

Detail Specification

Chapter 1: List of Items

Standard accessories: thermal imager (including camera lens), two pieces of lithium batteries, adapter (including adapter plug), USB connecting wire, wrist strap, operation manual, optical disk, list of accessories, SD card (16GB).

Optional accessories: lithium battery, portable package, desktop charger+ its adapter

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.

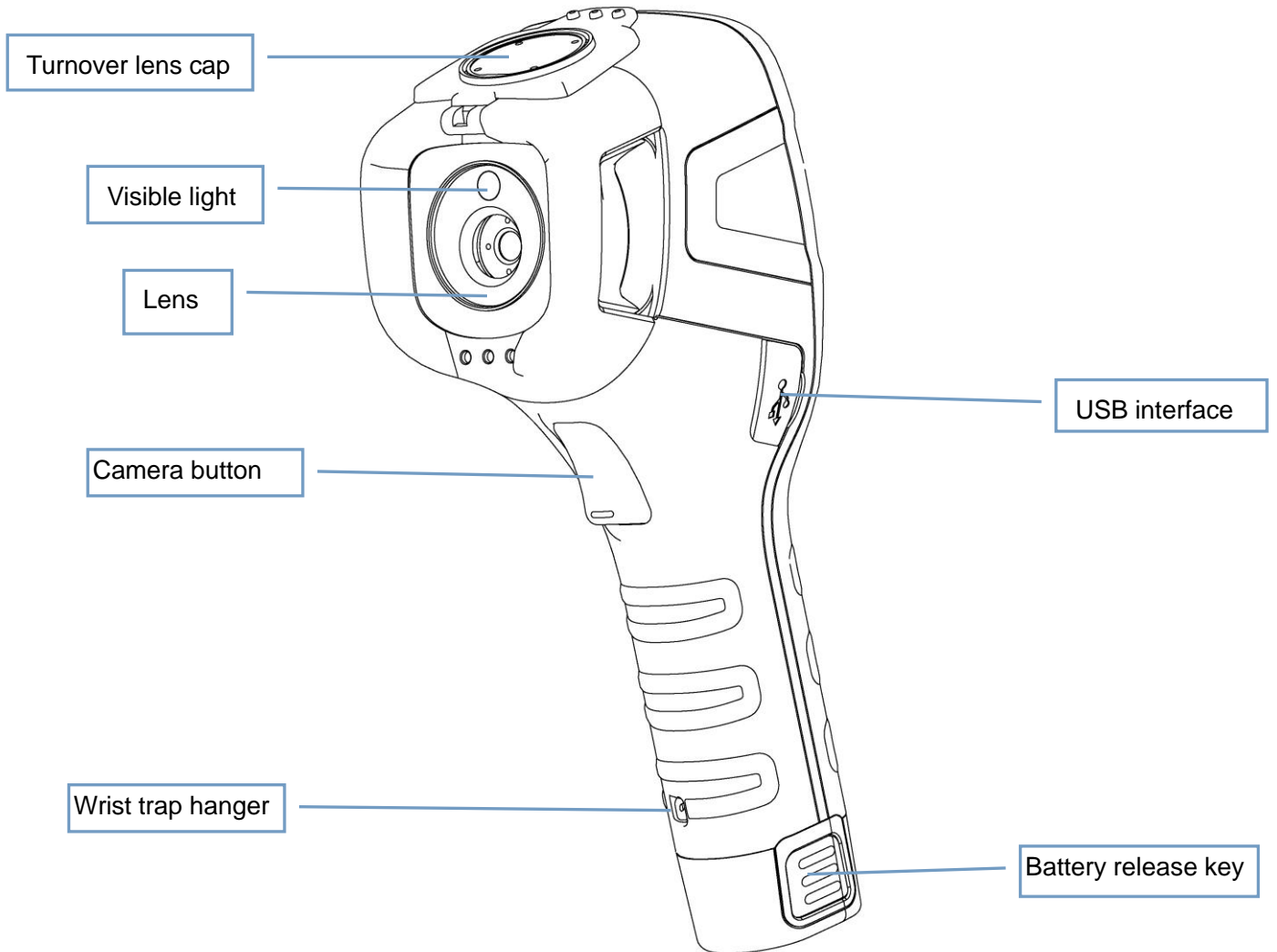
Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

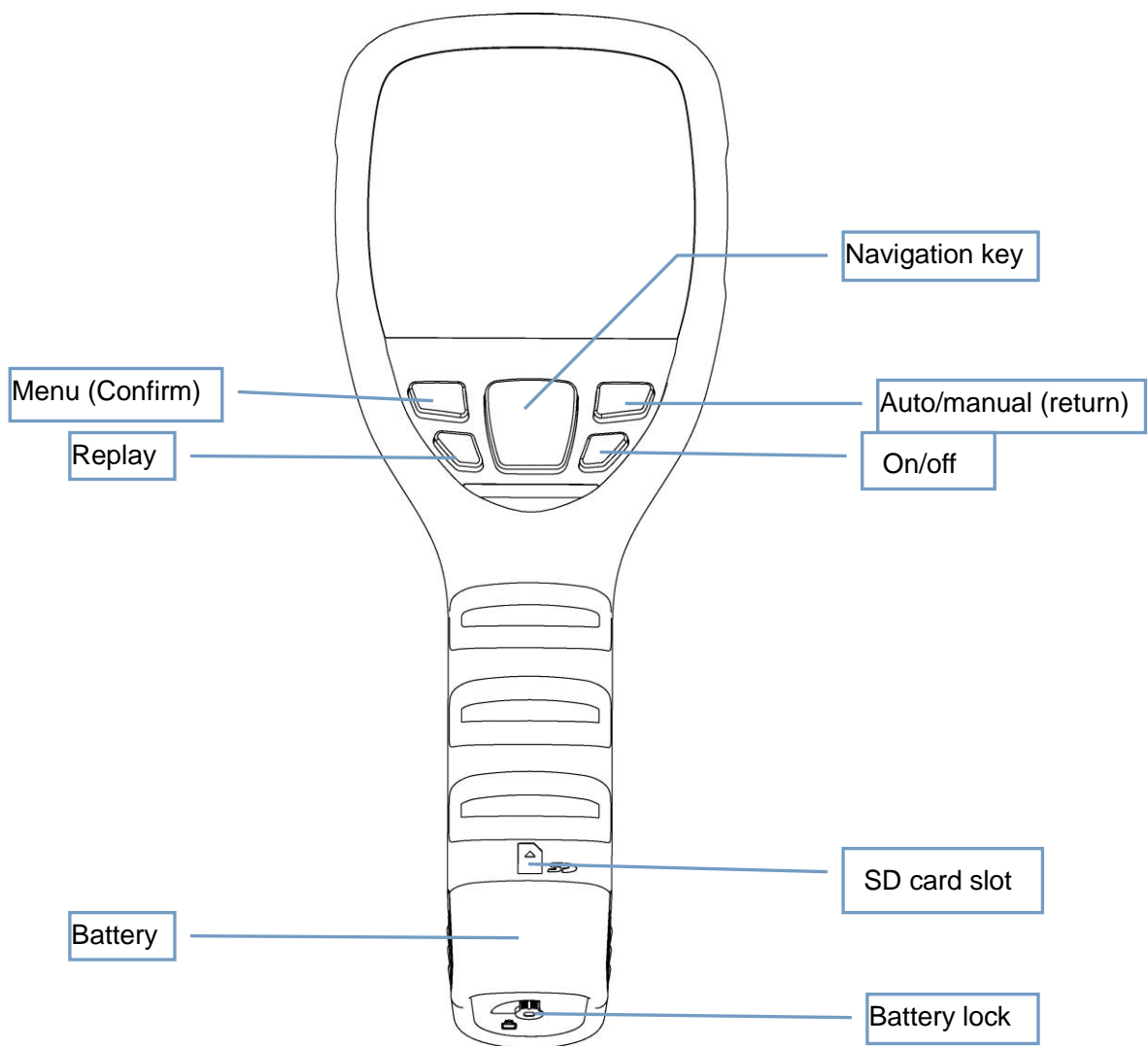
Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate 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.

Chapter 2: List of Components





Description of keys operation

B160V/B256V/B320V has a total of nine keys (as shown in the above figure), including four direction keys: +, -, <, >

“+” and “-”: select menu up and down or increase/decrease numerical value.

“◀” and “▶”: open and close menu window.

Menu (confirm): used to open main menu or confirm selection.

Auto/manual (back): switch luminance/contrast key automatically or manually or back to menu.

Replay/compensate: replay pictures through short press and compensate through long press.

On/off: turn machine on or off through long press and make machine dormant or awaken it through short press.

Trigger key: used to take photos.

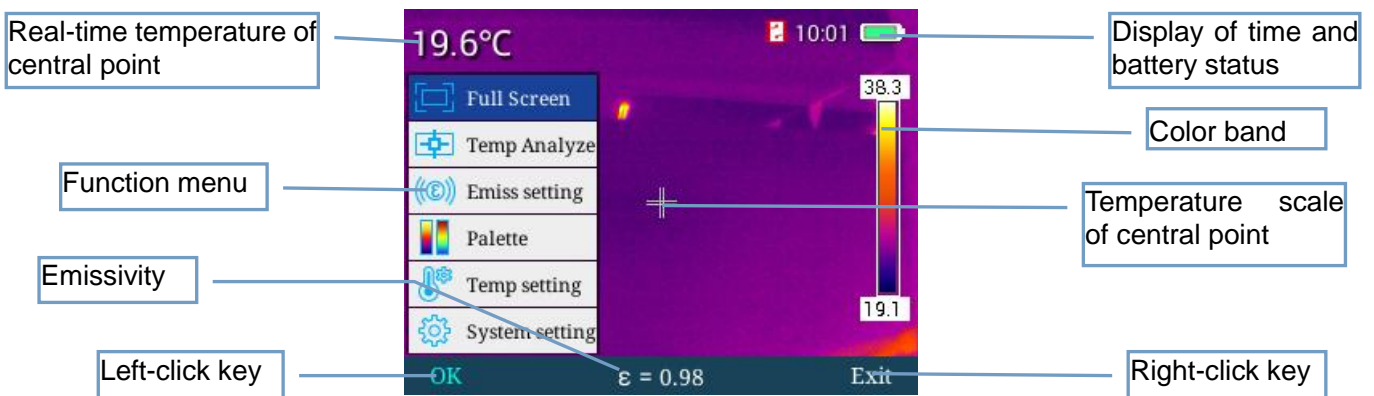
Start/close thermal imager

In power off mode, long press power key (on/off key) for 4-5s to light up the screen and the go to the startup picture; in power on mode, long press power key (on/off key) for 4-5s to pop a power off prompt up and then select “Confirm” to close temperature gauge.



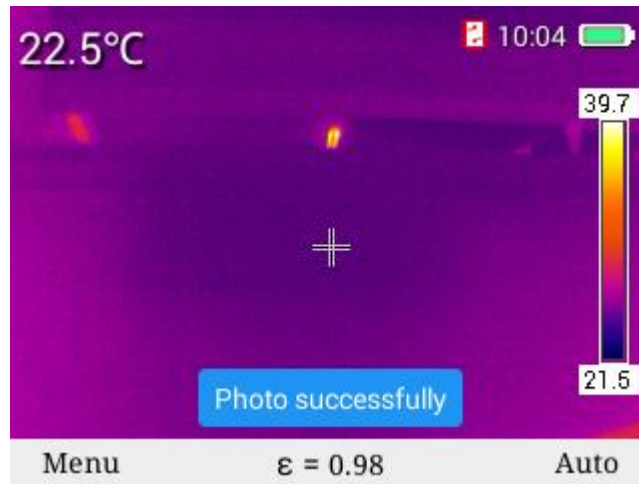
Main menu operation

Once the machine is turned on, it will go to main menu (as shown in following figure) and this interface is exactly the main interface of temperature gauge.



