NNPO

USER MANUAL

TC23S SERIES

Thermal sensor

App remote control

Photo

Video

Shenzhen NNPO Technology co., ltd
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Made in China

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Foreword

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· PREFACE

This Manual describes the operation methods and precautions of the thermal imager. Please read the Manual carefully before using the thermal imager, and use it in accordance with the standard operation methods to avoid danger or property loss in operation. Please keep this Manual properly for future reference.

After the laser is turned on, do not irradiate the eyes and skin. The laser emitted by the equipment may cause damage to the eyes and skin.

Description of icons used in the manual:

— Warning, the words involved in danger or harm.

— Tips, additional instructions, or helpful techniques.

— Notes, the explanation of the meaning of words.

Safety Precautions for Using

⚠ • DANGER

• In the process of equipment installation and use, the electrical safety regulations of the country and region where the equipment is used must be strictly observed. The power supply matching and conforming to SELV (safety extra low voltage) shall be used, and DC5V 2A shall be used for power supply.

• The power adapter provided by the regular manufacturer shall be used. Please refer to the product parameter table for the specific requirements of power adapter.
• During wiring, disassembly and other operations, the power supply of the equipment should be disconnected, and live operation is not allowed.
Do not place the battery near the heat source or fire source to avoid direct sunlight.
• Batteries of correct specifications should be used, as improper use may cause explosion hazard. After the battery is installed or removed, it is required to close the battery compartment safely.
• Do not swallow the battery to avoid chemical burns.
Do not place the battery within the reach of children.
In case of a laser equipment, do not direct the laser at human eyes to avoid possible damage.

• After the laser is turned on, it is strictly forbidden to align the laser at the objects with strong reflection such as glass and mirror, to avoid damaging the thermal imaging detector by laser reflection.

⚠ • CAUTION

• After the laser is turned on, it is strictly forbidden to align the laser at the objects with strong reflection such as glass and mirror, to avoid damaging the thermal imaging detector by laser reflection.
• Do not direct the thermal imager at high temperature targets, such as the sun, laser, electric welding machine, etc., otherwise the thermal imaging detector will be damaged.
• The time interval between switching on and off should be more than 20 seconds.
• Because the thermal imager combines precise optical instruments and electronic equipment sensitive to static electricity, it is necessary to avoid objects falling on the equipment or vigorously vibrating the equipment, and keep the equipment away from the place where there is magnetic interference.
• The equipment should not be installed in the place where the surface vibrates or is vulnerable to be impacted as far as possible (ignoring this may damage the equipment).

Safety Precautions for Using

• It may cause damage to the thermal imager if it is used in the environment beyond the specification. Do not use the product in extremely hot, cold, dusty, corrosive, high salinity or high humidity environment. Please refer to the product parameter table for specific temperature and humidity requirements.
• When the thermal imager is not in use, and during transportation, remove the battery and place the thermal imager in a protective package.
• When the power is low during use, replace the battery in time to avoid damage caused by over discharge.
When the equipment is not in use, cover the lens cap to protect the image sensor.
• When it is necessary to clean the non optical surface of the thermal imager, do not use chemical solvents, diluents, etc. to scrub, but apply a clean, soft, dry flannel cloth to wipe the shell.
• The infrared lens of thermal imager is coated with a layer of anti-reflection film, which needs to be cleaned only when it is obviously dirty. Frequent scrubbing may cause wear of the lens coating. Please avoid touching the surface of the lens. The acid substance on the skin left by the fingerprint will damage the coating and the surface of the lens. Only use special lens cleaning wipes to clean the lens.

• If you connect your products to the Internet, you need to bear your own risks, including but not limited to network attack, hacker attack, virus infection, etc. NNPO will not be responsible for the abnormal operation of the products, information leakage and other problems caused by this, but NNPO will provide you with product related technical support in a timely manner.
Equipment access to the Internet may suffer network security problems, please enhance the protection of personal information and data security. When you find that the equipment may encounter network security risks, please contact us in time.
• Do not disassemble the thermal imager by yourself. In case of any failure, please contact the manufacturer in time, otherwise the warranty will not be granted.
• Keep all the original packaging materials of the equipment properly so that in case of any problem, the equipment can be packed with packing materials and sent to the service center for handling. NNPO shall not be liable for any accidental damage during transportation caused by the use of non original packaging materials.

