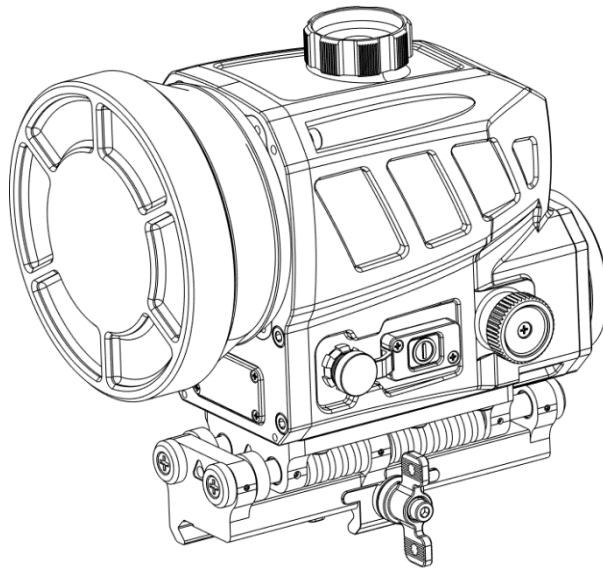


Tyke-CH6 Clip-on Series Thermal Imager

Operation and Maintenance Manual



Cautions&Warnings



- ①Keep the thermal imager away from strong light. Do not aim the thermal imager directly at the sun or laser, otherwise serious damage will be caused to the thermal imager.
- ②After the thermal imager is connected to the observation bracket, the zero position should be set before using.
- ③Keep the battery away from fire, and avoid violent impact or anode-cathode short circuit of the battery. Otherwise, it may cause an explosion.
- ④It is strictly forbidden to disassemble the thermal imager by yourself, or contact with corrosive substances such as acid and alkali.
- ⑤Before mounting the thermal imager, tiny particles and dust on the installation base surface and the surface of the observation bracket connection base should be carefully cleaned to ensure the installation accuracy.
- ⑥If there is dust on the exposed optical surface of the thermal imager, it can be gently wiped off with the provided flannel. Do not wipe it with fingers or dirty cloth.
- ⑦Protect the thermal imager from falling or severe impact.

 **Cautions**

- ① Please do not power the thermal imager on for reducing battery energy consumption when it is not used temporarily or in the process of preparations.
- ② Please keep the lens cover closed when powering the thermal imager on.
- ③ After the thermal imager is exposed to rain or moisture, the surface of the thermal imager should be wiped clean and dried in time.
- ④ For long time storage, please take the battery out and put it back in the carrying case.
- ⑤ After the battery is fully charged, it should be taken out in time and cannot be stored in the charger. Improper storage of the battery will cause the battery to slowly discharge until damaged.

Table of Contents

1 Overview	1
2 Features and Technical Specifications	1
2.1 Main Features	1
2.2 Technical Specifications	2
3 Functional Components and Interface	3
3.1 Focus Knob	3
3.2 Power Button	3
3.3 Menu Knob	3
3.4 Aviation Connector	3
3.5 Battery Compartment Handle	4
3.6 Locking Handle	4
4 Connection	4
4.1 Battery Installation	4
4.2 Imager Connection	4
4.3 Cable Connection	5
5 Operation Instructions	5
5.1 Power-On	5
5.2 Power-Off	6
5.3 Operation Interface	6
5.3.1 Entering the Operation Interface.....	7
5.3.2 Operating Menu	8
5.3.3 Zoom Operation.....	8
5.3.4. Screen Brightness Adjustment.....	8
5.3.5 Transmitting Images	9
5.3.6 Infrared Image	11
5.3.7 Reticle Setup Menu.....	12
5.3.9 Other Settings	13
6 Repair and Maintenance	15
6.1 Repair	15
6.2 Maintenance	15
7 Common Faults and Troubleshooting	15
8 Warnings & Cautions	16
8.1 Warnings	16
8.2 Cautions	17
9 Transportation and Storage	17
10 Completeness	17

1 Overview

Tyke-CH6 clip-on thermal imager is based on thermal imaging and sensing principle. It can realize observation, recognition, probability measurement and aiming point setting of the target day and night.