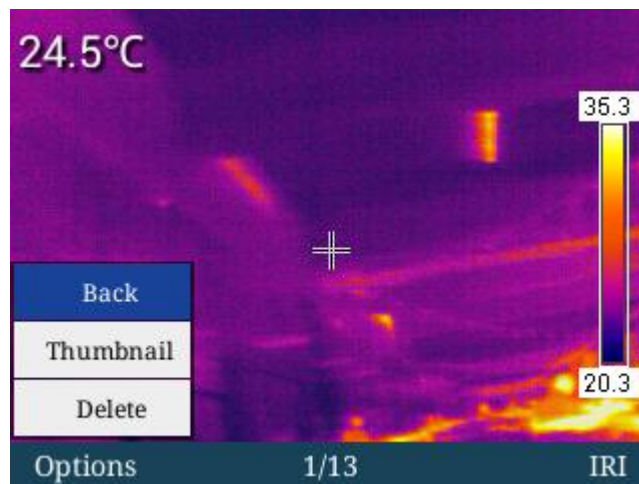
Photographing

Short press trigger key to complete photographing of current interface, as shown in following figure.

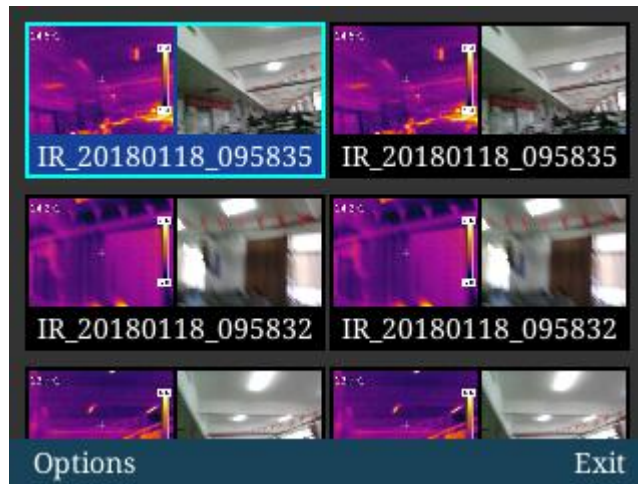


File browsing

In main menu mode, press “replay” key to replay infrared images stored recently, press “back” key to switch between IR mode and visible light mode, press “◀” or “▶” to switch images, and press “select” key under this menu to go to “back”, “thumbnail” and “delete” menu, as shown below.

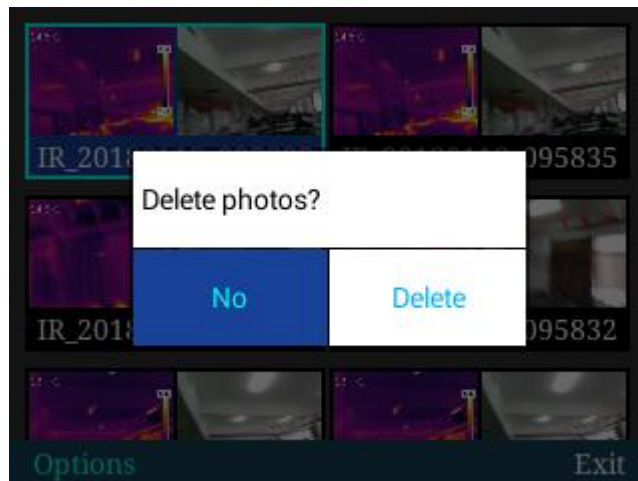


Press “+” or “-” to select “back”, “thumbnail” and “delete” menu, and press “back” key to back to the main interface. If you select “thumbnail” and press “confirm” key to access “thumbnail” menu, under this menu, press “+”, “-”, “◀” and “▶” to select corresponding images with such keys and conduct deletion, full-screen preview and other operations of such images, as shown below.



In file browsing menu, “full screen”, “delete” and “full-screen deletion” menu will appear once you press “select” key, and then you can press “+” and “-” keys to select up and down, as shown below.

Press “full screen” key, then press “confirm” key for full-screen display of images selected, press “delete” key to delete single image, and press “delete all” key to delete all images stored, as shown below.



Manual compensation

Long press “replay” key to go into manual compensation, as shown below.

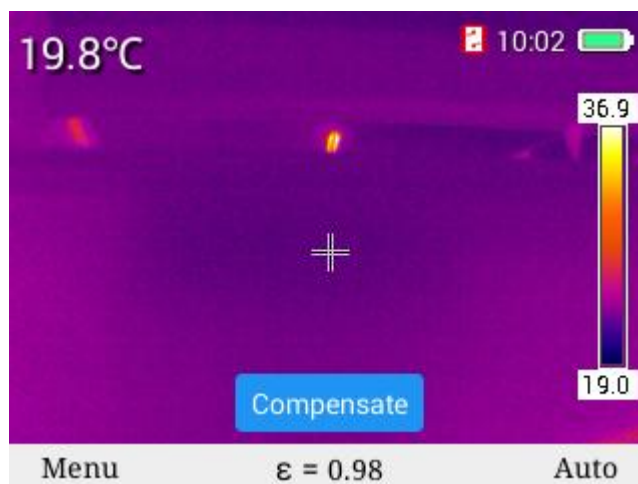
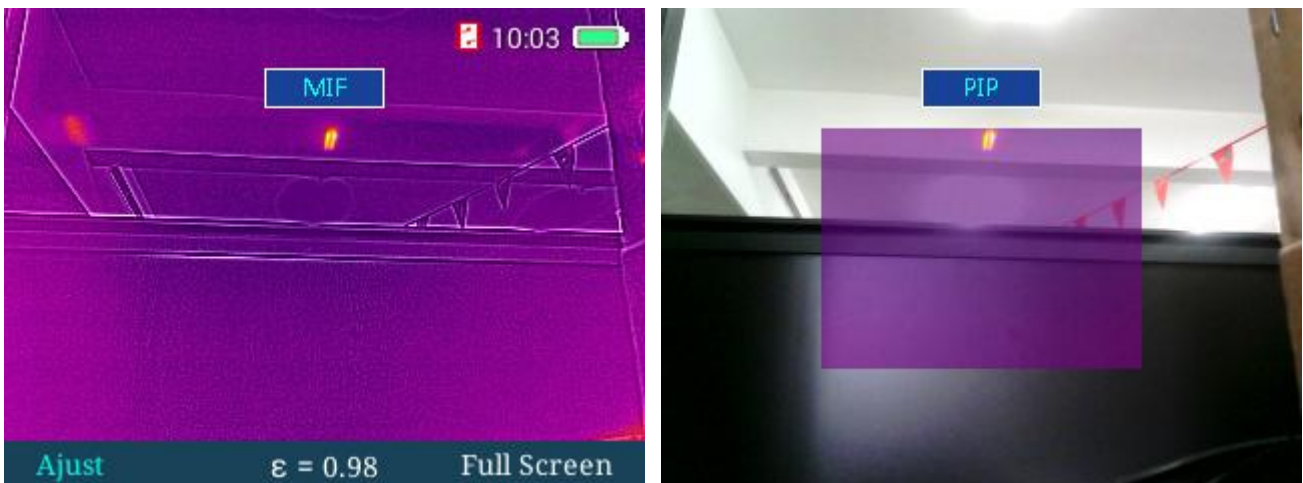
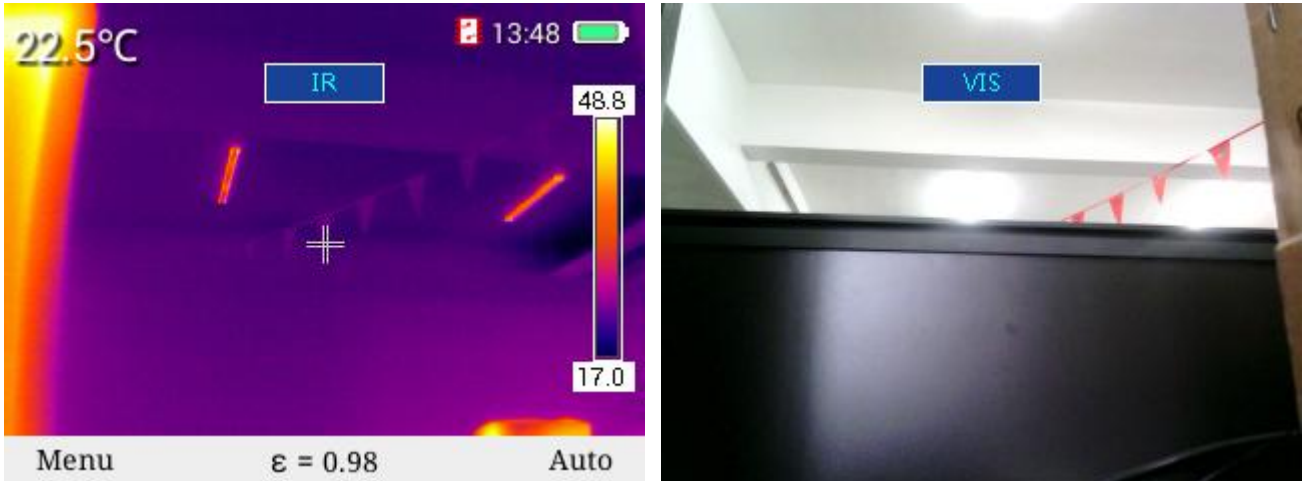
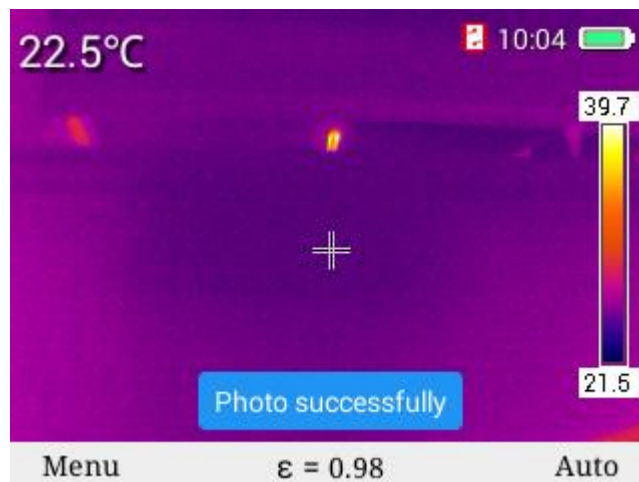


Image model switch

In main interface of temperature gauge, press “+” key to cycle among four image modes in the following order: IR mode, visible light mode, fusion mode and PIP mode, and press “-” key to cycle among four image modes in the following order: IR mode, PIP mode, fusion mode and visible light mode.



You can take photos by pressing the trigger in these four image modes.

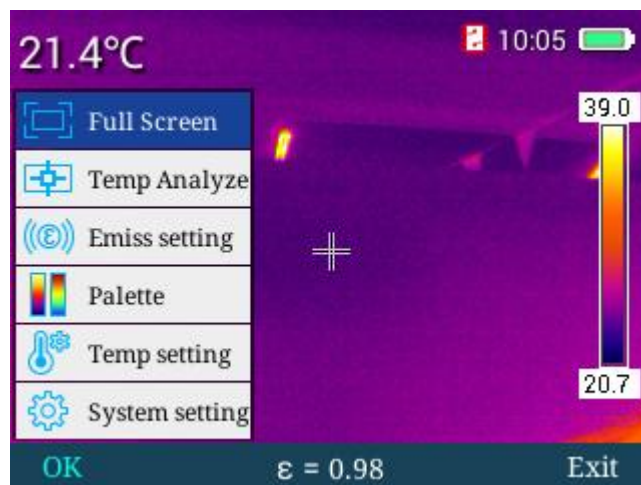


In fusion mode, you can adjust fusion position of infrared light and visible light. Press “confirm” key to go into fusion image adjustment mode, press four direction keys to displace visible light images and fuse visible light images with IR images, and press “confirm” key to store displacement adjustment setting.