Catalogue

Catalogue

·1 Product overview

TC23S features an ergonomic design. The traditional-style 30mm tube with the needs of professional hunters who value traditions and seek technological superiority. Using the most advanced infrared thermal imaging night vision system, the image quality is excellent with high shock resistance. A variety of reticles are optional. It can be snapshot captured, video recording, WIFI app connection with phone for transmission. It can meet various applications in law enforcement, outdoor hunting and other occasions.

·2 Product features

- It is portable with integrated laser rangefinder;
- Excellent image processing, highlighting the target;
- 12μm pixel thermal sensor, clear image, long detection range;
- Rugged & durable with high shock resistance, multi-functions;
- WIFI App remote control, Photo and video real time sharing on media

Thermal Imaging

·3 Main technical parameters

Detector	Uncooled 384 * 288/640*512
Pixel Size	12μm
Frame Frequency	50Hz；
Eyepiece display	1024*768（OLED）
Digital Zoom	2×，4×，8×
Focal Length	35mm/45mm
Field of View (HxV)	384*288：35mm 7.5°×5.7° / 45mm 5.9°×4.4° 640*512：35mm 12.5°×10° / 45mm 9.8°×7.8°
Eye Relief	48mm
Diopter (Range)	±5
Scene Mode	Jungle，Recognition
Calibration Mode	Shutter calibration, scene calibration, automatic calibration
Reticle	8 types with 5 colors
Palettes	White hot, Black hot, Red hot, Green hot, Fusion, Iron red
Picture-in-Picture	Yes
WIFI	connection with phone

Gyroscope	Yes
Hot Track	Yes
Snapshot capture /Video recording	Yes
Audio sound	Yes
Laser range finder	Optional
CVBS output	Composite video output（Via USB）
Firmware upgrade	Yes
Battery type	Single 18650 replaceble
Operating time(h,max)	Single battery > 4 hours
External power supply	TYPE-C interface
Housing	Aviation aluminum alloy

Dimension	35mm focal length	400mm×86 mm×81mm
	45mm focal length	410mm×86 mm×81mm
weight	35mm focal length	850g
	45mm focal length	890g

Protection level	IP67
Working temperature	-20°C～60°C

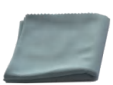
·4 Packing configuration

The configuration of the thermal imager is as followings.

S/N	Item	Qty.
①	Thermal imaging scope	1 piece
②	18650 rechargeable battery	2 (optional)
③	Charger	1 piece
④	Operation & Maintenance Manual	1 piece
⑤	Lens cleaning wipes	1 piece