At the same time, the built-in image transmission system can transmit the images in the thermal imager to the devices with Wi-Fi, such as mobile phones, pads and computers in real time, for convenient observation and monitoring.

2 Features and Technical Specifications

2.1 Main Features

- a. Brightness adjustment for screen display.
- b. Wired and wireless image transmission.
- c. Probability ranging.
- d. Infrared image adjustment.
- e. Manual zero settings.
- f. Auto fault detection.
- g. Reverse polarity protection and over-discharge protection for battery.
- h. Clip-on hood.

2.2 Technical Specifications

The technical specifications of the thermal imager are shown in Table 1.

Table 1 Main Technical Indicators of Thermal Imager

No.	Items	Technical Specifications	Remarks	
1	Imaging Components	Resolution	640×512	
2		Pixel size	12μm	
3		Spectral Range	8~14μm	
4		Frame Rate	25Hz	
5		MRTD	≤300mk	Minimum resolvable temperature difference
6	Objective Lens Components	Focal Length	75mm	
7		FOV	5.8°×4.6°	
8		Imaging Distance	30m~+∞	
9		Focus Mode	manual	
10	Display Components	OLED Resolution	800×600	
11	Physical performance	Power Supply	18650 Li-ion battery	2PCS
12		Continuous Working Time	≥8h	
13		Dimension	181×73.5×105mm	L×W×H
14		Weight	≤1.1kg	With battery
15		Boot Time	≤10s	
16	Imager performance	Encapsulation	IP67	
17		Recognition Distance	≥1000m	1.7×0.5 (human)
18			≥1500m	2.3×2.3 (vehicle)
19		Zero Movement Range	≤0.5mil	
20	Application Environment	Operating Temperature Range	-40°C ~ 55°C	
21		Storage Temperature Range	-43°C ~ 70°C	
22		Humidity	95%±3%	35°C±3°C
23		Altitude	≥5000m	
24		Adaptability	All-weather	

3 Functional Components and Interface

The thermal imager has functional devices and interfaces such as infrared objective lens, eyepiece, focusing knob, power button, menu knob, aviation connector, battery compartment handle, shock absorption component, and locking handle, as shown in Figure 1

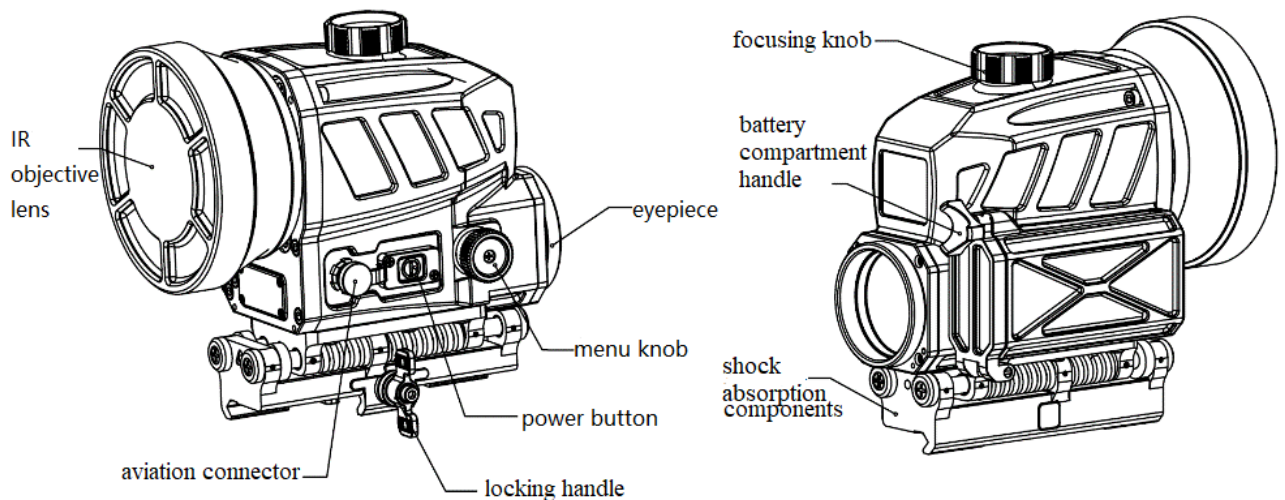


Figure 1 Functional Components of Thermal Imager

3.1 Focus Knob

The focus knob is used to adjust the sharpness of the observation target when the image in the display screen is blurred, and realize the imaging adjustment from a close view to a distant view.

