HOLO Series
User Manual

V1.0

InfiRay Technologies Co., Ltd.

Specifications

Model	HOLO-HL25
Detector Parameters	
Type	Uncooled VOx
Resolution	384×288
Pixel Size, μm	12
NETD, mk	≤ 40
Frame Rate, Hz	50
Optical Parameters	
Objective Lens, mm	25
FOV	10.5 º × 7.9 º
Digital Zoom, ×	×1, ×2, ×3, ×4
Detection Range, m (Target Size: 1.7m×0.5m, P(n)=99%)	1300
Display Parameters	
Type	2.6" AMOLED
Resolution	800×600
Battery Power Supply	
Battery Type/Capacity/Output Voltage	18500/ 1500mAh /3.7V
Operating Time (22 ºC), h*	≤ 5
External Interface Power Supply	5V (Type C)
Physical Parameters	
Ingress Protection Rating	IP67
Memory Capacity, GB	32
Operating Temperature, °C	-20~+50
Weight (exclusive of battery pack), g	< 500
Dimension, mm	66×90×90

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

- HOLO Thermal Imaging Camera
- Calibration hot pad
- USB cable
- Lens cleaning cloth
- User manual

II. Description

HOLO-HL25 is a new generation of holographic thermal imager featured with long working time and good concealment. It has a large screen with high definition line display, which can penetrate smoke, dust or dark night. It is suitable for general thermal search and targeting applications and can be widely used for hunting, searching and positioning under various outdoor conditions.

III. Product Features

- 12μm self-developed detector;
- High image quality;
- HD AMOLED display
- 50Hz frame rate;
- Built-in memory card, supporting photo taking and video recording;
- Built-in digital magnetic compass and motion sensor;
- PIP (picture-in-picture) function;
- Defective pixel calibration;
- Convenient operation interface;

