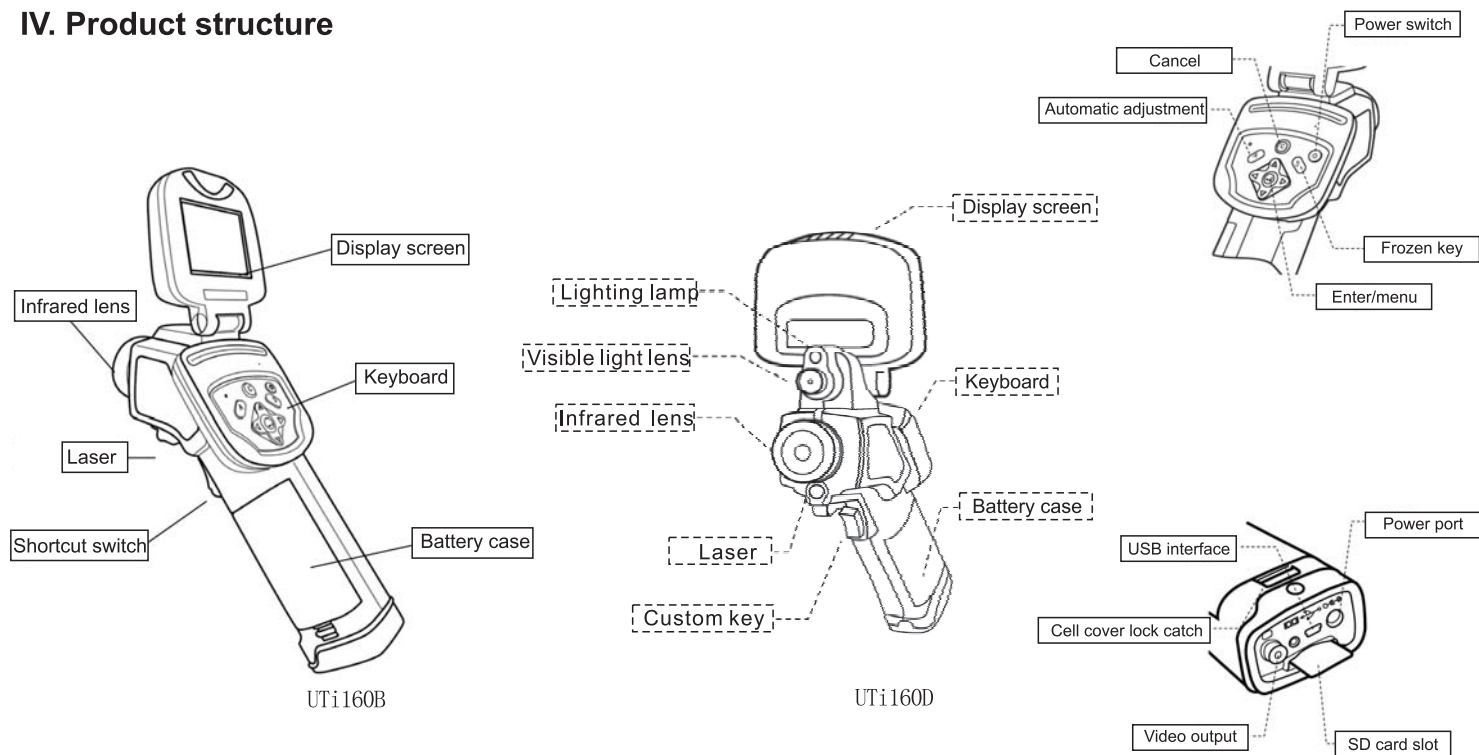


IV. Product structure

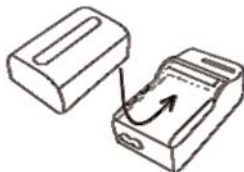


V. Product operation

1. Introduction to operation

1) Charge battery

When LCD indicates low battery, please charge battery according to following steps.



2. Plug charger into socket.

- When charging up, power indicator on charger will continue to shine in red. When battery charging is finished, power indicator will continue to shine in red.
- In completion of charge, unplug battery charger, and take out battery.
- Thermal imager utilizes smart lithium polymer rechargeable battery. It is unnecessary to discharge before charging. You can charge battery at whatever electric quantity. However, since charge times are 300 at most (battery service life), to prolong battery's service life, it is recommended to charge battery when electric quantity is naturally exhausted.
- Charge time varies from environment temperature and state of charge.

2) Install battery/SD card

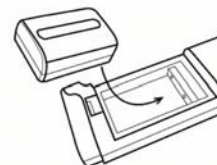
Before first use of the battery, please charge battery.

1. Make sure power supply has been shut down. Open battery lock according to arrow direction.



2. Put in battery


Push battery into battery case, “click” sound will be heard when battery is fully pushed in. if you want to take out the battery, push battery out in opposite direction of arrow.



3. Insert miniSD card

Put label side of miniSD card face toward battery case, push miniSD card in until “click” sound is heard. If you want to take out miniSD card, push it inside along card edge. miniSD card will pop out automatically. Then pull the card out.

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If miniSD card is put in when the machine is starting-up, and the card is identified, LCD will display .



- Take out battery if the product is not used.
- Please formatting miniSD card by FAT32 format.