3.2 Power Button

The power button enables power-on, power-off, and image correction.

3.3 Menu Knob

The menu knob is used for menu operation of the thermal imager to realize function control, electronic zoom, image adjustment and other operations.

3.4 Aviation Connector

The plug-in interface for external aviation connector is mainly used to connect external cables for outputting PAL video, debugging RS232 serial port and power supply.

3.5 Battery Compartment Handle

Open and close battery compartment.

3.6 Locking Handle

The locking handle is mainly used for fixing and connecting the thermal imager and the observation support to ensure the reliable and safe connection between them.

4 Connection

4.1 Battery Installation

Unscrew the handle of the battery compartment counterclockwise and put in two 18650 batteries. There is no need to distinguish the positive and negative poles of the battery. Just lock the handle of the battery compartment

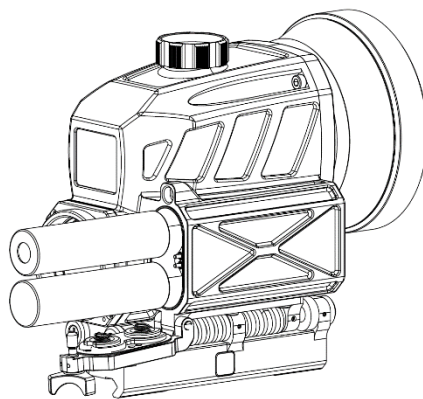


Figure 2 Components for Battery Installation

4.2 Imager Connection

Connect the thermal imager with the Picatinny rail through the damping assembly and screw it by hand. After the connection is completed, check whether the thermal imager shakes.

4.3 Cable Connection

Insert the aviation cable into the corresponding interface of the thermal imager.

Note: During cable connection, align the connector with the socket before inserting it. The connection is done when there is a crisp sound.

5 Operation Instructions

Functions and parameters can be set through the display screen as described below.

① Power button

The power button enables power-on, power-off, and image correction.

② Menu knob

Clockwise/reverse rotation, short press, and long press can be operated for menu knob.

In menu mode, short press to select menu options.

Press the knob for more than 3s to enter the system menu.

5.1 Power-On

After the battery is installed and can supply power normally, press the power button to start the thermal imager.

The product model, product name, product self-test status and startup progress bar are displayed on the startup interface (the continuous dot at the bottom of the screen is the startup loading progress bar). After the loading of the startup screen is completed(the startup time is about 12s), enter the main interface of the thermal imager.

When the system starts, the startup screen and product information will be displayed as shown in Figure 3.

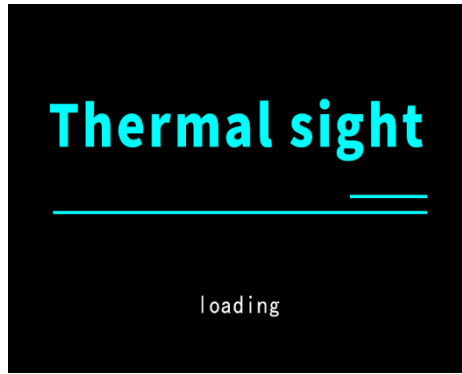


Figure 3 Startup of Thermal Imager

Note

- 1. Before starting the imager, make sure that the lens hood is closed, and do not open it until the system is stable.**
- 2. When the startup screen disappears, it means that the system is started successfully.**

5.2 Power-Off

Long press the power button for 3s on any interface and the following page is displayed. Turn the menu knob to *YES* and press it to power off.