IV. Device Composition

1. Display Screen

2. Five-way button

3. Power button

4. Clamping pressure plate

5. Nut

6. Battery holder cover

7. Lens

8. Battery holder

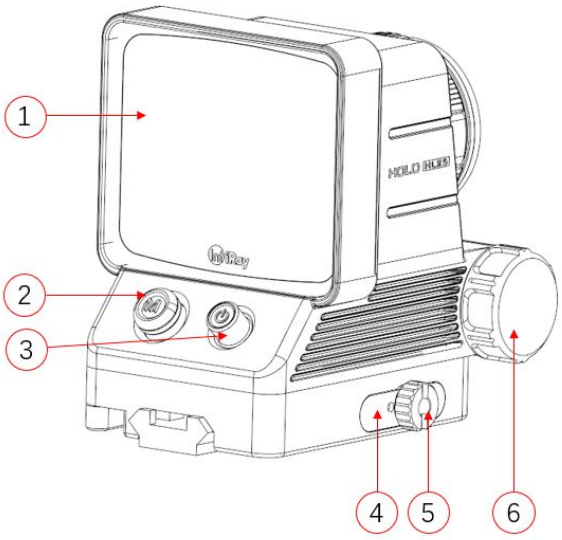
9. Fixture

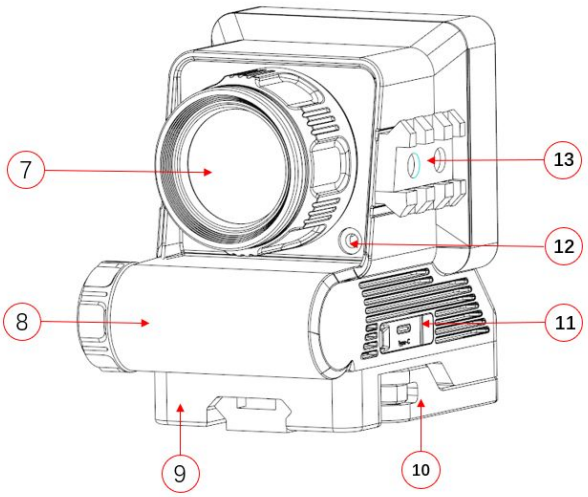
10. Locking wrench

11. Type-C interface

12. Lasers

13. Side picatinny rail





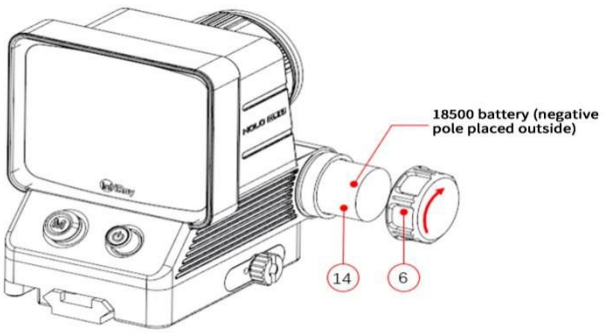
V. Button Operations

Button	Device Status/ Current Operating Mode	Press	Press and Hold
Power Button ⏻	Powered off	——	Power on
	Always-on interface	Shutter	Shutdown after 3s / standby before 3s
	Advanced menu	Return to the upper level	——
Up ↑ Button	Always-on interface	Digital zoom (1.0×--4.0×)	PIP on/off
	Shortcut menu	Reticle color	

(Zoom Button)	Advanced menu	Move up	——
Down ↓ Button (Calibration Button) C	Always-on interface	Take photo	Start/end recording
	Shortcut menu	Laser switching (10m/30m/50m/off)	
	Advanced menu	Move down	
Left ← Button/Palette Button P	Always-on interface	Palette mode	——
	Shortcut menu	Type A/B/C	——
	Advanced menu	Move left	
Right → Button/Brightness Button ☼	Always-on interface	Screen brightness (1.0×--5.0×)	Stadiametric rangefinding
	Shortcut menu	Reticle type	——
	Advanced menu	Move right	
Menu Button (M Button) M	Always-on interface	Go to the Shortcut Menu	Go to the Advanced Menu
	Advanced menu	Switch on and off/Enter the next-level options/Confirm the current option parameters	Save and return to the upper menu
	Pixels defect correction	**Add/delete defective pixels**	**Save/cancel calibration**

VI. Battery Installation

- Turn anticlockwise to open the battery holder cover (6) as shown in the figure;
- Install one 18500 battery (14) according to the device body battery installation instruction icon, i.e. the positive pole of the battery faces inward and the negative pole faces outward, and put it into the battery holder;



- Close the battery holder cover (6) and turn clockwise to tighten it.

★ Special description:

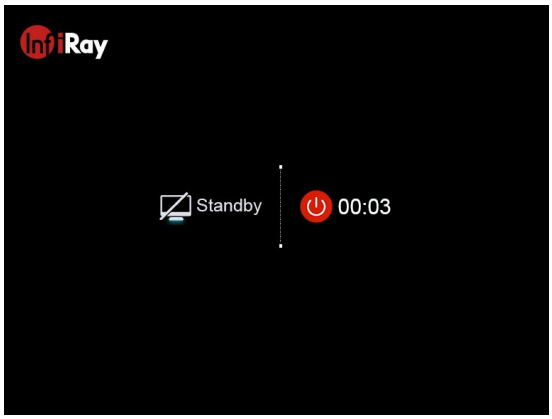
This device can also be connected to an external power supply through the Type-C interface data cable. There is no need to remove the battery, but it cannot charge the rechargeable battery.

VII. Operating instructions

7.1 Startup and Shutdown

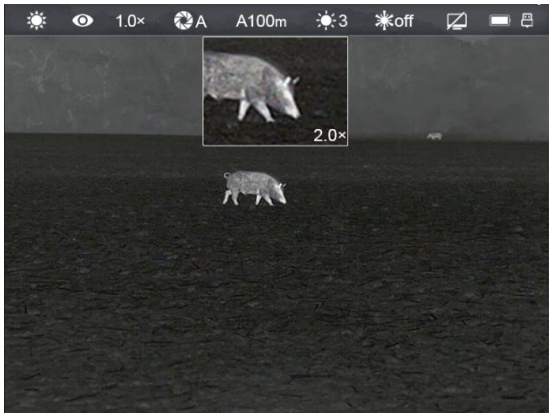
When the power is off, press and hold the **Power Button**, the thermal imager starts, and the screen displays the image.

When the power is on, press and hold the **Power Button**, the thermal imager shuts down.



7.2 Status Bar Display

When the thermal imager is on, a row of status bars is displayed above the image, as shown in the following figure.