Full screen mode

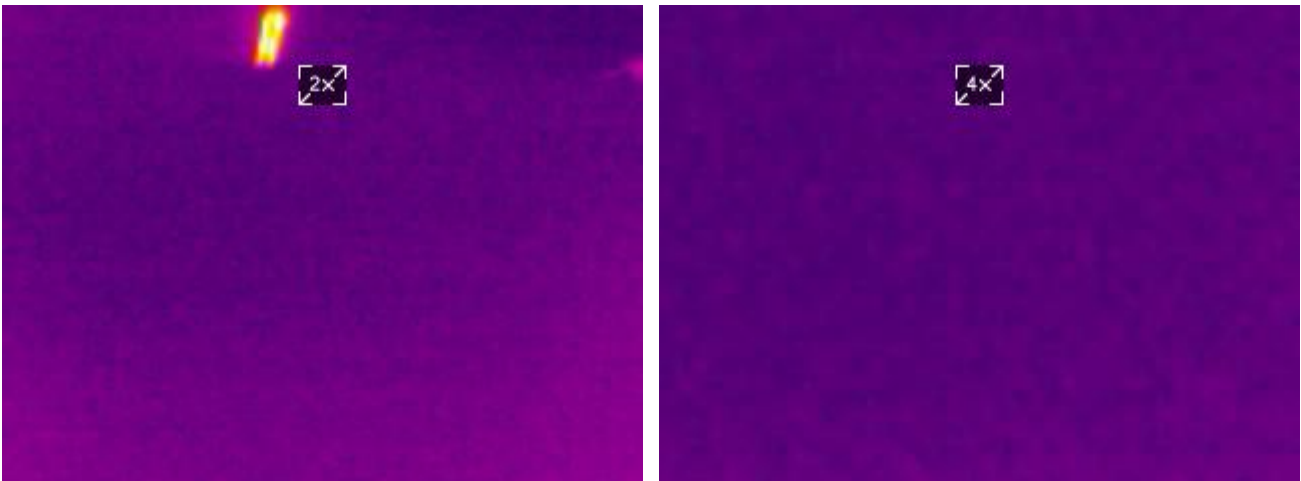
Press “menu” key to go into main menu mode, and select “full screen mode” with “+” and “-” keys, as shown below.



Select “confirm” key or “▶” key to go into full screen mode, as shown below:



Under full screen mode menu, you can press “+” key to zoom in images and image zoom-in reminder will appear as shown in following figure (disappear after 3s). In 2X zoom-in status, if you press “+” key, you can zoom in images by four times; if you press “-” key, images will return to their original status. Press “trigger” key to store images and press “back” key to back to real-time mode.

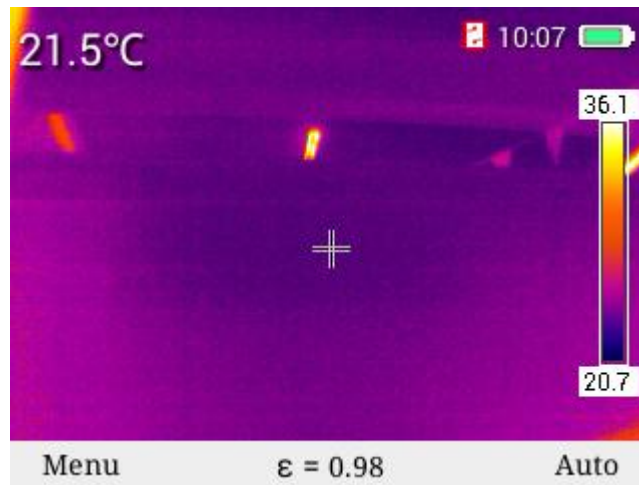


Selection of temperature measurement pattern

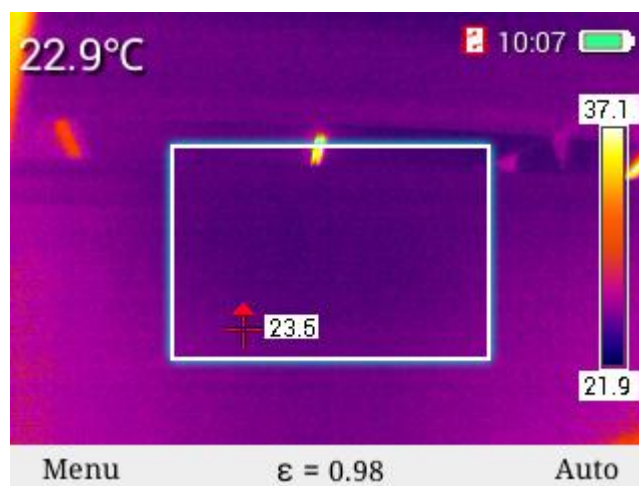
In main menu mode, press “confirm” key or “right” key to go to the menu, press “+” and “-” to go to “temperature measurement pattern” menu as shown below, and select such four temperature measurement patterns as “point”, “area-wide highest”, “area-wide lowest”, “upper isotherm” and “lower isotherm”.



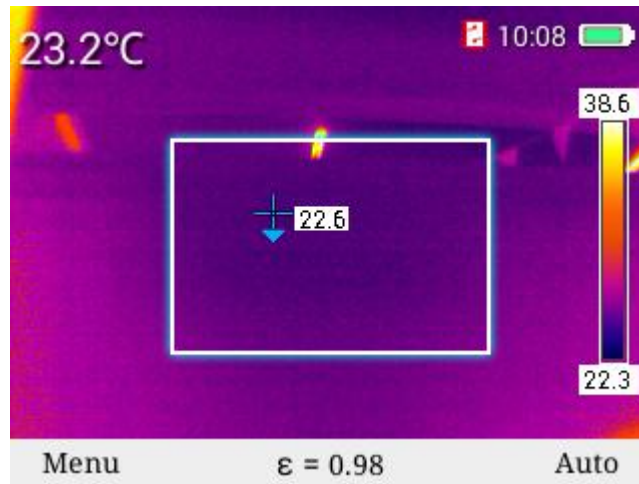
Test temperature of central point in “point” analysis mode, as shown below



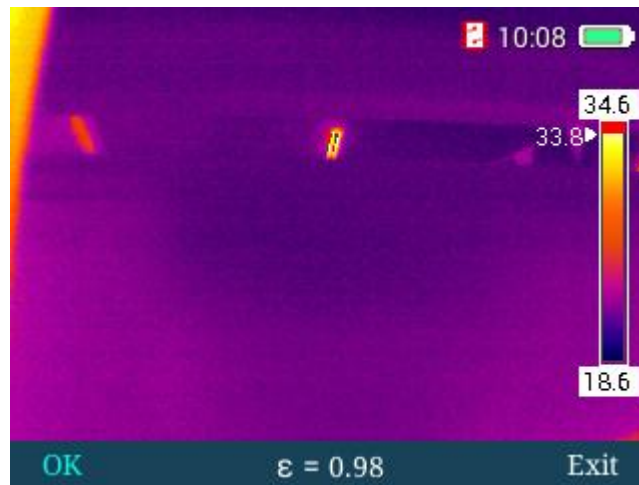
Display the highest temperature value in the area in “area-wide highest” mode, as shown below



Display the lowest temperature value in the area in “area-wide highest” mode, as shown below



In “upper isotherm” mode, select high-temperature color band with “+” and “-” keys and display it in red. Meanwhile, display corresponding high temperature area in real-time image, as shown below.



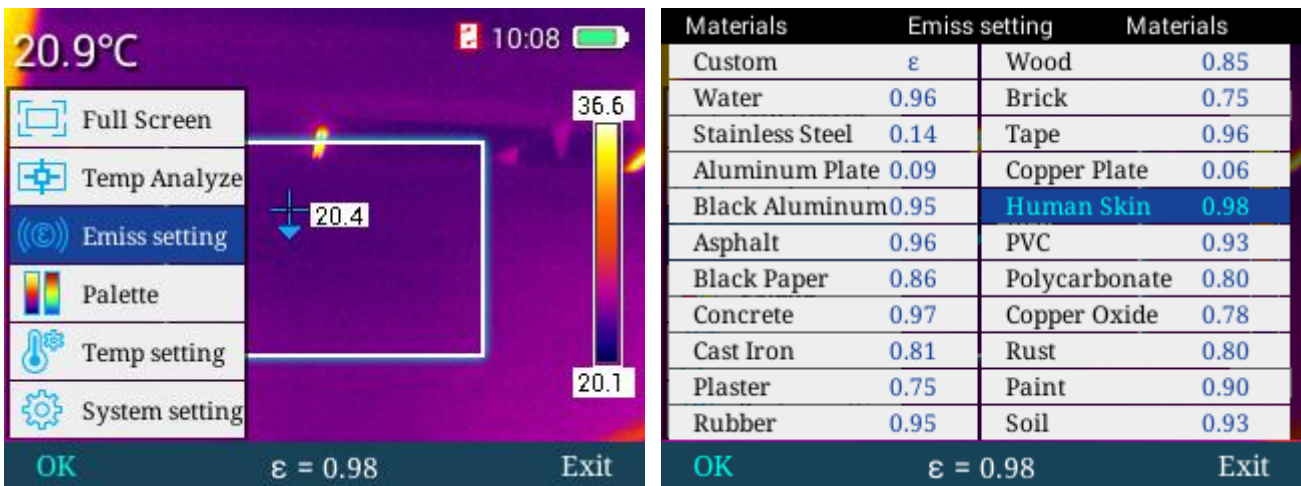
In “lower isotherm” mode, select low-temperature color band with “+” and “-” keys and display it in blue. Meanwhile, display corresponding low temperature area in real-time image, as shown below.



Selection of emissivity

In main menu mode, press “menu” key and “right” key to go to “emissivity” menu, and select emissivity

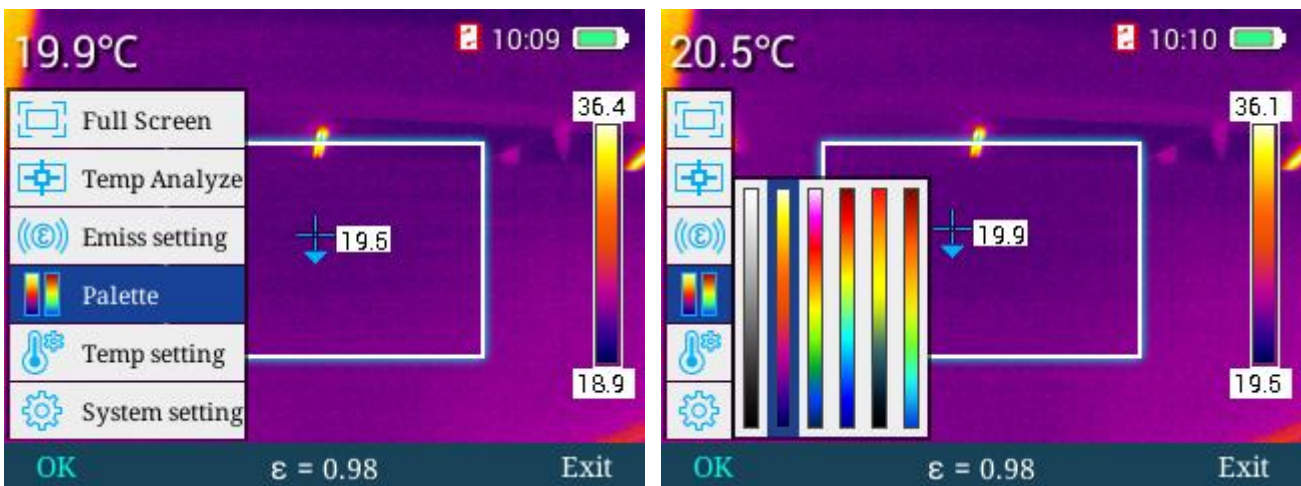
value required through table look-up and with “+” and “-” keys, as shown below:



It is also allowed for user-defined emissivity value. In emissivity mode, go to custom mode, select “confirm” key, and then press “+” and “-” keys to customize emissivity value ranging from 0.01 to 1.00. Press “exit” key to back to main menu.