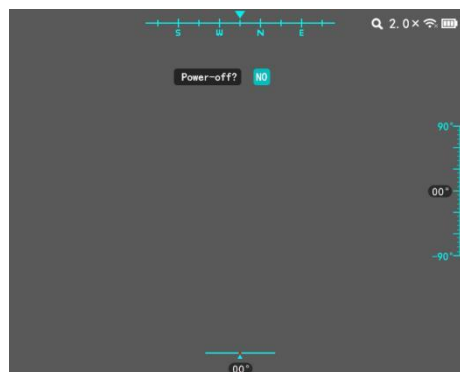


Figure 4 Power-off Prompt

5.3 Operation Interface

Enter the main menu of the thermal imager after startup, as shown in Figure 5.

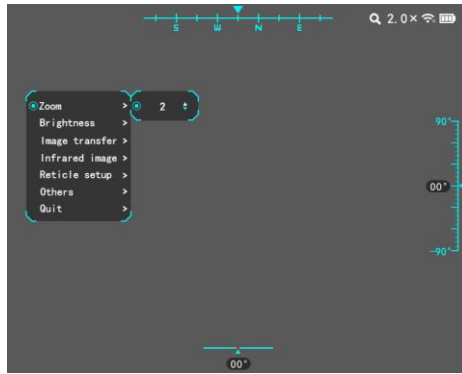


Figure 5 Main Working Interface

The display contents of the main working interface are displayed from left to right:

Clip-on/observation: clip-on

E-zoom  1.0x

In the main menu, rotate the menu knob to zoom the image cyclically, and the zoom will be displayed in the upper right corner in real time. The zoom process is clockwise and unidirectional 1-2-3-4x. Rotate the encoder counterclockwise, and the zoom will be 4-3-2-1.

Note: the E-zoom cannot be adjusted in the clip-on mode.

Image transmission mode 

The user can choose the image transmission mode in the main menu.

Battery capacity 

The system detects and displays the power in real time. When the battery is in low power, the display box of the battery will turn red for low power prompt; When the battery power is insufficient to support the operation of the thermal imager, it will be automatically shut down with a countdown prompt display.

5.3.1 Entering the Operation Interface

Rotate the menu knob directly in the main working interface, and the interface will switch between observation mode and clip-on mode (up-down change of rolling indicator and blanking of ranging reticle). Press the menu knob for more than 3s to enter the main menu, which includes zoom, brightness, image transfer, infrared image, zero reset, reticle setup, other setup and exit. Adjust the relevant

functions of the thermal imager to meet the needs of users and image detail processing, as shown in Figure 6.

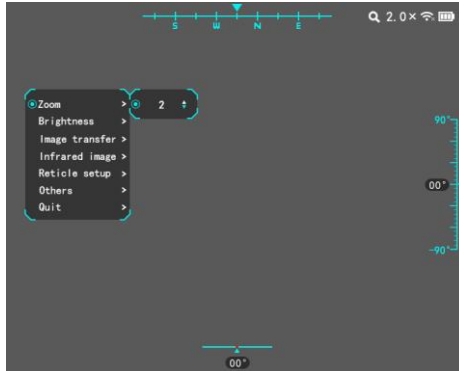


Figure 6 Menu Interface

5.3.2 Operating Menu

After entering the menu, you can select different functions by turning the knob, and there is a point prompt in front of the corresponding function. Click the menu knob to select the current function and follow the prompts to perform corresponding operations.

After the operation is completed, tap the menu knob to exit the menu and maintain the adjusted state. If there are parameters that need to be saved, there will be a prompt in the interface.

When the automatic blanking switch of the menu is turned on, under any menu, it will automatically exit the menu after 60s if there is no button or knob operation.

5.3.3 Zoom Operation

The zoom range of the infrared image is 1.0×—4.0×, and the zoom step is 1.0×; When zooming, the infrared image is zoomed with the center of the screen as the center, and the zoom value can be seen on the display screen.