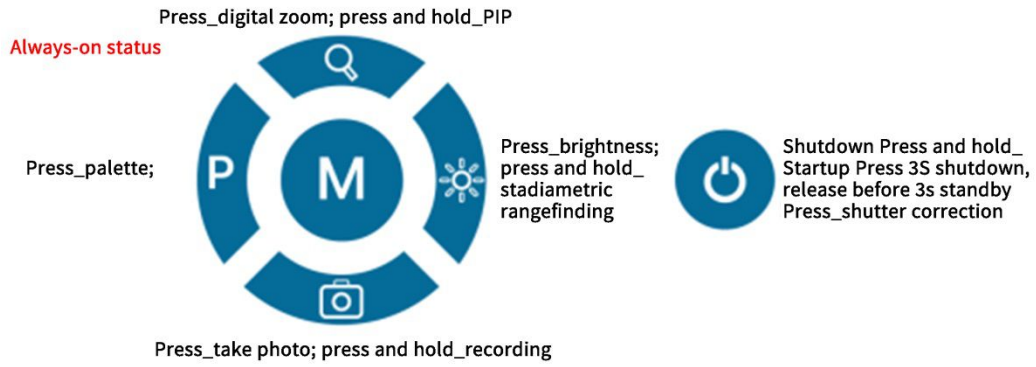


The top status bar from left to right is:

- Palette mode: white hot, black hot, red hot, pseudo-color, bird watching (white hot by default)
- Ultra-clear mode: on/off (off by default)
- Digital zoom: 1×, 2×, 3×, 4× (1× by default)
- Shutter mode: automatic shutter A/manual shutter M (automatic mode by default)
- Gun type: A/B/C (A by default)
- Screen brightness: 1 to 5 (3 by default)
- Lasers :10m / 20m / 50m / off (off by default)
- Standby shutdown: on/off (on by default)
- Battery icon, USB icon

7.3 Always-on Interface

After startup, enter the always-on interface.

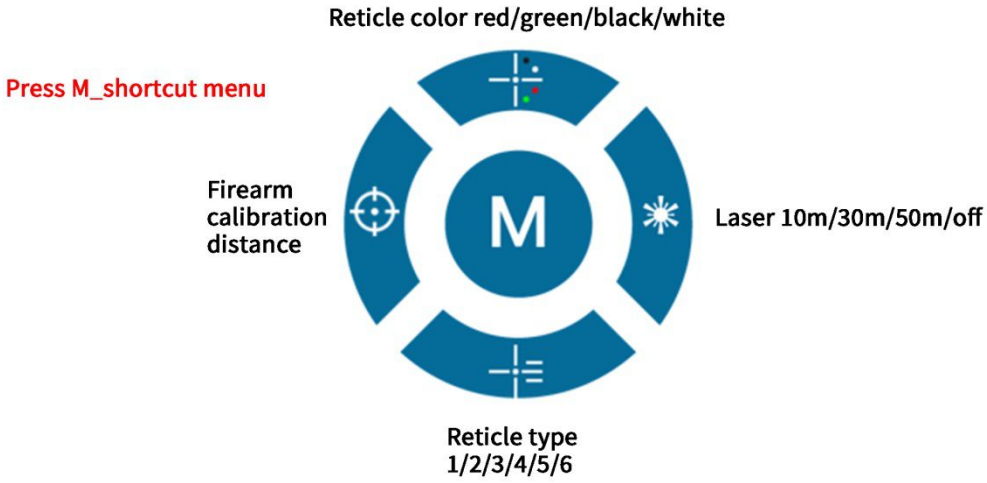


- Press the ↑ **button** (zoom button) -- **digital zoom**. 1×, 2×, 3× and 4× circulate in order on the home screen. The top status bar is updated in real time. (1× by default);
- Press and hold the ↑ **button** (zoom button)--**PIP**. The device is turned on/off. The magnification values 2×, 4×, 6×, 8× (off by default) are displayed in PIP.
- Press the ↓ **button** (calibration button)--**take photo**. If the camera icon flashes once, it indicates that the photo has been taken;
- Press and hold the ↓ **button** (calibration button)--**recording**. Press and hold to start video recording, and press and hold again to save and exit recording;
- Press the ← **button** (palette button)--**palette mode**. White hot, black hot, red hot, pseudo-color and bird watching circulate in order (white hot by default);

- Press the → **button** (brightness button)--**screen brightness**. Levels 1-5 circulate in order (3 by default);
- Press and hold **the → button** (brightness button)--**stadiametric rangefinding**. Press and hold to enable single-point rangefinding and disable the brightness function, and press and hold again to disable single-point rangefinding (disabled by default).