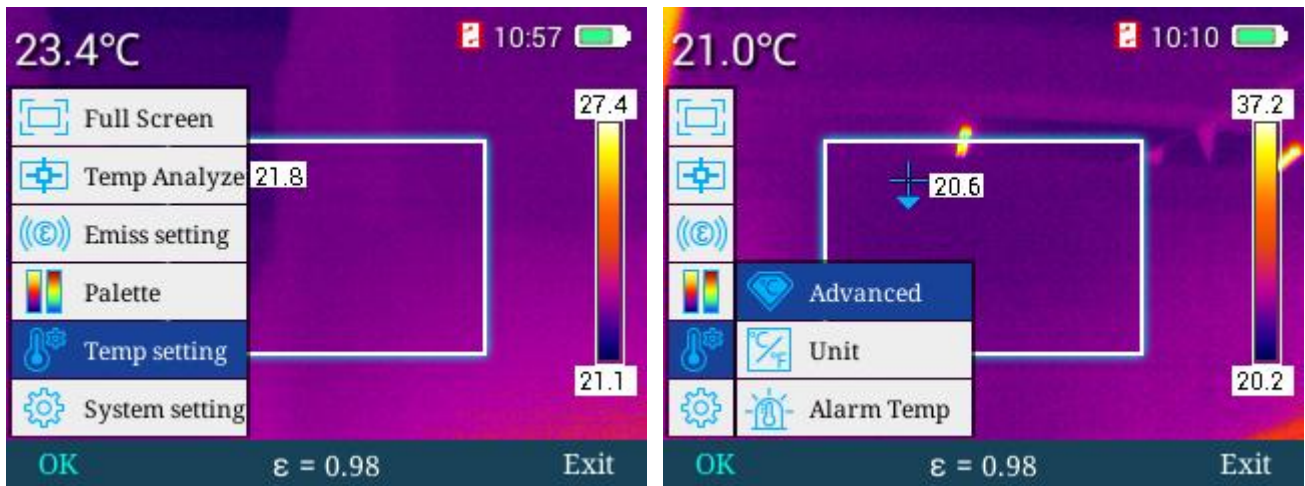
Selection of color band

In main menu mode, press “+” or “-” keys to select “color band selection” menu, then press “confirm” key or “right” key to go to “color band selection” menu, and select color bands required with “left” and “right” keys. There are six color bands available for selection. It is shown as below.

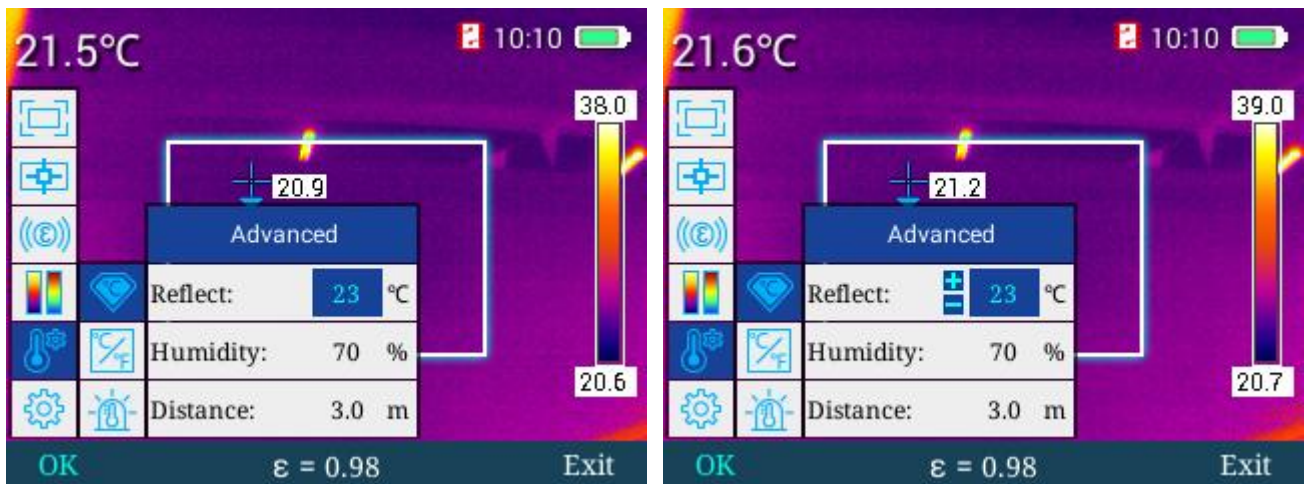


Temperature setting

In main menu mode, press “+” or “-” keys to select “temperature setting” menu, then press “confirm” key or “right” key to go to “temperature setting” menu. You can enter into such submenus as “advanced”, “temperature unit” and “temperature alarm” to check or select corresponding functions. It is shown as below.



Then press “confirm” key or “▶” key to go to “advanced” menu where you can adjust numerical values of reflected temperature, relative humidity and temperature measurement distance, as shown below.

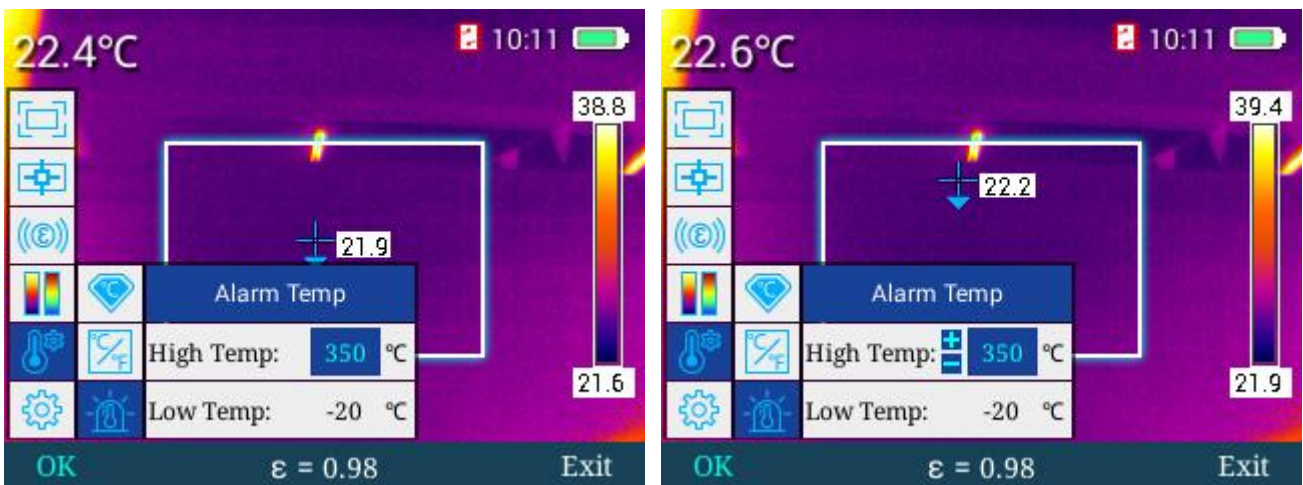


In “advanced” menu mode, press “+” key or “-” key to select corresponding options for adjustment, press “▶” key to call out plus and minus, enter into “reflected temperature” adjustment menu where you can press “+” key or “-” key to adjust numerical values, press “confirm” key to save adjusted values and press “◀” key to back to previous menu. As operating modes for relative humidity and temperature measurement distance are identical with that of environment temperature menu, no more detail will be provided. Press “exit” key to back to main menu mode.

In “temperature unit” menu, press “▶” key to go to temperature unit selection menu, then press “+” key or “-” key to select switch between Fahrenheit and Celsius, and press “confirm” key to save selection status. Press “◀” key to back to previous menu, as shown below.



In “temperature alarm” menu, select “▶” key to access high temperature alarm/low temperature alarm menu. In this menu, press “+” and “-” keys to select high temperature alarm or low temperature alarm which will be highlighted in blue, then press “▶” key to call out plus and minus, and press “+” key or “-” key to adjust values of alarm temperature. At high alarm temperature, as for temperature more than value set, the black blue cross cursor will flash continuously for alarming in the course of area-wide analysis; at low alarm temperature, as for temperature less than value set, the black blue cross cursor will flash continuously for alarming in the course of area-wide analysis. Press “confirm” key to save values set, press “◀” key to back to previous menu, and press “exit” key to exit current menu and back to main menu, as shown below.



General setup menu

In main menu mode, press “+” or “-” keys to select “general setup” menu, then press “confirm” key or “▶” key to go to “general setup” menu which includes “auto power-off”, “time and date”, “language selection”, “screen luminance”, “storage location”, “upgrade”, “WIFI hot spot”, “USB video”, “reset”, “help”, and “version No.”, as shown below:



Auto power-off

In main menu, press “+” or “-” keys to select “auto power-off” menu, then press “confirm” key or “▶” key to access “auto power-off” to set up corresponding auto power-off functions, as shown below.



“No” means no auto power-off and “5 minutes” indicate auto power-off reminder will be popped up 5 minutes later. If you select to cancel, it will stay powered on; if you choose nothing, it will power off automatically; in a similar way, “20 minutes” indicate auto power off 20 minutes later.

Time and date setting

In general setup menu, press “+” or “-” keys to select “time and date” menu, then press “confirm” key or “▶” key to access “time and date” menu to set up system time and date, as shown below.

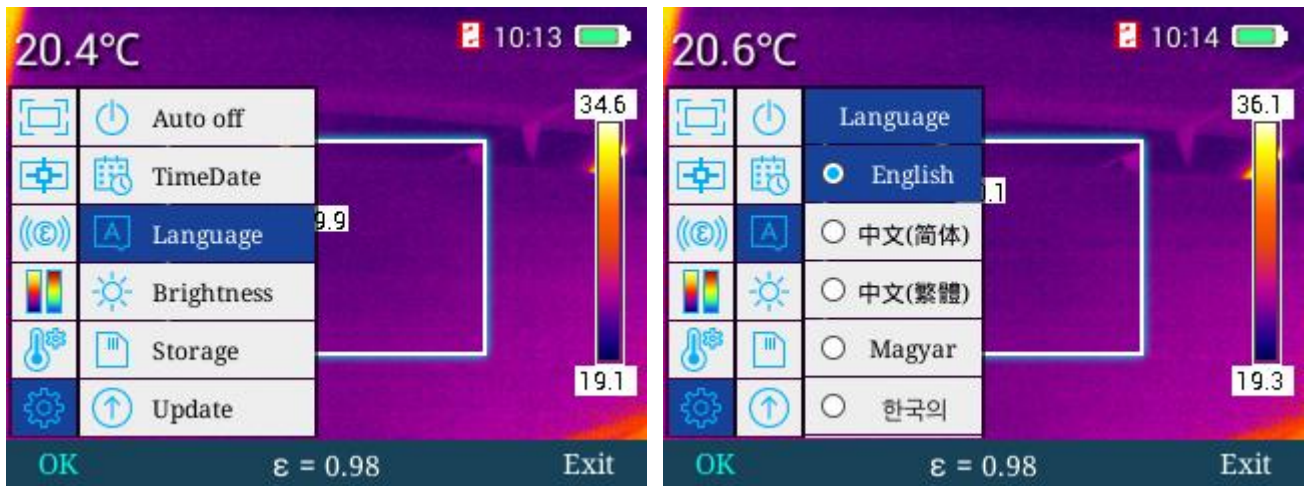


In “time and date” menu, press “▶” to successively select values to be adjusted which will be highlighted in blue, and then select “+” or “-” keys to adjust values selected. Press “◀” key to back to previous value selected and press “confirm” key to save current value adjusted, as shown below.