5.3.4. Screen Brightness Adjustment

Screen brightness adjustment is carried out for the screen at the eyepiece end. It can adapt to brightness adjustment under all weather conditions to meet the use in any scene. Brightness adjustment will not adjust image contrast and other parameters. The default

brightness is 5. The adjustment range is 0-9, 0 for the lowest brightness and 9 for the highest brightness.

Under the screen brightness adjustment menu, rotate the encoder roller to adjust the brightness. After adjusting to the appropriate brightness, briefly press the encoder to determine the current gear; The gear display is shown in Figure 7

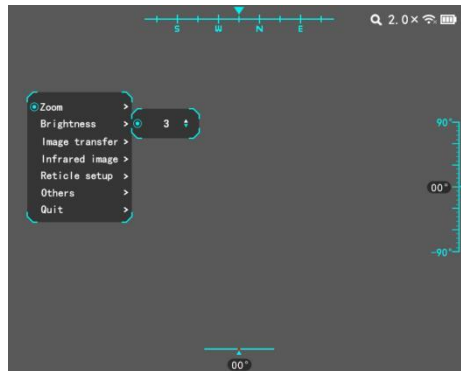


Figure 7 Screen Brightness Adjustment Interface

5.3.5 Transmitting Images

Image transmission is to transmit the videos and image in the thermal imager to other devices by wired or wireless means, which is convenient for simultaneous observation, coordinated command, and quick pointing.

Image transmission includes two forms of wireless transmission and analog video (off by default, and it needs to be turned on again after restart).

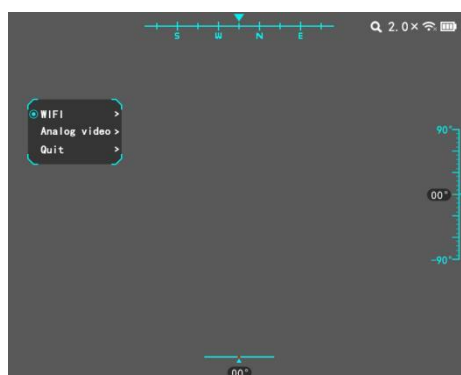



Figure 8 Image Transfer Interface


Wireless transmission: The wireless transmission menu includes the head-mounted transmission function. When *Head-mounted transmission* is selected, it

needs to be matched with head-mounted products; When *On* is selected, wireless transmission is enabled.

Head-mounted transmission: Image transmission with head-mounted products(Jerry-F are supported at present currently), which can realize real-time transmission of the video in the thermal imager to the Jerry-F equipment. See Jerry-F Instructions for Use for connection with Jerry-F. (Before connecting, you need to turn on the pairing switch on the Jerry-F. When the headset transmission is turned on, it will be paired with Jerry-F. The pairing time lasts for 30s. After the pairing is completed, follow the instructions in the thermal imager for follow-up operations.)

Wireless transmission: The information in the thermal imager is transmitted in real time through LAN to mobile phones, pads, computers and other devices with Wi-Fi(special app  needs to be installed), which is more convenient for observation and monitoring.

Connection steps for wireless transmission (Take Android system as an example):

- ① Adjust the wireless transmission to *on*.
- ② Turn on the Wi-Fi switch of the mobile phone, search for the Wi-Fi with the type of "WIFIV_", and connect it (the default password is "12345678" and cannot be changed);
- ③ After the connection is successful, click to open the dedicated APP-Cam802 , and you can observe the image in the thermal imager in real time.

Analog video: The analog video is used to transmit the video in the thermal imager to the external device. When the head-mounted transmission or wireless transmission is turned on, the analog video is turned on by default and cannot be turned off. Only when the wireless transmission is turned off, can analog video be manually turned on or off.

Wired transmission connection steps (take a common monitor as an example):

- ① Adjust the analog video to *On*;
- ② Insert the special cable into the thermal imager according to the method in Chapter 5.3;
- ③ Insert the BNC port of the special cable into the video input port of the monitor;
- ④ Adjust the display mode of the monitor until the image is displayed on the monitor normally;

Note: When wireless transmission is on, analog video can be output to an external monitor via cable (PAL video).