7.4 Shortcut Menu

On the home screen, **press the M button** to enter the shortcut menu; press and hold the M button to save and return to the previous level, namely the home screen. The shortcut menu function information is displayed on the interface:



- ↑ **Button** -- reticle color. Press the **Up Button** in turn to switch the **reticle colors** black/white/red/green circularly. (black by default)
- ↓ **Button** -- reticle type. Press the **Down Button** in turn to switch the **reticle types** 1-6 circularly. (1 by default)
- ←**Button** -- firearm calibration distance. Press the **Left Button** in turn to switch the firearm calibration distances 100m/200m/300m circularly. (100m by default)
- → **Button** -- Lasers. Press the **Right Button** in turn to switch the **laser functions** 10m/30m/50m/off circularly. (off by default)


1.0×
A
A100m
3
off
Green
100m
Off
4
1.0×
A
A100m
3
off
Red
100m
Off
2
1.0×
A
A100m
3
off
Green
100m
10m
4
1.0×
A
A100m
3
10m

Caution!

The Holo Series holographic thermal imager is equipped with a laser pointer. Please pay attention to the following.

- Do not look directly at the laser;
- Do not point the laser at a person;
- Do not use optical equipment to look directly at the laser pointer;
- Do not remove, modify or repair the thermal imager by yourself;
- The laser may be harmful to your health.

WARNING!

The Holo Series holographic thermal imager is equipped with a laser pointer that meets the standards of Class 3R laser.

Laser Radiation Avoid
Direct Eye Exposure
Class 3R Laser Products

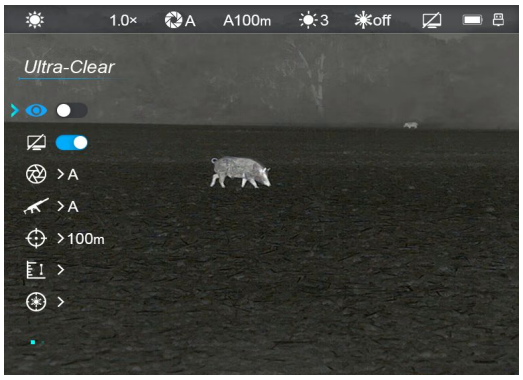
The laser wavelength is 650nm; energy < 3mW.

7.5 Advanced Menu

- On the home screen, press and hold the **M button** to enter the advanced menu.
- **Press the ↑ or ↓ button to switch the menu** function options;
- The function options of the main menu are cyclical: When the cursor ›reaches the last menu option on the first page, it will start from the first menu option on the second page; When the cursor ›stays at the first option on the first page, you can press the ↑ **button** to jump directly to the last menu option on the second page;
- Press the **M button** to modify the parameters of the current option or go to the next level of the menu;
- The position of the cursor ›indicates the selected option, the icon of which will change from white to blue;
- The operation of secondary and tertiary menus is the same as above;
- Under all menu interfaces, you can press and hold the **M button** to save changes and return to the home screen, and press the **Power** **button** to return to the upper menu without saving changes;
- During the continuous operation of the thermal imager, 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

Ultra-Clear -- turn on/off Ultra-Clear



- On the home screen, press and hold the **M button** to enter the advanced menu screen;
- Press the **Up or Down button** to select the "Ultra-Clear";
- Press the **M button** to turn on or off the Ultra-Clear;
- In the Ultra-Clear mode, the thermal imager can display more details in severe weather conditions such as heavy fog, rain and snow. When it is activated, the icon in the status bar will prompt.

Standby -- enable/disable the automatic standby function

- On the home screen, press and hold the **M button** to enter the advanced menu screen;
- Press the **Up or Down button** to select the "Standby Settings" option;
- Press the **M button** to enable or disable the Standby function;
- After enabling, the icon in the status bar will prompt, and in case of no button operation within 15 minutes, the device will automatically enter the Standby state.