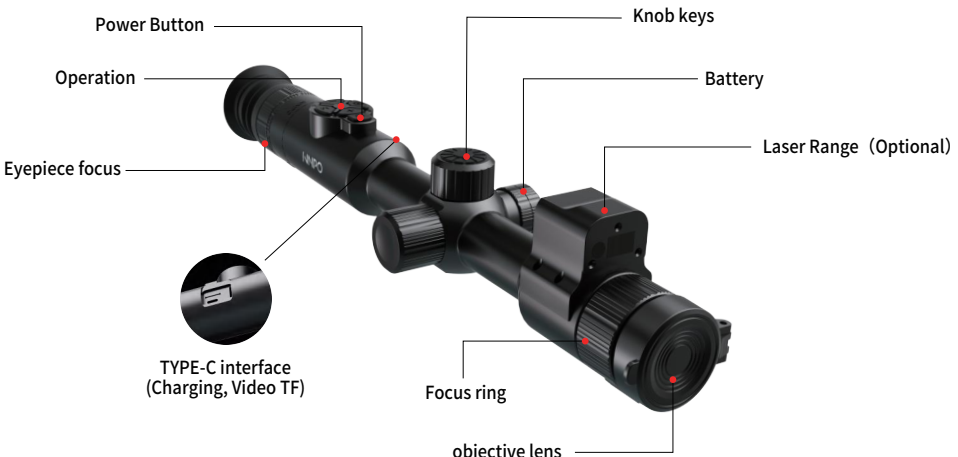
① ② ③ ④ ⑤



• 5 Operation

·5-1 Thermal imager components



·5-2 Preparation before use

·5-2-1 Check

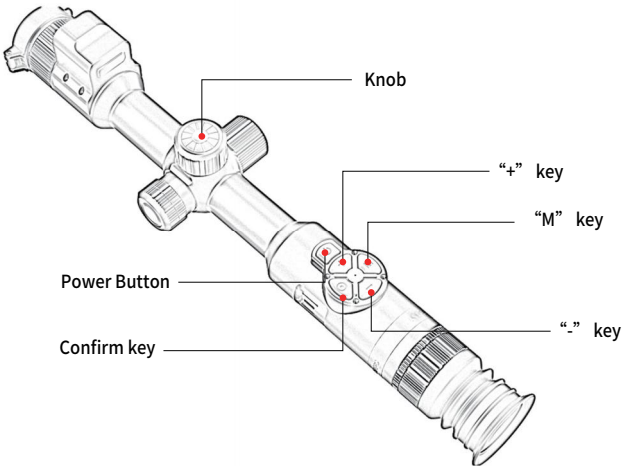
Check whether the lens, body, eyepieces and keys of the thermal imager are obviously damaged. Wipe the infrared objective lens with the lens cleaning wipes to ensure that the lens is clean.

·5-2-2 Install the battery

This product uses a single 18650 battery. Open the battery compartment cover and install the battery in the direction indicated by the positive and negative poles on the body.

·5-3 Key and Knob function description

·5-3-1 Keys (The keys of the thermal imager are as follows.)



The key description is as follows:

-  Power /Sleep Button: Power on/ Power off /Sleep mode switch
-  Confirm key: calibration, switching pallete color, menu confirmation operations;
-  + key: Zoom , switching reticle, menu + operation
-  Menu key: enter or exit the menu, laser rangefinder on/off;
-  “-” key: Menu-operation, photo taking, video recording;
- There are two operation modes: short press and long press (hold 2 seconds)

The function operation list is as follows:

Key	Trigger state condition	Press and release	Press and hold 2 seconds
	Shutdown status	/	Starting up
	Sleep status	Starting up	Starting up
	Starting up - shortcut key	Sleep	Shutdown
	Shortcut key	Switching palette color	Calibration
	Menu operation	Menu confirmation operation	/
	Shortcut key	Digital Zoom	Switch reticle
	Menu operation	Move up menu options	/
	Shortcut key	Ranging ON/OFF	Enter main menu
	Menu operation	Return to previous menu/Exit menu	/
	Shortcut key	Photo capture	Video recording
	Menu operation	Move down menu options	/

·5-3-2 Knob

Trigger conditions	Starting up	Long press (hold 2 seconds)	Rotate
Shortcut key	Calibration	Enter main menu	Digital Zoom
Menu operation	Menu confirmation operation	Return to previous menu/ Exit menu	Move menu options

·5-4 Power on/off

When the device is not turned on, press and hold the power key for 2 seconds until the start screen appears on the display and the thermal imager is powered on .

After the self-test, the image is on the display of the device.

When the device is turned on, press and hold the power key for 2 seconds to turn off the thermal imager.

Refer to related section for the main view of the device display.

·5-5 Sleep mode

Sleep mode is used to save battery power。In the view mode, short press the power key. After a second, the display will turn off. Press the button again to exit the Sleep Mode。

·5-6 Shortcut key operation instructions

When the device does not enter the menu, some common functions can be operated quickly by pressing the keys.

- Digital zoom: short press + key or Rotate the Knob; zoom (× 1, × 2, × 4, ×8sequence switching)
- Switching palette color: short press confirm key;
- Calibration : long press the confirm key.(The device will perform non-uniformity correction according to the current calibration mode;)
- Laser rang finder ON/OFF: long press+key (valid for Rangfinder Version device)
- Switching reticle: Long Press M key to change reticles.
- Snapshot capture: when it not video recording, short press”-”
- Video recording: long press”-”
- Stop video recording: short press”-”

Note: Shortcut key operation is only valid when the device does not enter the menu.