5.3.6 Infrared Image

In infrared image mode, the functions of image mode, brightness, contrast, color palette, image enhancement and filter are available. Users can fine tune the image according to the actual scene requirements for better observation effect. Select an infrared image under the main menu and press the key to enter the infrared image submenu, as shown in Figure 9. Submenu functions of infrared image are as follows.

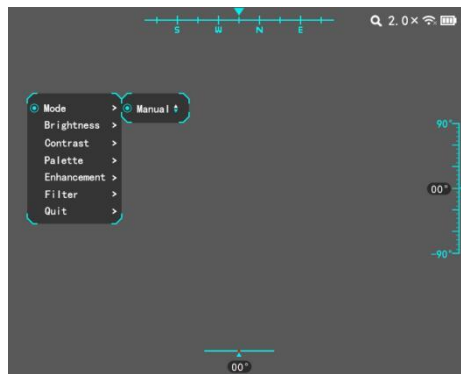


Figure 9 Infrared Image Menu

① Image Mode (1-10 Scenes)

The image mode has 1-10 scenes. The default state is scene 1 when the imager is turned on. Choose different scene modes by turning the menu knob. The image mode will be saved for the next start.

② Brightness (0-100)

Adjust the image brightness for different ambient (different from screen brightness adjustment) in the range of 0 to 100 (the default is 50). When the menu knob is rotated clockwise, the number gradually becomes larger with step 5, otherwise it becomes smaller. The brightness value is automatically saved to the current image mode after modification.

③ Contrast (0-100)

Adjust the contrast in the range of 0 to 100 (the default is 50). When the menu knob is rotated clockwise, the number gradually becomes larger with step 5, otherwise it becomes smaller. The contrast value is automatically saved to the current image mode after modification.

④ Palette

The color palette has five modes: white heat, black heat, rainbow, red face and red heat. Different color palette has different target colors and are suitable for different states. Users can change according to the actual situation. The default state is white heat mode.

⑤ Image Enhancement (Default: On)

⑥ Filter (Default: On)

Note: When image enhancement and filtering are turned on, it can enhance the image details and make the picture more delicate. They are turned on by default.

5.3.7 Reticle Setup Menu

The reticle settings includes five parts: reticle type, reticle brightness, reticle color, save and exit, and exit. Users can select the reticle switch, set different colors, and adjust the reticle brightness according to their own usage, so as to realize the adjustment of the reticle.

The reticle settings can make it suitable for different application environments.

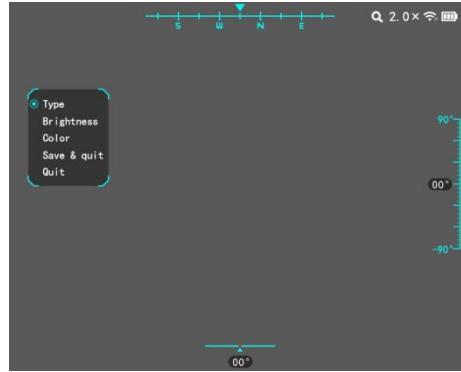


Figure 10 Reticle Setup Menu

Reticle type: The reticle type includes ranging and off.

Reticle brightness: The reticle brightness changes cyclically in the range of 1-9(1 is the darkest and 9 is the brightest). When the menu knob is rotated clockwise, the number becomes larger and the brightness increases. It will be automatically saved after the setting is completed. The brightness is 1 by default.

Reticle color: there are five colors: red, yellow, green, purple and inverse color. The default is in inverse color mode (inverse color mode is to adjust the reticle color according to the background of the scene. When the brightness is too high, the reticle will be black. When the brightness is low, the reticle is displayed in white. In inverse color mode, the reticle brightness cannot be adjusted).

Save and Exit: Press Save and Exit to save the current settings and return to the first level menu.

Exit: when it is not necessary to save the current settings, Press Exit return to the first level menu.

5.3.9 Other Settings

Other setting menus include angle display, angle correction, fault detection, factory reset, automatic blanking, language and exit.