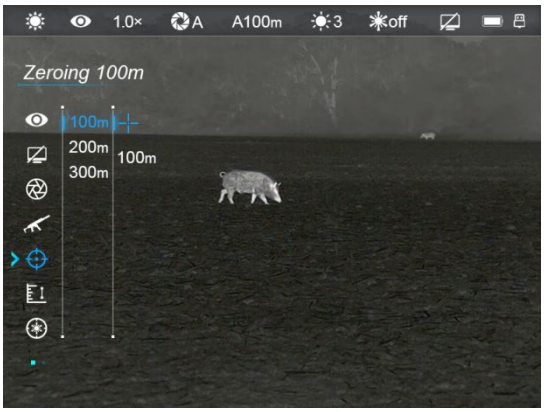
Type of Calibration Gun--select different types of calibration gun

- On the home screen, press and hold the **M button** to enter the advanced menu screen;
- Press the **Up or Down button** to select the "Gun Type" option;
- Press the **M button** to enter gun type submenu;
- Press the **Up or Down button** to select zeroing profile A/B/C;
- Press the **M button** to confirm selection and save and return to the previous level.

Firearm Calibration

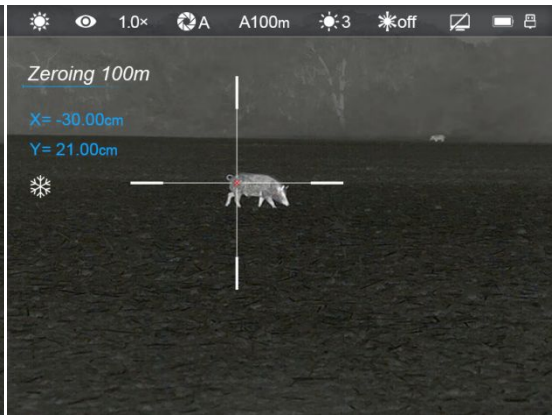
Operation of firearm calibration function:

Firearm calibration: Select firearm calibration distance_enter firearm calibration or modify firearm calibration distance value_enter firearm calibration.



- On the home screen, press and hold the **M button** to enter the advanced menu screen;
- Press the **Up or Down button** to select the "Firearm Calibration" option;
- Enter the Firearm Calibration screen, and the center of the screen displays reticle 1;
- Aim the reticle center of the device at the bull's eye and shoot, and then observe the position of the actual point of impact;
- Keep the device still, press the **M button** to freeze the screen, and at the same time, a freeze mark appears on the screen;
- Press the Up, Down, Left or Right button to adjust the X-axis and Y-axis to the position of the actual point of impact respectively, and press and hold the **M button** to hold and return

  to the Main Menu.



Laser Calibration

If the actual target location differs from the location marked by the laser cursor, you can use this function to calibrate the laser cursor.

- On the home screen, press and hold the **M button** to enter the advanced menu screen;
- Press the **Up or Down button** to select the "Laser Calibration" option;
- Press the **M button** to enter the Laser Calibration screen;

- Press the **Up and Down button** to select the laser distance value, 10m / 30m / 50m;
- Press the **M button** to enter Laser Calibration, the X-axis direction and the Y-axis direction are displayed. Press or press and hold the **Up or Down button** to fine-tune or quickly calibrate the laser cursor to the correct position in the Y-axis direction. Press or press and hold the **Left or Right button** to fine-tune or quickly calibrate the laser cursor to the correct position in the X-axis direction;
- Press and hold the **M button** to save the calibration parameters and return to the home screen.

Pixels Defect Correction--Correction of image defective pixels

When using the thermal imager, you may see defective pixels, such as visible lightspots or dark spots with stable brightness. To address this problem, use the Pixel Defect Correction function to remove the defective pixels.