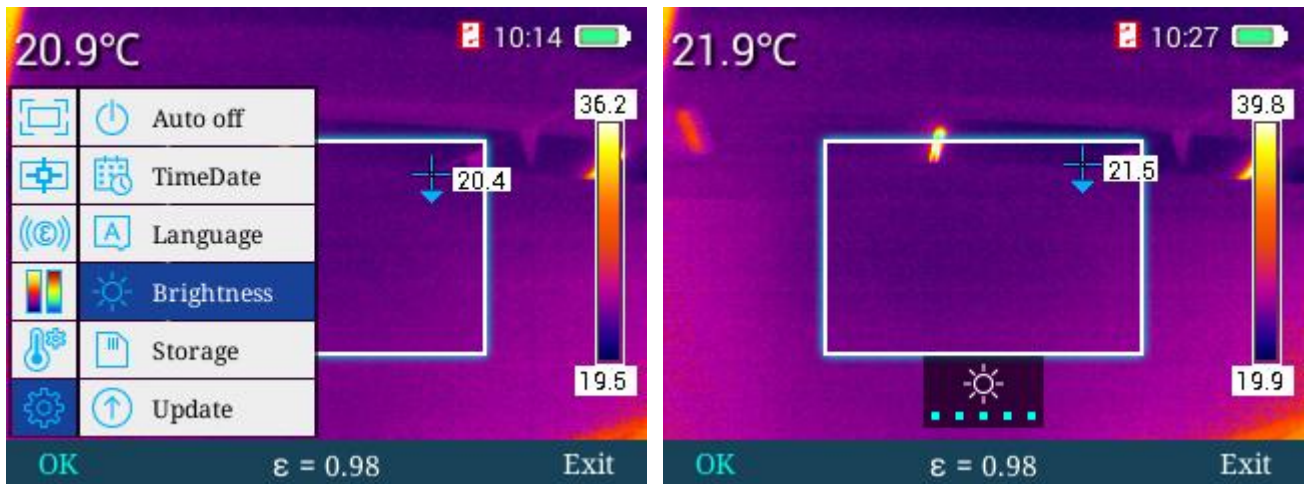
Language selection

In general setup menu, press “+” or “-” keys to select “language selection” menu, and then press “confirm” key or “▶” key to access “language selection” menu where you can press “+” or “-” keys to select corresponding languages, as shown in flowing figure.



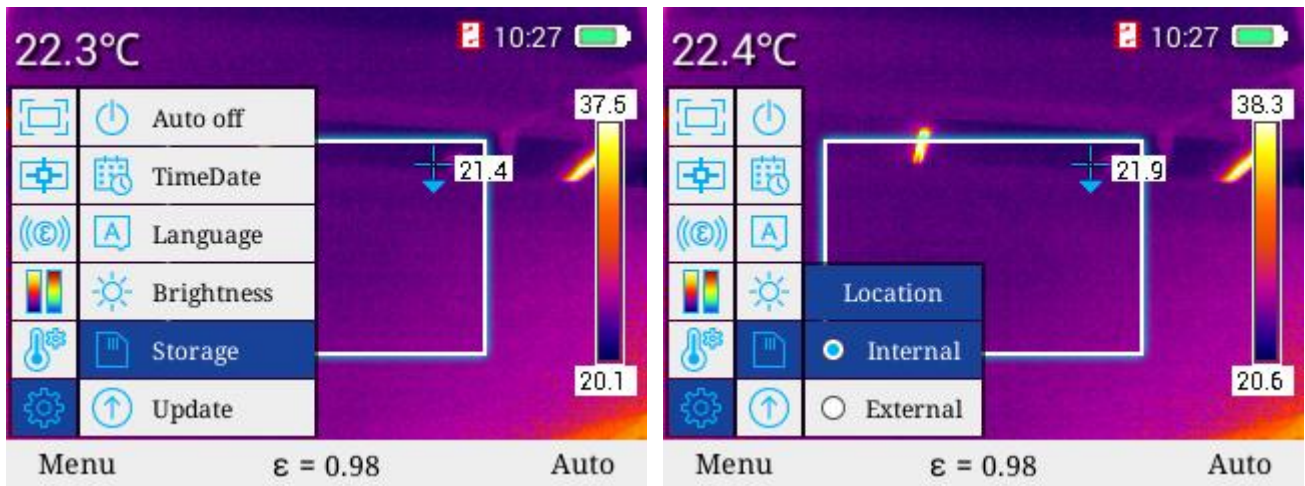
Screen luminance setting

In general setup menu, press “+” or “-” keys to select “screen luminance” menu, and then press “confirm” key or “▶” key to access “screen luminance” menu where you can press “right” key and “◀” key to increase or decrease screen luminance in five grades. Press “confirm” key to save luminance grade set. Press “exit” key to back to the main interface, as shown below.



Storage location

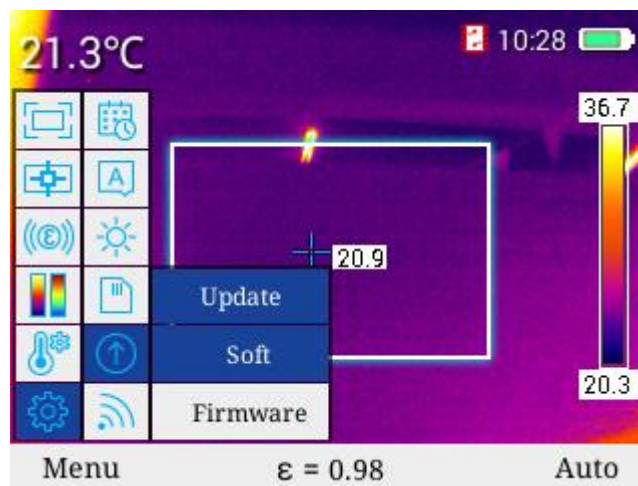
In general setup menu, press “+” or “-” keys to select “storage location” menu, and then press “confirm” key or “▶” key to access “storage location” menu where you can press “+” key and “-” key to switch storage location. This machine supports 16G SD card memory function. In main menu, press “trigger” key to take photos which can be stored in SD card. Without SD card, images will be stored in the memory of the machine; when external SD card is selected, “no external SD detected” pop-up will appear, as shown below.



If you fail to save images and image storage capacity has been met, a picture shown in following figure will appear.

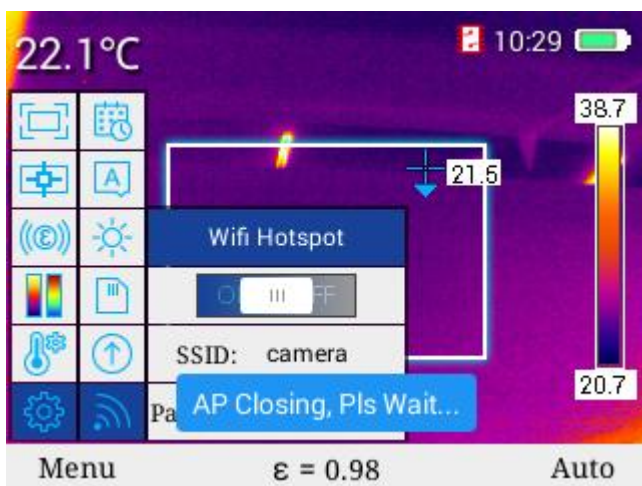
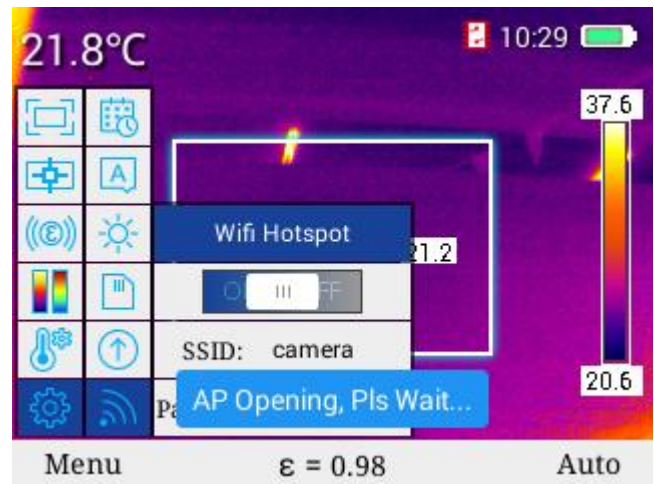
Upgrading

For upgrading, please refer to maintenance instrument.



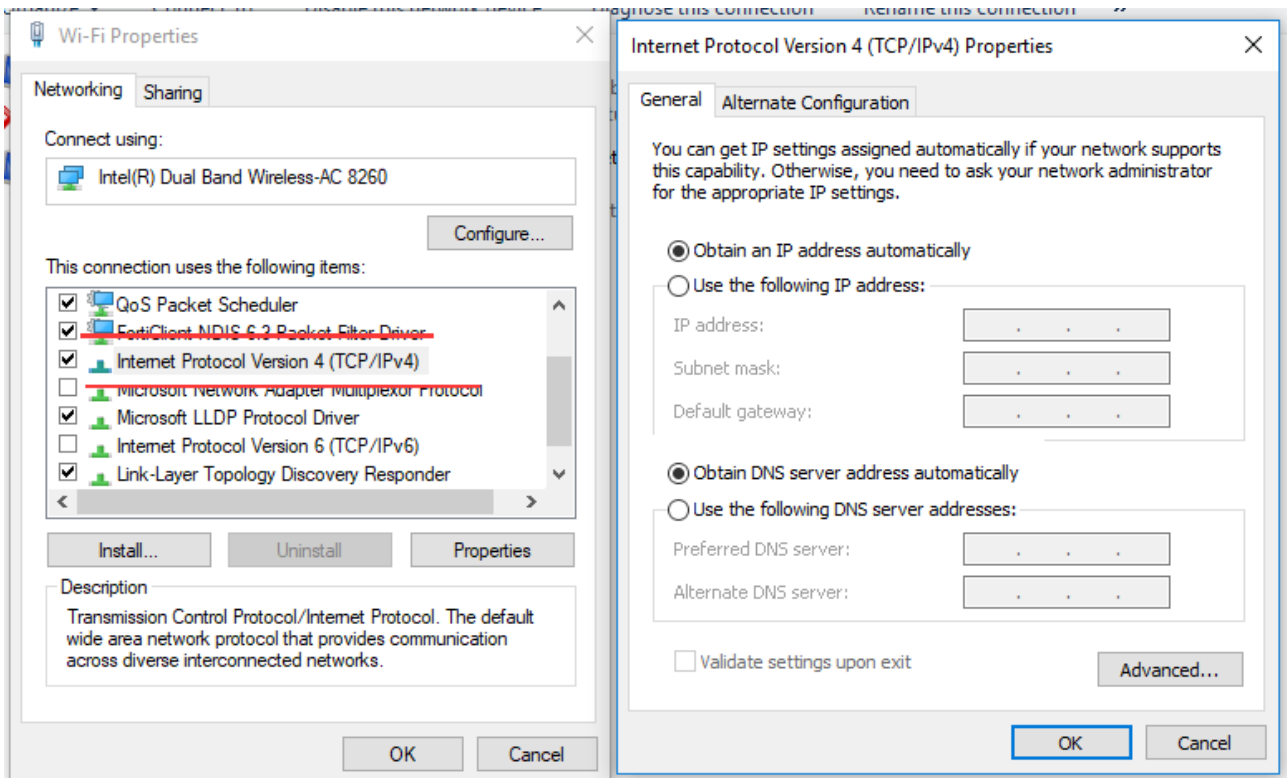
WIFI hot spot

In general setup menu, press “+” key to select “WIFI hot spot” menu, and press “confirm” key or “▶” key to access “WIFI hot spot” menu, and then press “confirm” key or “▶” key to turn WIFI on or off. Once it is turned on, there will be a WIFI icon at the top right corner. Temperature measurement APP and infrared analysis software can be connected to equipment via WIFI to transmit and analyze IR real-time videos and images, as shown below.