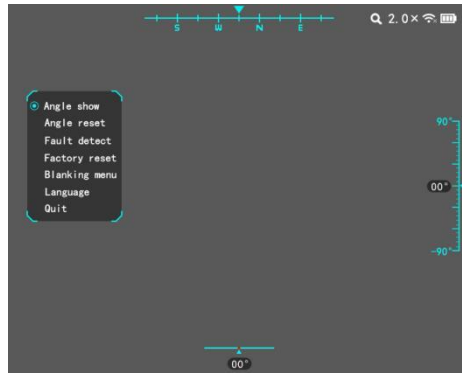


Figure 11 Other Settings Menu

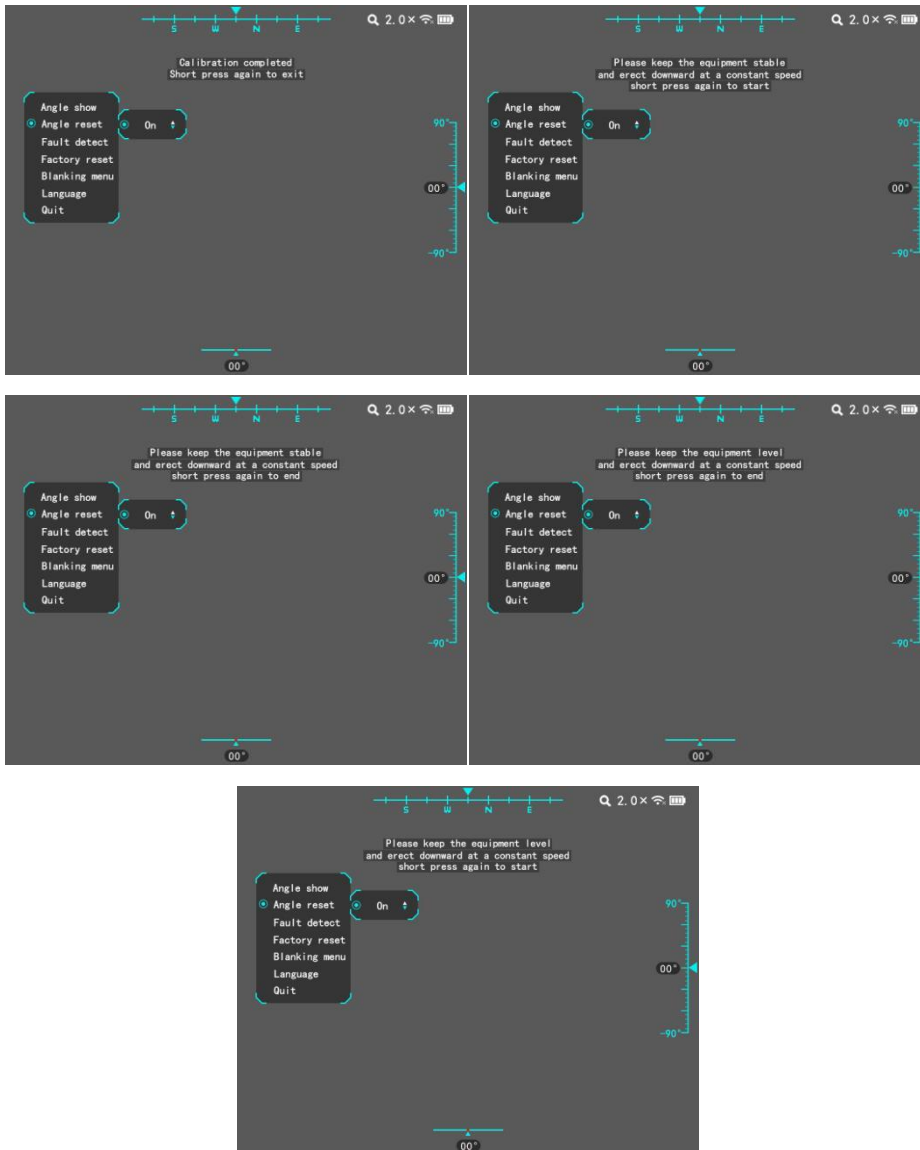


Figure 12 Angel Correction

Fault Detection: When entering the fault detection menu, core components such as detectors, memory and battery packs will be detected. The detection results will appear on the screen when the detection is completed.