·5-7 Thermal imager commissioning

·5-7-1 Eyepiece visibility adjustment

In order to adapt to users with different vision, the thermal imager is designed with visibility adjustment. When the interface icon or text on the screen is blurred, it means that the visibility of the eyepiece does not match that of the user. Please adjust the visibility of the eyepiece.

Slowly rotate the visibility adjustment ring until **the icon and text in the screen is clearly visible**, it means that the visibility of the eyepiece has adapted to that of the user, and the visibility adjustment is completed.

·5-7-2 Infrared lens focusing

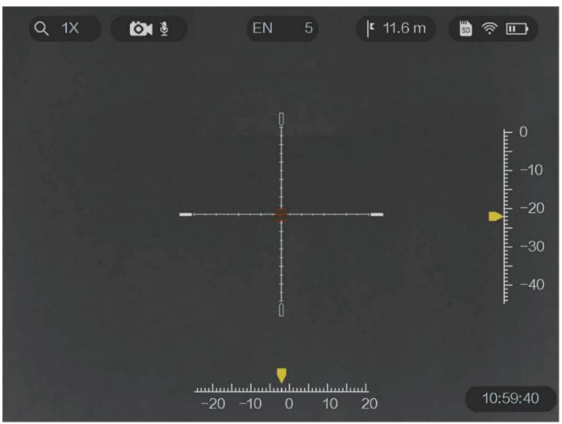
The lens of the thermal imager is provided with a lens focusing ring at the front of the lens.

After the thermal imager is turned on, the thermal imager should be aimed at the observation target, and the lens focusing ring should be rotated until the image is clear. When the distance of the observation target changes, the image may be blurred. The lens focusing ring should be rotated to refocus until **the target image is clear.**

Clockwise rotation of the focusing ring is far focusing, and counterclockwise rotation is near focusing.

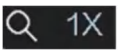
·5-8 Main image interface of thermal imager

When the thermal imager is in the view observation interface, the image interface is as shown in the figure below.



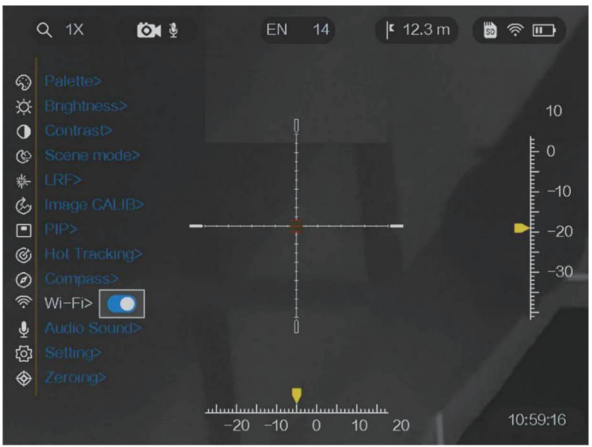
In view observation interface, shortcut key operations can be performed, and shortcut operations are detailed in related section；.

Status Item	Symbol	Option	Function
Power indicator		full charge	The battery is sufficient and can be used with confidence
		low-battery	Pay attention to charging or replacing the battery soon
		out of charge	The machine is about to fail to work before charging
		the battery is charging	The machine can be used normally while charging
Wi-Fi hotspot		Wi-Fi is connected	APP software can be used
		Wi-Fi is not connected	App software cannot be used
TF card status		The card is inserted	Photos and videos can be stored on the device
		The card is not inserted	Photos and videos cannot be stored on the device

Status Item	Symbol	Option	Function
Digital Zoom ratio		No digital zoom	No digital zoom, wider field of view
		8x digital Zoorn	8x digital zoom, bigger target
Target LRF value	/	No LRF value	Disable LRF function
		Real-time LRF value	Enable LRF function and real-time ranging
Compass, pitch-roll angle		Compass	North-east/south-east / South-west/North-west :0°~359°
		Pitch angle	-90°~+90°
		Roll angle	-90°~+90°
Audio and video recording		Record video and sound at the same time	Playback with video and sound
		Record video without sound	Playback with video but no sound

·5-9 Main image interface of thermal imager

When thermal imaging is in the menu operation interface, the image interface is as shown in the figure below.



In the menu operation interface, you can perform the operation of the menu bar.