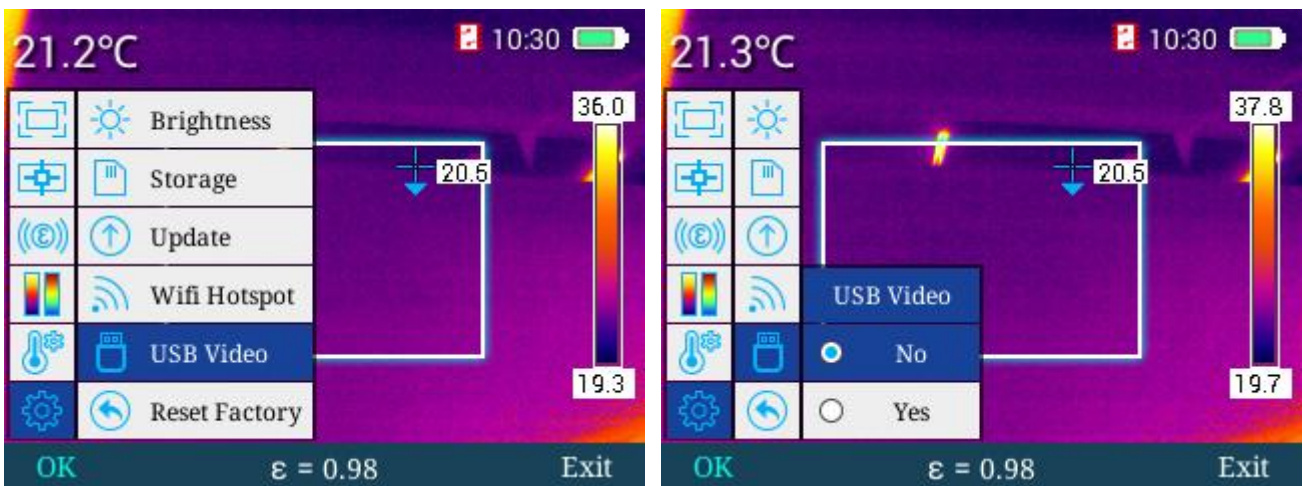


USB video

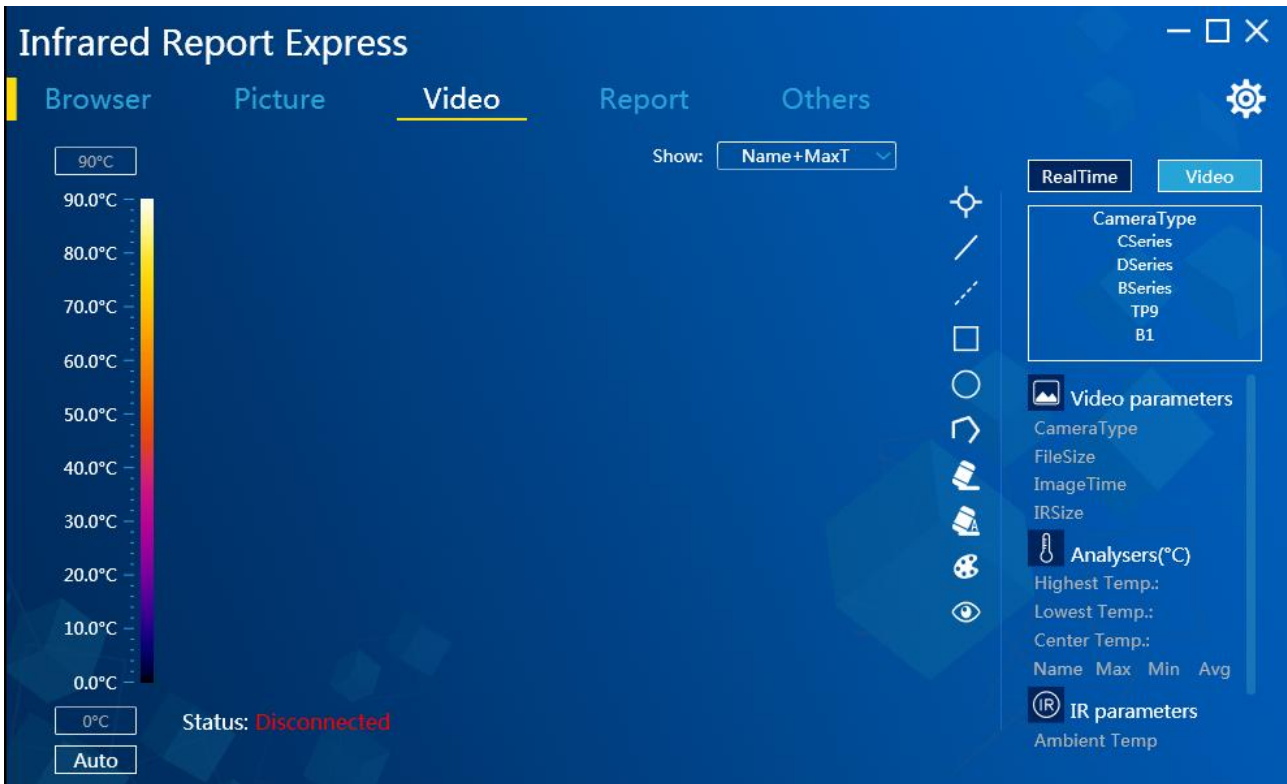
1. Connect the computer with device reliably through USB cable;
2. Enter the setting interface of "TCP/IP v4", set the attribute of "Internet protocol version 4 (TCP/IPv4)" as "Automatic acquisition of IP address" and "Automatic acquisition of DNS server address", click "Confirm", as shown below:



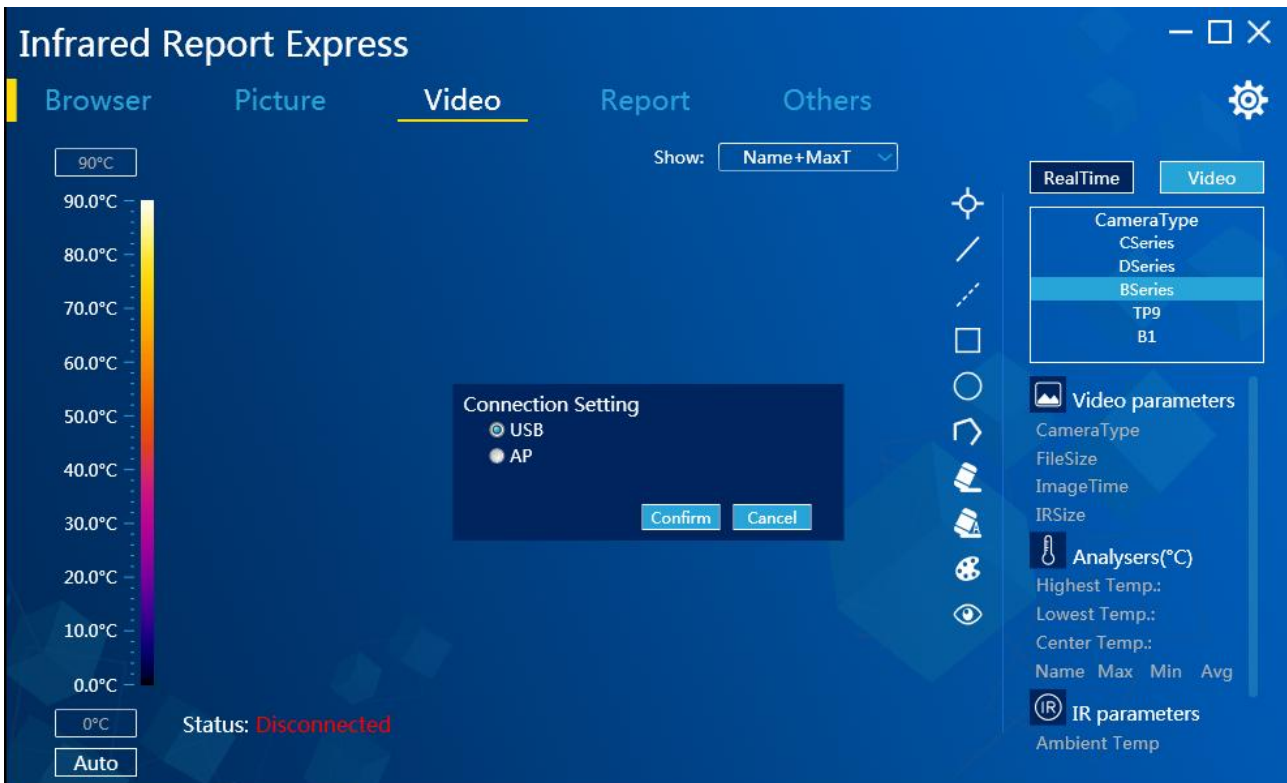
3. In general setup menu, press “+” key or “-” key to select “USB video” menu, and press “confirm” key or “▶” key to access “USB video” menu, then press “+” key or “-” key to switch USB video on or off, and press “confirm” key to save on-off state of USB video. Once USB video is switched on, PC infrared analysis software can be connected to equipment with USB connecting wire and opened to transit and analyze IR real-time videos and images, as shown below.



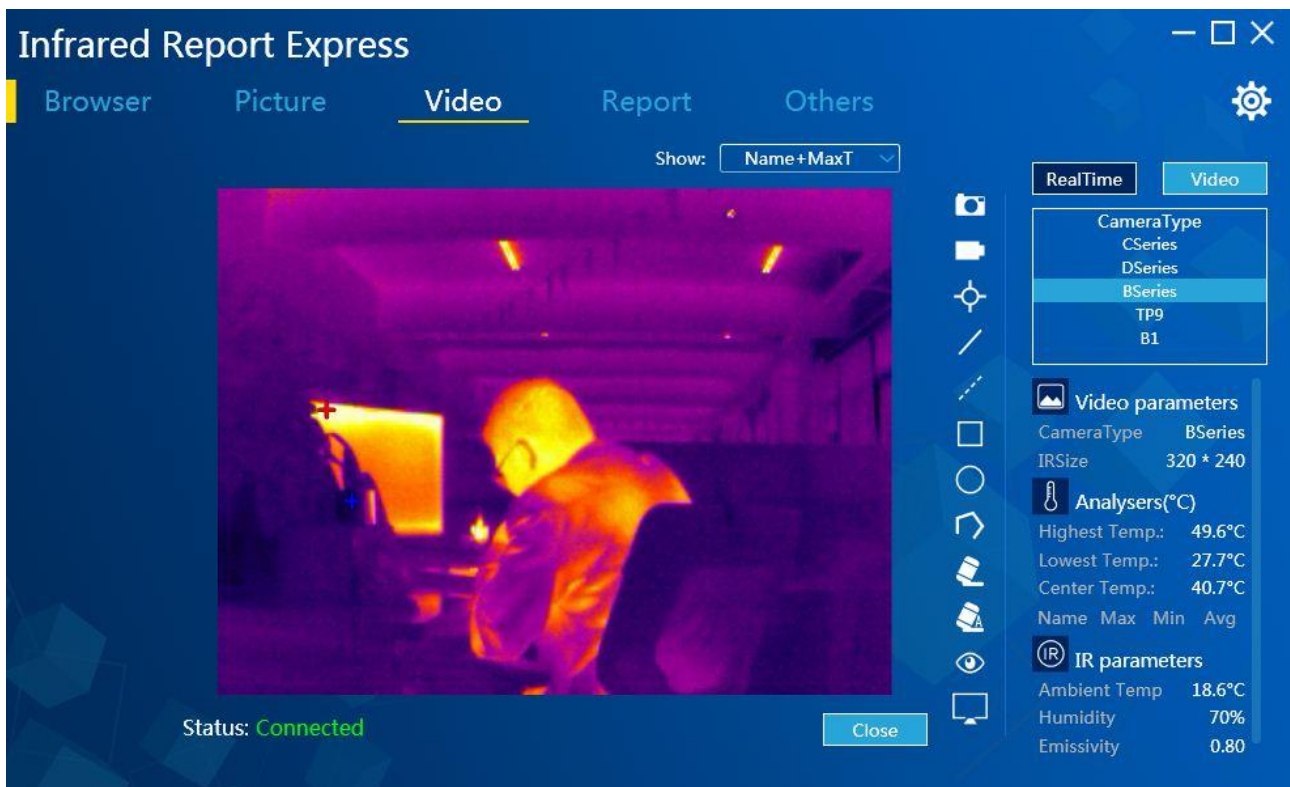
4. After network identification by the computer, start “Infrared analysis software”, as shown below:



5. Click “Video analysis” and select “BSeries” in the choice box of device model. Select “USB” in the popped dialog box of connection setting, as shown below:

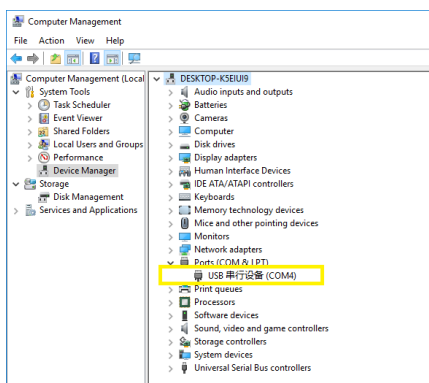


6. Click “Confirm” to normally connect the device. The infrared analysis software from computer will display real-time infrared image and analyze correspondingly, as shown below:

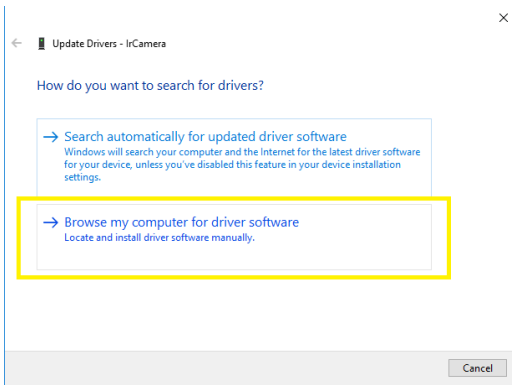


Windows 10 driver installation method:

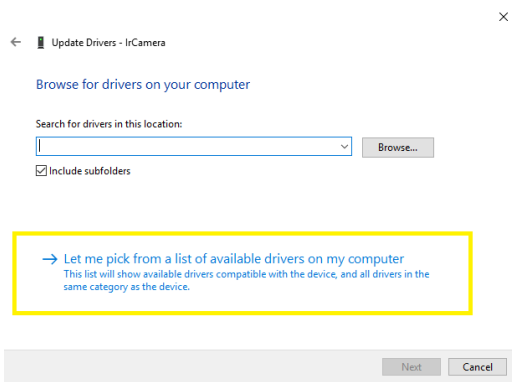
- 1、 1 signature-disable the win10 operating system driver;
- 2、 2 connect the camera to the computer with the USB cable, turn on the "USB real-time video" function on the camera;
- 3、 3, enter in the computer "device manager"/" port (COM and LPT), the devices already have been registered as a USB serial device. Right click on the "update device drivers";



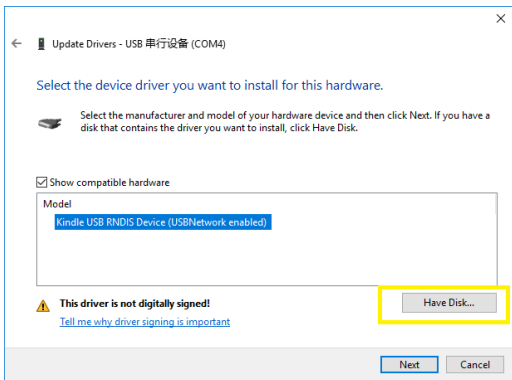
- 4、 click "browse my computer for driver software (R)".



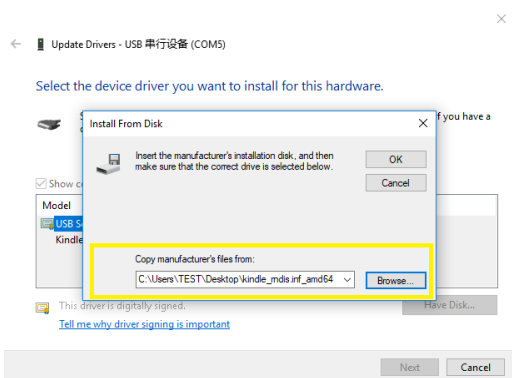
5. click "let me select in the list of available drivers from the computer (L)";



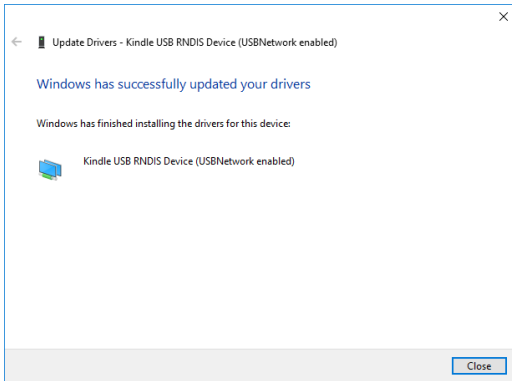
6. click "from the disk to install";



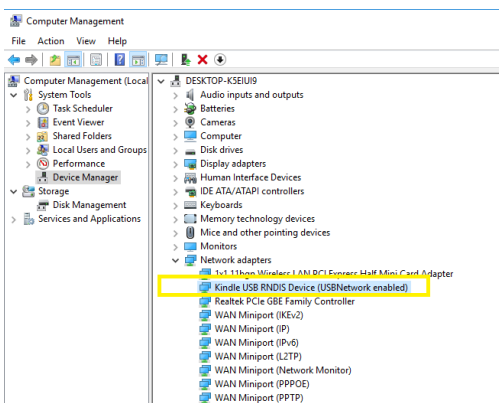
7. click "browse", in driving placing route, choose the provided driver installation program and click "ok";



8、 after successful driver installation, it shows "Windows has been successfully updated your driver".



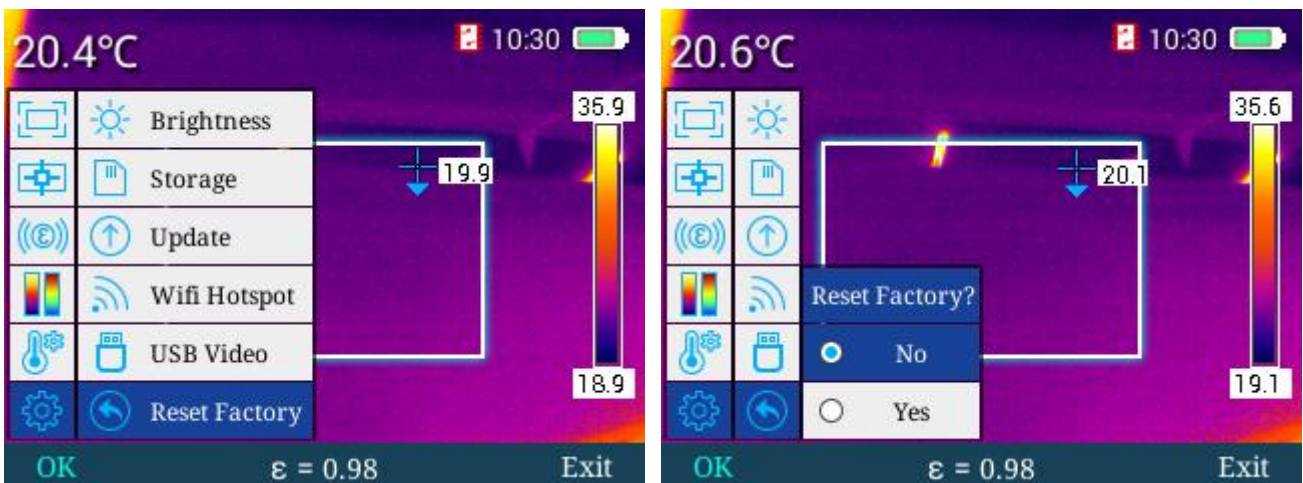
9、 after the driver installation is complete, enter in the Device manager, in the network adapter ,you can find"Kindle USB RNDIS Device" ,means driver installation is complete;

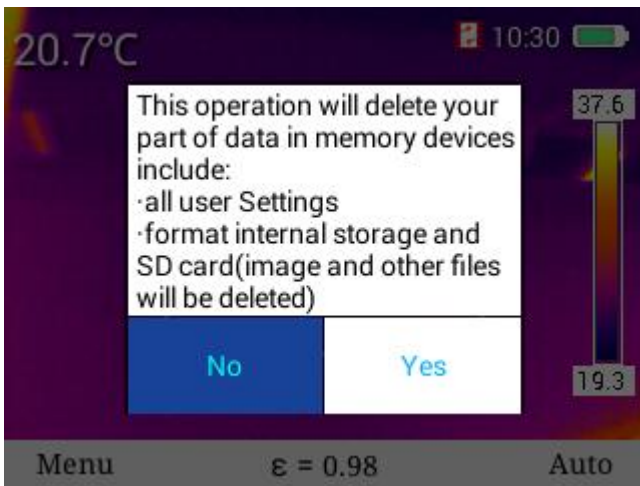


Computer drivers installed successfully, you can connect the infrared analysis software now!

Factory reset

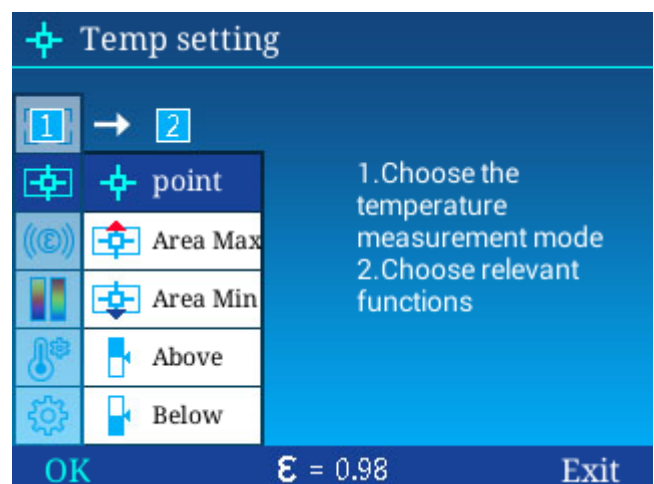
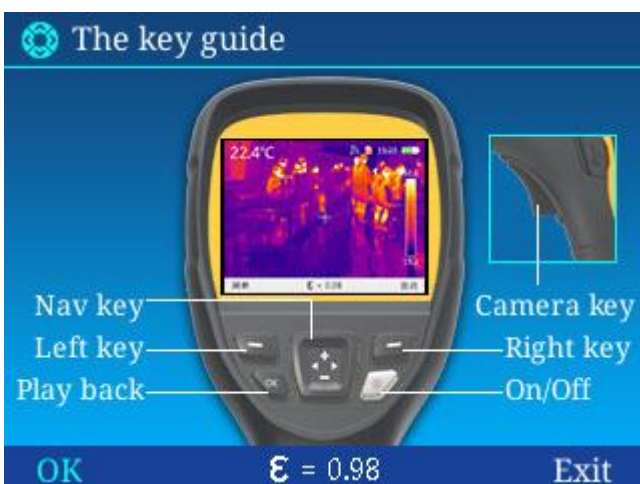
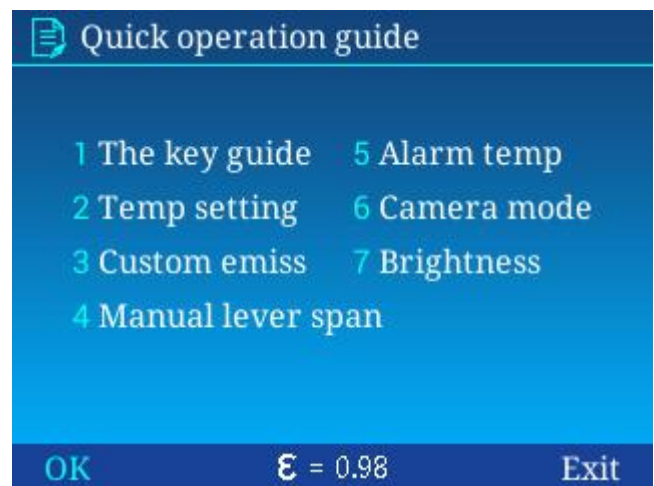
In general setup menu, press "+" key or "-" key to select "factory reset" menu, and then press "confirm" key or "▶" key to pop up dialog box to select whether to restore system settings or not. Select "yes" to restore factory settings and select "no" to not restore factory settings, as shown below.