Factory Reset: When the user chooses to restore the factory settings, the system parameters of the thermal imager will be restored to the factory default state.

Auto blanking: You can choose to enable auto blanking function or not. When the auto blanking is enabled, it will automatically exit the menu if there is no menu operation for 60s.

Language: Chinese and English are available, which can be switched according to the user's language habits.

Exit: Exit the current menu and return to the previous menu.

6 Repair and Maintenance

6.1 Repair

Considering the product is special, it is not advised to repair it by yourself since unskilled disassembly will lead to sealing failure and/or optical deviation. If your product has any problem, please send it back for professional repair.

6.2 Maintenance

Check whether the first lens of the objective lens and eyepiece lens are clean before using the imager. If not, please clean them with the cleaning kit. During cleaning, please operate carefully to protect the surface coating. Do not clean the lens with detergents or products containing wood fibers that may damage the optical coating. For long time storage, you should also clean it frequently, in case that dust or stains accumulate on the lens.

7 Common Faults and Troubleshooting

Table 2 Common Faults and Troubleshooting

No.	Fault	Reason	Troubleshooting Methods
-----	-------	--------	-------------------------

1	No image, black screen	Power failure	Check whether the battery has been installed.
			Check whether the power switch is turned on.
			Send back for repair.
2	Preview fuzzy, unclear image	Stains on objective lens	Clean the first lens of the objective lens following the daily maintenance rules.
		Stains on ocular lens	Clean the ocular lens following the daily maintenance rules.
			Send back for repair.
3	Bright spots on image	aging or mechanical vibration and impact	Contact our after-sales department.

8 Warnings & Cautions

8.1 Warnings

- 1) Keep the thermal imager away from strong light. Do not aim the thermal imager directly at the sun or laser, otherwise serious damage will be caused to the thermal imager.
- 2) After the thermal imager is connected to the observation bracket, the zero position should be set before using.
- 3) Keep the battery away from fire, and avoid violent impact or anode-cathode short circuit of the battery. Otherwise, it may cause an explosion.
- 4) It is strictly forbidden to disassemble the thermal imager by yourself, or contact with corrosive substances such as acid and alkali.
- 5) Before mounting the thermal imager, tiny particles and dust on the installation base surface and the surface of the observation bracket connection base should be carefully cleaned to ensure the installation accuracy.

6) If there is dust on the exposed optical surface of the thermal imager, it can be gently wiped off with the provided flannel. Do not wipe it with fingers or dirty cloth.

7) Protect the thermal imager from falling or severe impact.

8.2 Cautions

1) Please do not power the thermal imager on for reducing battery energy consumption when it is not used temporarily or in the process of preparations.

2) Please keep the lens cover closed when powering the thermal imager on.

3) After the thermal imager is exposed to rain or moisture, the surface of the thermal imager should be wiped clean and dried in time.

4) For long time storage, please take the battery out and put it back in the carrying case.

9 Transportation and Storage

Packaged products can be transported by road, railway and air. Devices should be protected against rain, dust, sunlight, and impact during transportation and should be covered with tarpaulins if shipped in gondola cars.

Warehouses storing the devices should be rainproof and dustproof, with humidity not over 80%. The storeroom should be free of acid, alkali, and corrosive gases, as well as strong mechanical vibration, impact, and strong magnetic field. Devices for long-term storage should be powered on and checked once every six months. Random batteries should be charged regularly to prevent under-voltage damage.

10 Completeness

Thermal imager (including the connecting seat, lens hood, and eye cup): 1SET

Hand-held observation expansion eyepiece: 1

Flannel:1PCS

Desiccant: 1 bag

Operation and Maintenance Manual: 1PCS

18650 lithium battery: 4PCS

18650 charger (with adapter and cable): 1PCS

Optional:

Aviation cable: 1PCS