Menu Item	Symbol	Option	Function
palette		6 palettes settings to choose	Switch between six palettes
Brightness		10 levels of image brightness	Adjust the image brightness
Contrast		10 levels of image contrast	Adjust the image contrast
Scene mode		Jungle,Recognition	Switch between two modes
LRF		Off（default）/On	Enable or disable LRF
Image CALIB.		Auto, Shutter, Scene	Switch between three modes
PIP		Off/On	Enable or disable the PIP function.
Hot Tracking		Off/On	Enable or disable hot spot mark (marking the spot of highest temperature).

Menu Item	Symbol	Option	Function
Compass		Off/On	Enable or disable compass, pitch-roll angle
Wi-Fi		Off/On	Enable or disable Wi-FI
Audio		Off/On	Enable or disable audio
Setting		Set screen Lumi. , Auto-sleep, Auto-off, language, time synchronization, Restore , version etc	Setting system parameters and view the firmware number
Zeroing		10 Reticle group, including reticle type, reticle color, X-axis, Y-axis, and save	There are 10 reticle groups, and 8 types and 5 colors in each reticle group.

·5-9-1 Enter main menu

Press and release the 

menu key, and a main menu will pop up on the left side of the screen.

PAfter entering the operation menu interface, the key description is as follows:

1. Switch the menu item. Move the menu item up or down with  the "+" and  "-" keys, or via the knob.

2. Select the menu item. Select a menu item via  the Confirm key, or by pressing the knob button.

3. Modify the key value. Modify the key value with the  "+" key and  "-" key, or adjust the key value with the knob.

·5-9-2 Palette

The infrared image can display different colors by adjusting the image palette (the adjustment of palette color band), so as to facilitate the users to observe and identify the target.

The thermal imager has 6 kinds of palette for users to choose, which are white hot, black hot, red hot, green hot, fusion, hot iron.

·5-9-3 Brightness

The brightness of the scene image can be increased or decreased by adjusting the image brightness.

The thermal imager is designed with 1-10 levels of image brightness, which ranges from the darkest to the brightest. Users can choose the appropriate brightness according to their viewing habits and current environment.

·5-9-4 Contrast

TThe scene image can be increased or decreased by adjusting the image contrast to make the target more prominent.

The thermal imager is designed with 1-10 levels of image contrast, which ranges from the weakest to the strongest. Users can choose the appropriate contrast according to their viewing habits and current environment.

·5-9-5 Scene mode

Choose the scene mode suitable for the current use environment, jungle mode or recognition mode, to achieve better observation effect.

·5-9-6 Laser rangefinder

Laser ranging ON/OFF (valid for Ranging Version device)

·5-9-7 Calibration (correction)

Calibration (correction) can eliminate the snowflakes, jitters, fringes and so on, and make the image clearer.

In the process of using the thermal imager, the components of thermal imager will heat up due to long-time operation, which may cause snowflakes, jitters, stripes and so on in the infrared image, affecting the viewing experience. The user can correct the image and eliminate the abnormal image.

• Automatic calibration: the product automatically performs shutter correction;

• Shutter calibration: manually trigger shutter calibration by long pressing  the "Confirm" button .

• Scene calibration: manual calibration is needed and external uniform scene is used for correction;

Note: The effect of scene calibration is the best. Before scene calibration, the lens cap or other objects should be used to block the lens. The objects that block the lens should be flat and the temperature distribution should be uniform.

Note: In the process of correction, the image will solidify for 0.5 seconds, which is not abnormal in the thermal imager.

·5-9-8 Picture-in-Picture

• PIP: NO/OFF

·5-9-9 Hot track

• hot spot track on/off

When hot spot track is turned on,a cursor appears on the screen to identify the hottest spot in the scene.

• 5-9-10 Compass

The Compass information display on/off

The gyroscope information display on/off

When the compass information is turned on, Compass information is displayed in the upper middle position of the screen.

• Pitch information is displayed in the middle right position of the screen.

• Roll information is displayed in the bottom middle position of the screen.

• 5-9-11 WIFI

WIFI on/Off

When the WIFI is turned on, it can be connected with the mobile phone through WIFI, displayed and operated on the mobile APP.

