) to open the secondary menu of Status Auto Hiding; ● Turn the controller (4) to select Hide or Show; ● Press the controller (4) to confirm the selection, and return to the main menu. 
	<p>Reset Device</p> 	<p>Restoring Factory Default Settings</p> <ul style="list-style-type: none"> ● Press the controller (4) to open the secondary menu of Settings; ● Select Factory Reset, and press the controller (4) to open the secondary menu of Factory Reset; ● Turn the controller (4) to select Yes (restoring factory settings) or No (canceling the operation); ● Press the controller (4) to confirm the selection;

	<ul style="list-style-type: none"> ● If Yes is selected, the scope re-start automatically; ● If No is selected, the operation is canceled and the upper menu is displayed. <p>The following functions will be restored to their default settings after finishing the reset:</p> <ul style="list-style-type: none"> - Image Mode: White hot; - Zeroing Distance: A100; - Ultra-Clear Mode: Off; - Shutter Calibration Mode: A; - Compass: Off; - Standby: Off; - Wi-Fi: Off; - Motion Sensor: Off; - Language: English; - Units of Measure: Meter; - Status Auto Hiding: Off.
<p>Info</p> 	<p>Querying Device Information</p> <ul style="list-style-type: none"> ● Press the controller (4) to open the secondary menu of Settings; ● Turn the controller (4) to select Info; ● Press the controller (4) to query the relevant information about the current scope; ● Press and hold the controller (4) to exit and return to the upper menu.





XIV. 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 (A), Manual (M), and Background (B).


Select the required mode from **Calibration** on the main menu.

- **Automatic (A):** The device conducts automatic shutter correction through software algorithms with the lens cap removed (the sensor automatically closes the internal shutter). In Automatic mode, you can also press the **power button (5)** to manually perform shutter correction;
- **Manual (M):** On the home screen, press the **power button (5)** for manual shutter correction with the lens cap removed (press the **power button (5)**, and the sensor automatically closes the internal shutter);
- **Background (B):** Close the lens cap and press the **power button (5)**. A prompt is displayed on the home screen: **Cover lens during calibration**. Background calibration will begin in 2s. After calibration, remove the lens cap.

XV. Zeroing

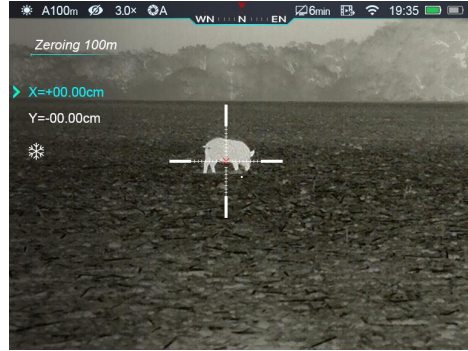
TUBE TL35 SE uses the “freezing” zeroing method. It is better to perform zeroing in environments within the operating temperature range of the scope.

- Fix the scope on the weapon with a frock clamp (For details, refer to **Chapter VII. Mounting and Usage**);

- When using the scope for the first time, press and hold the **controller (4)** and **power button (5)** for more than 8s to enable the hidden reticle and zeroing functions;
- Select a target at a certain distance, such as 100m and 200m;
- Adjust the scope according to the operating instructions as described in **Power-on and Settings** in Chapter VII;
- Select the zeroing profile (refer to **Zeroing Profile** in **Chapter XIII. Main Menu**);
- Press and hold the **controller (4)** to open the main menu, select the zeroing option, and press the **controller (4)** to open the submenu of the zeroing function;
- According to the selected target distance, select or add the new zeroing distance (refer to **Zeroing > Zeroing Distance > Set Zeroing Distance** in **Chapter XIII. Main Menu**);
- After setting the zeroing distance, press and hold the **controller (4)** to save the parameter. Turn the **controller (4)** to select the zeroing function, and press the **controller (4)** to go to the zeroing interface (refer to **Zeroing > Zeroing Distance > Zeroing Interface** in **Chapter XIII. Main Menu**). The X and Y coordinates of the reticle are displayed in the upper left corner of the screen;
- Aim and shoot at the target;
- Observe the position of the actual point of impact, and assume that the red mark × in the figure on the right is the position of the point of impact (**This mark is only for illustration. It should actually be a bullet hole**);
- If the point of impact and the aiming point (the center point of the reticle) do not match, keep the aiming position still, and meanwhile, press and hold the **controller (4)** and **power button (5)** for 2s to freeze the picture, and then a snow-like freezing icon  appears on the left of the display, as shown in **Figure n**;
- Turn the **controller (4)** to move the reticle, turn it clockwise to move the cursor right or down, and turn it anticlockwise to move the cursor left or up;
- Press the **controller (4)** to switch between the X-axis and Y-axis, and the position of the cursor ➤ indicates the selected item, with the icon turning blue;



- After moving the reticle, a little white dot appears on the screen, indicating the position of the reticle before moving;
- After moving the reticle position to the actual point of impact, press and hold the **controller (4)** to save the current reticle position and return to the home screen;
- Repeat aiming and shooting, until the position of the point of impact is consistent with that of the aiming point.