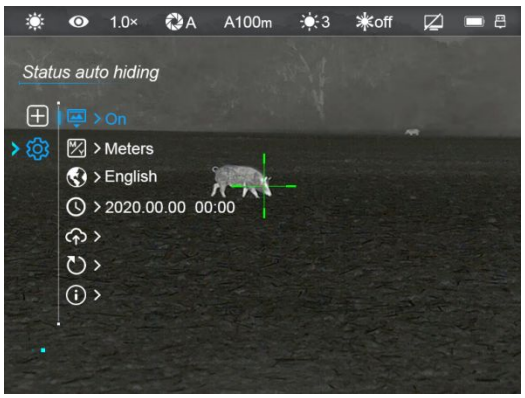
- On the home screen, press and hold the **M button** to enter the advanced menu screen;
- Press the **Up or Down button** to select the "Pixel Defect Correction" option;
- Press the **M button** to enter the correction screen, and display the X-axis, Y-axis and the number of defective pixels at the same time;
- Press the Up, Down, Left or Right button to adjust to the position where pixel defect correction is required, and press the **M button** to add/delete the defective pixel;
- Press and hold the **M button** to display the prompt box of whether to save defective pixel. After confirming the saving, it will automatically return to the previous level of the menu;
- Press the **Power button** to not save this pixel defect correction and return to the main menu.

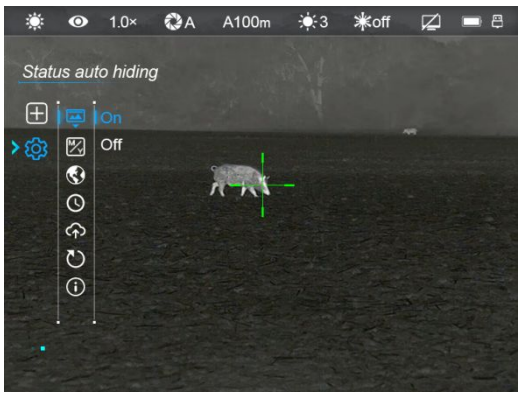
Settings

Set the date, time, language, status auto-hiding, factory reset, and device information query.

Status Auto Hiding -- Enable/disable the Status Auto Hiding function

- Press the **Up or Down button** to select "Status Auto Hiding" option;
- Press the **Up or Down button** to enable or disable this function;
- Press the **M button** to confirm selection and save and return to the previous level.





Unit Conversion -- Convert meter/yards

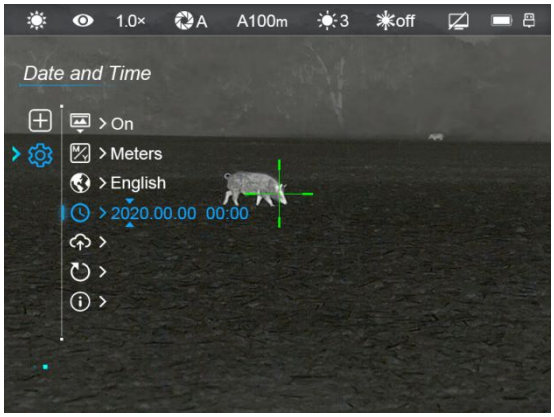
- On the home screen, press and hold the **M button** to enter the advanced menu screen;
- Press the **Up or Down button** to select the "Unit Conversion" option;
- Press the **M button** to enter the Unit Conversion submenu. HOLO series supports Meter and Yards;

- Press the **M button** to confirm selection and return to the previous level.

Language -- Select system language

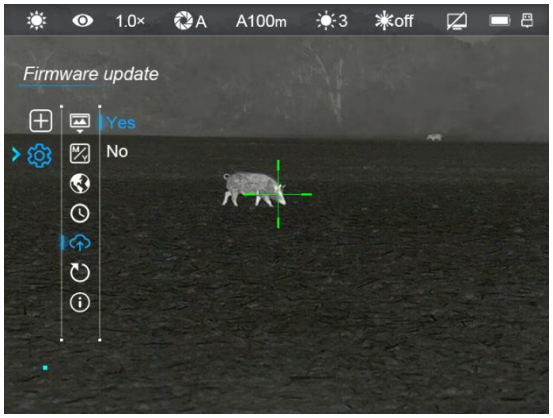
- On the home screen, press and hold the **M button** to enter the advanced menu screen;
- Press the **Up or Down button** to select the "Language" option;
- Press the **M button** to enter the Language submenu. HOLO series supports English, simplified Chinese and Russian;
- Press the **Up or Down button** to switch between the two languages;
- Press the **M button** to confirm selection and save and return to the previous level.