• 5-9-12 Audio sound

Audio sound on/off

Turn on the audio sound of recording, and the live sound will be recorded simultaneously into the video; turn off it, and the recorded video will have no sound.

·5-9-13 Setting

·5-9-13-1 Screen brightness

The brightness of eyepiece display screen can be increased or decreased by adjusting the screen brightness button.

The thermal imager is designed with 1-10 levels of screen brightness, which ranges from the darkest to the brightest. Users can choose the appropriate screen brightness according to their viewing habits.

Note: If the screen brightness is too high, long-term use may cause damage to vision.

·5-9-13-2 Automatic sleep

The automatic sleep function of device can be turned on and off, and the automatic sleep time is set;

After the automatic sleep is turned on, when the thermal imager has not been used for a long time and it is up to the automatic sleep time, the device will automatically enter the sleep status.

In the sleep status, most of the functions of the device will be turned off. After waking up, the device can be turned on quickly.

·5-9-13-3 Automatic shutdown

The automatic shutdown function of device can be turned on and off, and the automatic shutdown time is set;

After the automatic shutdown is turned on, when the thermal imager has not been used for a long time and it is up to the automatic shutdown time, the device will automatically shut down.

·5-9-13-4 Language

Switch the operation language of thermal imager.

·5-9-13-5 Time setting

Setting the time on the screen of the device

·5-9-13-6 Firmware version

Indicating the firmware version

·5-9-13-7 Default setting

Restore the factory default settings.

·5-9-14 Zeroing

·5-9-14-1 Reticle

Reticle setting options

There are 10 reticle settings to choose from for thermal imager.

Each type of reticle setting can be individually set with the corresponding reticle style, color, and corresponding to a separate zero calibration position.

·5-9-14-2 Reticle Type

The thermal imager has 8 kinds of reticle types to choose.

·5-9-14-3 Reticle color

The thermal imager has 5 kinds of reticle colors to choose. They are white, black, red, green and yellow.

·5-9-14-4 X and Y

If the thermal imager is assembled on different equipment, the zero position will be different. When the assembly equipment of thermal imager is replaced, zero calibration is needed.

- X: Move the reticle left and right;
- Y: Move the reticle up and down.

·5-9-14-5 Save

Save the current zero coordinate adjustment. If you exit without saving, the zero coordinate will remain at the original position.

·5-10 Defective pixel correction

"Defective pixel correction(DPC)" are persistent or often bright or dark pixel on the thermal imaging image, which may appear during use and can be corrected. Before you start switch the palettes mode to White Hot mode.

On the observation interface, press and hold the  "Confirm" and  "+" keys simultaneously to enter the Defective pixel correction setting interface.

Short press the  "M" key to select Axis, and short press again to switch the moving direction of the axis.

In the X-axis adjustment item, short press the  "+" and  "-" keys to adjust the X-axis direction of the reticle.

In the Y-axis adjustment item, short press the "+" and "-" keys to adjust the Y-axis direction of the reticle.

When the center position of the cursor reaches the defective pixel , short press the  "Confirm" button to correct the current defective pixel.

Press the  "+" and  "-" keys simultaneously to cancel the current defective pixel correction.

After all the defective pixel have been corrected, long press the  "Confirm" button to exit the current defective pixel correction interface and return to the observation interface.

· 5-11 Client software introduction

We recommend using the NNPO Connect software. Search the NNPO Connect software in App Store (iOS System) or Google PlayTM (Android System). Install the client software on your mobile phone first, and then connect your phone to the hotspot of the thermal device. Refer to related section for details of Wi-Fi hotspot connection.

1. Run the app and connect the phone with the device.

2. If the device is inactivated, set the password and activate it. If the device is activated, enter the password to add it to the app

3. When the device is added, the live view can be seen. You can view the interface of the monocular on the software. User can change such image parameters as brightness, contrast, zoom, palettes directly via phone as well as record video on phone/tablet memory.

• 6 Analysis and troubleshooting of common faults

If your instrument fails, first check the common faults shown in Table 5. If it is not caused by the following faults, please contact NNPO as soon as possible.