Note: After the zeroing position at a distance is set up, you can switch the options of **Zeroing Distance** in the shortcut menu.

XVI. Status Auto Hiding

TUBE TL35 SE supports automatically hiding the GUI and saving the reticle only so that there is no blocking on the image. Specific operations are as follows:

- Turn the **controller (4)** to select **Settings** on the main menu;
- Press the **controller (4)** to open the secondary menu of Settings, and turn the **controller (4)** to select Status Auto Hiding;
- Press the **controller (4)** to open the submenu of **Status Auto Hiding** and then select Hide or Show;
- After the Status Auto Hiding is enabled, all GUI icons including the status bar are automatically hidden and only the image and reticle are displayed if there is no operation within 8s;
- Press or press and hold any button to invoke the GUI icons;
- You can use the buttons and the menu only after the GUI icons are displayed.

XVII. Wi-Fi

TUBE TL35 SE has a built-in Wi-Fi module and can connect wirelessly to a mobile device (laptop or mobile phone) via Wi-Fi.


- On the main menu, enable Wi-Fi. For detailed operations, refer to Wi-Fi in **Chapter XIII**.

Main Menu;

- After the Wi-Fi of the scope is enabled, search for the Wi-Fi signal with the name "InfiRay-TUBE_XXXXXX" on the mobile device, among which XXXXXX is a 6-bit serial number composed of letters and digits;
- Select the Wi-Fi and enter the password to connect. The initial password is 12345678;
- After Wi-Fi connection is established, you can control the scope via the app on the mobile device.

Setting Wi-Fi Name and Password

You can change the name and password of the device Wi-Fi on the app.

- After the scope is connected to the mobile device, locate the Settings icon  on the InfiRay Outdoor image screen and tap it to open the Settings interface;
- In the text box, enter and submit the new Wi-Fi name (SSID) and password;
- After submitting the changes, reset the device to activate them.



Note: If the device is reset, the name and password of the Wi-Fi will also be restored to the default settings.

XVIII. Product Update and Description of App

The TUBE TL35 SE thermal camera can be controlled using an app. You can transmit images

in real time, operate the device, and update device software by connecting the device to a mobile phone or laptop via Wi-Fi.

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

You can also test and update the software 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 our official website (www.infirayoutdoor.com) or the app store. Alternatively, you can scan the QR code below to download it for free;



- Open the InfiRay Outdoor app after installation;
- If your device has been connected to a mobile device, please switch on the mobile data of the mobile device. After connection, an update prompt will be displayed automatically on the app. Tap **Now** to download the latest version immediately or **Later** to update later;
- InfiRay Outdoor automatically registers the last connected device. Therefore, once you have connected with InfiRay Outdoor before, it will automatically detect the update 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, connect the scope to the mobile device and the update process automatically starts;
- After the update is installed, the device will restart automatically.

XIX. 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).

XX. Maintenance

The maintenance should be carried out at least twice a year and includes the following steps:

- Wipe the surface of metal and plastic parts to clear off dust and dirt by using a cotton cloth.
Silicone grease may be used for the cleaning process;
- Clean the electric contacts and battery slots on the device using a non-greasy organic solvent;
- Check the glass surface of the eyepiece and lens. If necessary, clear off the dust and sand on the lens (it is perfect to use a non-contact method). Use a specialized wiping tool and solvent to clean the optical surfaces.

XXI. 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 its vendor or supplier for troubleshooting.

Fault	Possible Causes	Solution
The scope cannot be	The battery is out of charge.	Charge

started.		
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 Chapter XIV of the User Manual.
The image is too dark.	The screen is not bright enough.	Adjust the display brightness
The icons are clear but the image is 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 position of the reticle moves after shooting.	The scope or the clamp is not mounted firmly.	<p>Check whether the scope is mounted firmly.</p> <p>Ensure that the bullet type and caliber you use are consistent with that used for zeroing.</p> <p>If you have performed zeroing in summer but are using the scope in winter (or vice versa), the zeroing point may have changed slightly.</p>
The scope cannot focus.	Configuration error.	<p>Set the scope according to Section VII Mounting and Usage.</p> <p>Check the outer surface of the objective lens and eyepiece, and if</p>

		<p>necessary, wipe off any dust and frost on it.</p> <p>In cold weather, a special antifogging coating can be applied (such as those used on eyeglasses or car rearview mirrors).</p>
The device cannot connect to a mobile phone 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.	<p>The device is beyond Wi-Fi coverage.</p> <p>There is blocking (such as concrete walls) between the device and the receiver.</p>	Move the device to a place where you can receive Wi-Fi signals.
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).	
When the device is used at a low temperature, the imaging quality is poorer than that at a normal temperature.	<p>At temperatures above 0℃, the 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.</p> <p>At low temperatures, the observed targets (background) usually cool down to a similar temperature because of reduced temperature contrast.</p>	

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

§ 15.19 Labelling 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.

§ 15.21 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.

§ 15.105 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-worn operations. To comply with RF exposure requirements, a minimum separation distance of 0 mm 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.