Help check

In general setup menu, press “+” key or “-” key to select “help” menu, then press “confirm” key or “right” key to access “help” menu where you can press “◀” key or “▶” key to conduct loop check of help images, and press “exit” to back to main menu, as shown below.



Custom emiss

1 → 2 → 3

① Emiss Custom ε ③ ε = 0.98

1. Choose emissivity
2. User defined
3. +-emissivity ajustemnt

OK ε = 0.98 Exit

Manual lever span

1 → 2 → 3 → 4

ε = 0.98 Manual 40.6 +0.1°C 40.6

15.2 +0.1°C 15.2

OK ε = 0.98 Exit

Alarm temp

1. Choose temp setting -> alarm temp
2. ok->ajauptment status
3. +-temp ajustemnt

1 → 2 → 3

Alarm Temp

H: 45 °C

L: 13 °C

OK ε = 0.98 Exit

Camera mode

1. In realtime mode, the four - medium image mode switches by up, down

IRI: IR

Vis: VIS

MIF: MIF

Pip: PIP

OK ε = 0.98 Exit

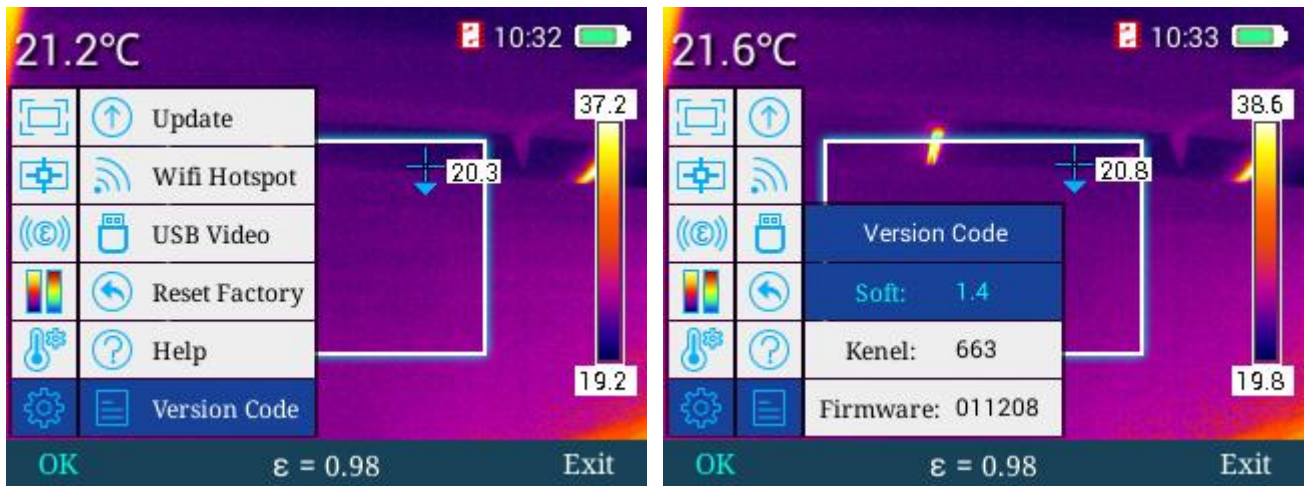
Brightness

1. Adjust the screen brightness by left and right

OK ε = 0.98 Exit

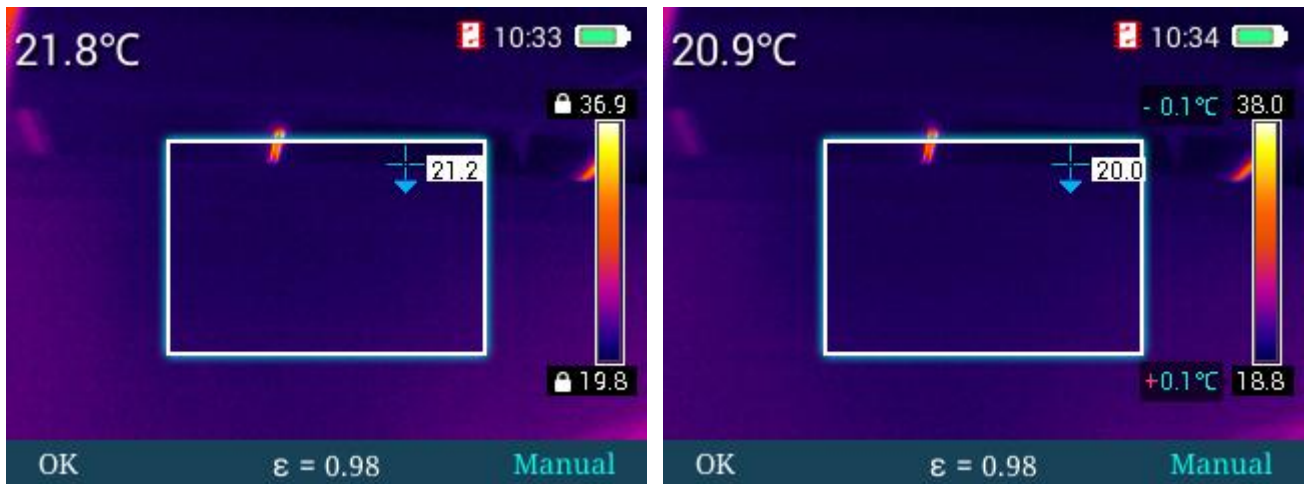
Version No.

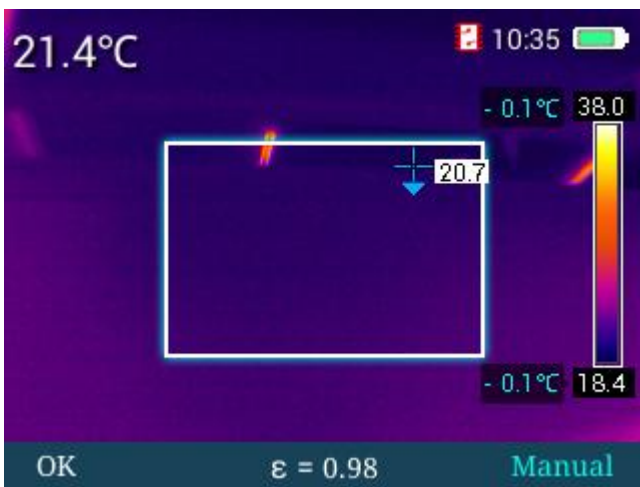
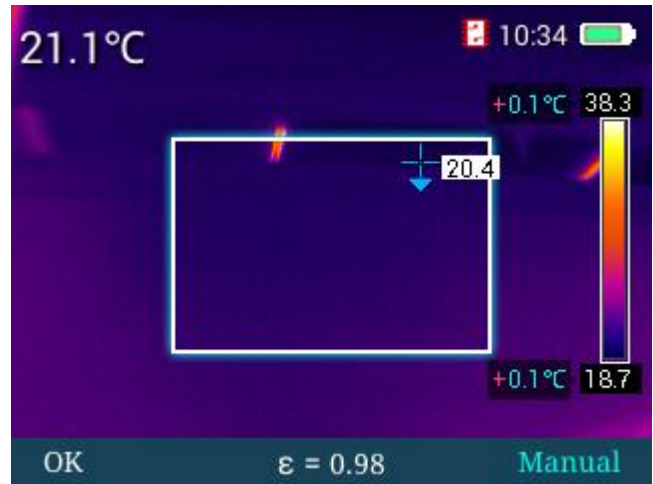
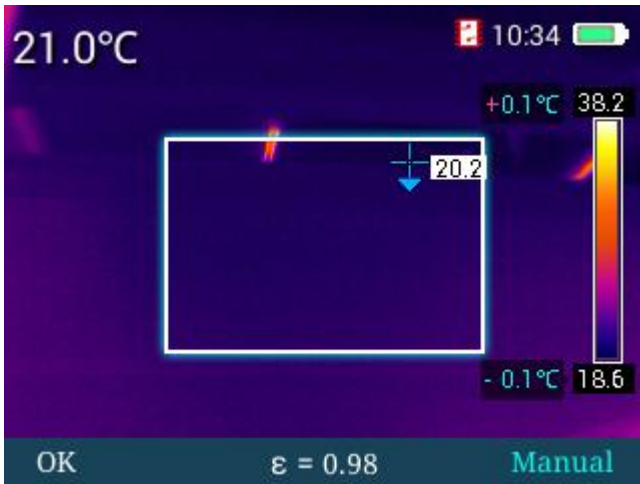
In general setup menu, press “+” key or “-” key to select “version No.” menu, then press “confirm” key or “▶” key to access “version No.” menu where you can check out versions of software, kernel and firmware of equipment, and press “exit” to back to main menu.



Luminance/contrast adjustment

In general setup menu, press “auto/manual” key to go to manual luminance/contrast adjustment mode, press “◀” key to decrease Tmax and increase Tmin simultaneously, press “▶” key to increase Tmax and decrease Tmin simultaneously, and press “+” key to increase Tmax and Tmin and “-” key to decrease Tmax and Tmin simultaneously, as shown below.





Standby

In any menu, you can short press power key to go into standby state. In standby state, machine can be awakened merely by pressing power key.

Troubleshooting guide

Start-up failure	Low battery	Use battery after charging
	Poor contact of battery	Remove battery, put it in battery compartment again and properly install the battery
	Plug of external battery is not put in proper place	Pull the plug and reinsert the battery in proper place
Obvious deviation between	Battery runs out	Replace it with a fully charged battery

battery power indication and actual power usage	Battery life is expired	Replace it with new battery
Unclear IR image	Lens have misted up or been polluted	Clean lens with specialized equipment
Unclear visible light image	Excessively dark surrounding environment	Take appropriate lighting measures
	There is vapor in front of visible light or the visible light is polluted	Clean the front-end of visible light with specialized equipment
Inaccurate temperature measurement	Relevant temperature measurement parameters are set incorrectly	Change parameter setting or restore the default parameters directly
	Non-uniformity correction has not been implemented for a long time	Set custom key as compensation key in the menu, press custom key, and conduct non-uniformity correction after shutter sounds.
	Temperature measurement starts immediately after start-up	To ensure temperature measurement accuracy, we recommend you to turn on the thermal imager and then wait for 5-10 minutes before temperature measurement.
	No calibration for a long time	To ensure accurate temperature measurement result, we recommend you to send back the thermal imager for calibration once a year.