Fault detection	Fault location	Actions
The thermal imager will not start up after the power key is pressed and held	Whether the battery is installed correctly	Open the battery cover and check that the battery is installed in the opposite direction
	Whether the battery is fully charged	Take out the battery and charge it
	The battery cover is not tightened	Tighten the lens cap

After service

Fault detection	Fault location	Actions
Image is poor and blurred after starting up	Scene correction is not aligned with uniform temperature correction target Lens are out of focus	Cover the lens cap, or use other targets with uniform temperature distribution for compensation and correction Rotate the lens focus ring until the image is clear
Bright line, black edge and flower screen appear on the image	Image correction is not performed	Perform the compensation (correction) operation
Image is blurred	Lens are out of focus Infrared lens are contaminated	Rotate the lens focus ring until the image is clear Use special lens cleaning wipes to clean the lens
Different distances were observed	Lens are out of focus	Rotate the lens focus ring until the image is clear
The interface is not clear	The visibility of eyepiece is improper	Adjust the visibility according to the Manual

Fault detect	Fault location	Actions
The thermal imager is shut down suddenly during use	The battery compartment cover is loose	Tighten the battery compartment cover
The precision is decreased obviously during use	The connecting seat is loose	Check whether the connecting seat is fully locked
It is unable to shut down normally	It is unable to shut down	Press and hold the power button to force the shutdown

• 7 Maintenance and Service

After the observation is completed or if the target is not observed for a long time following the startup, it should be shut down in time to extend the effective utilization time of the thermal imager.

After service

The lens of thermal imager is an important optical component. Therefore, in the process of installation and use, oil stains and various chemical substances should be avoided to contaminate and damage the lens surface. After use, please cover the lens cap.

When the thermal imager is not in use, and during transportation, remove the battery and put the thermal imager in a safety box.

When the thermal imager is stored for a long time or does not work, it should be kept in a cool and dry environment as far as possible.

Do not use chemical solvents, diluents, etc. to scrub, but apply a soft, dry flannel cloth to wipe the thermal imager shell.

The lens of thermal imager only needs to be cleaned when it is obviously dirty. Please avoid touching the surface of the lens. The acid substance on the skin left by the fingerprint will damage the coating and the surface of the lens. Only use special lens cleaning wipes to clean the lens.

When it is not used for a long time, it should be electrified for check and correction once every six months.

After service

Thank you for choosing this product. Please read the Product Warranty Card carefully and keep it properly to be fully entitled to the perfect after-sales service support.

We will provide you with after-sales service according to the standard product warranty commit ment. Please check the official website for details of after-sales service policy. Some of the informa tion is excerpted as follows:

1. The warranty period starts from the date of the first purchase of the product, and the purchase date is subject to the invoice date of the purchased product. If there is no valid invoice, the warranty period will be calculated from the date of delivery. If the invoice date is later than the actual delivery date of the product, the warranty period shall be calculated from the actual delivery date of the

2.No warranty coverage (only some of the information is excerpted, please refer to the after-sales service policy for details)

① Exceeding the specified warranty period;

② Failure or damage caused by misuse, accident, modification, improper physical or operating environment, natural disaster, surge and improper maintenance or storage;

③ Failure or damage caused by the products, software, services or behaviors of a third party

④Normal decolorization, wear and consumption during the use of the product;

⑤ The product can run normally without interruption or error;

⑥ Data loss or damage;

⑦ Consumable parts, except for the failure due to material or process defects;

⑧ Failure to show valid warranty certificate and valid original purchase invoice or receipt, alteration, replacement or tear of original serial number label, absence of serial number or inconformity of product model or number on warranty certificate with actual product;

⑨ Any other circumstances in which the product is not used in accordance with the attached instructions or operation manual, or the product is not used in the intended function or environment, and it is confirmed that you have violated the operation manual.

3. NNPO will not be responsible for the additional promises made to you by the seller or any third party, and you should ask these third parties to fulfill them.

protection to fix card

User name	
Detailed address	
Tel	
Model	
S/N	
Date of purchase	
Seller	
Tel	

After service

Note:

1. You will be entitled to the free warranty within the warranty period and preferential service beyond the warranty period with this card.

2. This Warranty Card is only applicable to the products stated in it, which is valid after being sealed by the sales unit.

3. The warranty terms of special items shall be subject to the specific purchase and sale contract.

FCC Caution

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.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.