Date and Time



- On the home screen, press and hold the **M button** to enter the advanced menu screen for settings;
- Press the **Up or Down button** to select the "Date and Time" option;
- Press the **M button** to display upper and lower blue triangle, indicating selected;
- Press the Up or Down button to select the appropriate time, and press the **M button** to switch from left to right;
- After the setting is completed, press and hold the **M button** to save and exit the date reset function and return to the previous menu.

Firmware Update



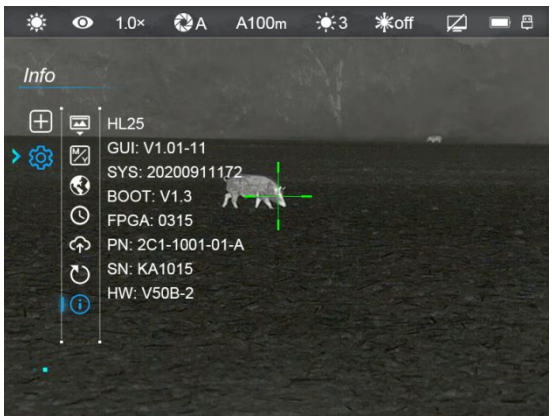
- On the home screen, press and hold the **M button** to enter the advanced menu screen for settings;
- Press the **Up or Down button** to select the "Firmware Update" option;
- Press the **Up or Down button** to select Yes/No;

- Select Yes and press the **M button** to update, and select No and press the **M button** to return to the previous level.

Factory Reset -- Restore to the default settings at factory

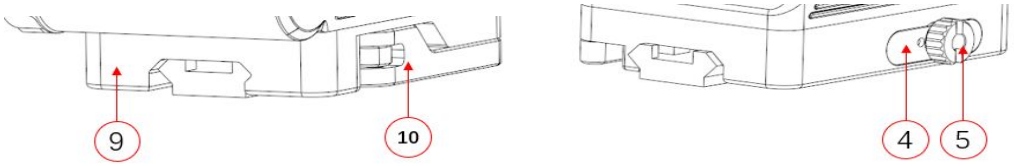
- On the home screen, press and hold the **M button** to enter the advanced menu screen;
- Press the **Up or Down button** to select "Factory Reset" option;
- Press the **M button** to enter the submenu of this function;
- Press the **Up or Down button** to select Yes or No, and press the **M button** to confirm the selection;
- If select "Yes", the device will automatically restart and return to the default state; if select "No", cancel and return to the previous menu;

Info -- Query relevant information of device



- On the home screen, press and hold the **M button** to enter the advanced menu screen;
- Press the **Up or Down button** to select the "Info" option;
- Press **M button** to query relevant information of the device, including product model, GUI version number, software and hardware version number and PN\SN code;
- Press the **M button** or the **Power button** to exit to return to the previous menu.

VIII. Fixture Installation



The bottom of HOLO series is equipped with a quick-release fixture, which, with simple and convenient operation, can be quickly installed on the picatinny rail for fixing. The specific method

is as follows:

(1) First adjust the clamping pressure plate to a proper position through the nut (5);

(2) Then put the HOLO device fixture (9) in a proper position of the picatinny rail, and pull back the wrench (10) to clamp the rail.

IX. 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 screen (no crack, oil, stain, or other sediments)
- Status of the battery (fully charged in advance) and electrical contact (no salinization or oxidation).

X. 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 screen 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.

XI. Troubleshooting

The following table lists all problems that are likely to occur during device operation. Inspection and repair should be conducted according to the suggestions in the 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.

Fault	**Possible Causes**	**Solutions**
The thermal imager cannot start.	The battery is out of charge.	Replace 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 per the user manual.

Images are too dark.	The display is not bright enough.	Adjust the display brightness.
Icons are clear but images are blurry.	The lens is not focused.	Rotate the lens focus knob 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 device to dry in a warm and dry environment for more than 4 hours.
The observed target disappears.	Glass and other crystalline objects may cover the field of view.	Find the glass and other crystalline objects from the field of view and move them out of the field of view.
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 normal temperature.	At temperatures above 0°C, 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. At low temperatures, the observed targets (background) usually 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.	