Electric quantity

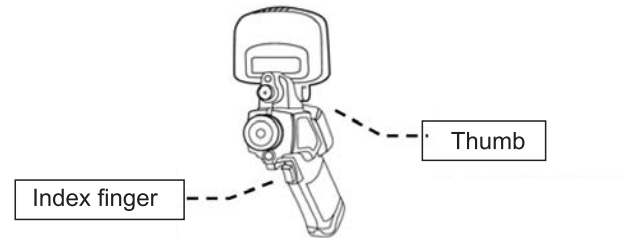
The following table indicates electric quantity displayed on LCD.

Status					
Description	Sufficient power			Low battery	Replace battery or charge

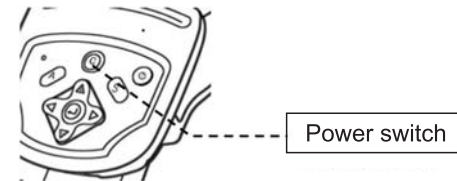
3) Turn on/turn off power supply

When thermal image is on, power indicator will keep light on.

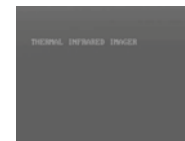
1. Hold thermal imager properly by right hand, thumb on keyboard



2. Press down thermal imager power source for at least 3 seconds. Green power indicator will light on.



3. Seconds later, LCD screen will display start image.

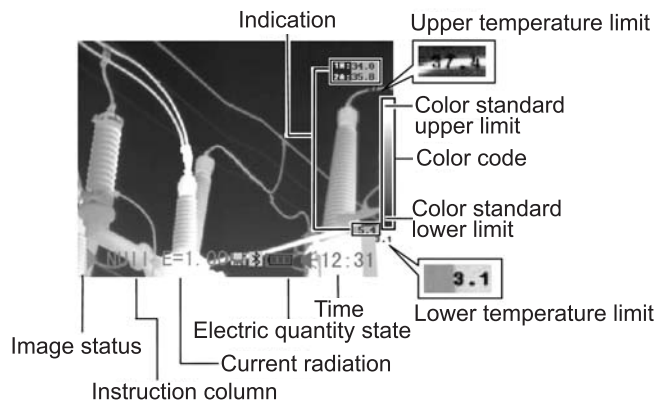


4. Turn off power, press [power switch] for 3 seconds. Press down power switch for at least 3 seconds, power indicator will be off.

4) Display information

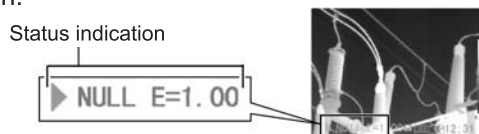
LCD screen has 100% view of images actually captured by camera.

The followings are images displayed by thermal imager.



● About instruction column

Thermal imager status (including current work mode and analysis tool), and available hot key are shown in instruction column.



Status indication	Menu	Menu mode. Thermal imager menu is popped out.
	Null	Null mode. Currently no selection menu or analysis tool.
	*SP1	Point analysis. Current analysis tool is temperature measuring point 1.
	CAP.	Automatic capture point. Current analysis tool is automatic capture point.
	E	Current set radiance.
	SD	Card is inserted and identified.

How to enter [Null]:

- Press down [cancel] repeatedly until [Null] appears on status display column.
- If you select menu besides analysis submenu, you can press [menu/confirm] to exit menu.

5) Set up time and date

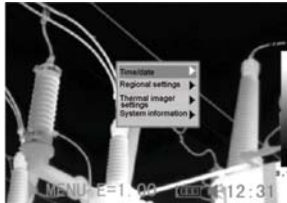
When use thermal imager for the first time, please set up time and date.

1. Make thermal imager in Null mode.
2. Pop Menu out by [menu/confirm], press up/down direction key to select [system setup], and press menu/confirm.

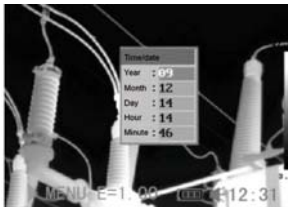


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3. Select [time set] by up/down direction key, then press menu/confirm key.



4. Set up date and time
 - Press [Up], [Down] to select items that need to be modified.
 - Press [Left], [Right] to modify setting of this item.



5. After modification, press [menu/confirm] key, the device will save all modifications. If you don't want to save those modifications, press [cancel] directly.

6) Personal settings

In personal settings menu, you can set up thermal imager menu system to satisfy your habit.

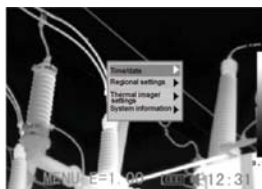
1. Make thermal imager in Null mode
2. Press down [menu/confirm] key to pop out menu, then press up/down direction key to choose [system settings], press menu/confirm.



3. Press Up/down direction key to select [Regional settings], press menu/confirm key.



4. Other settings
 - Press [Up], [Down] key to select items needed to be modified.
 - Press [Left], [Right] key to select this item setting.



5. In completion of modification, press [menu/confirm] key, system will save all modification. If you don't want save the modification, press [cancel] directly.

About personal settings	
Regional language	Set up menu language.
Television system	Including PAL/NTSC.
Temperature unit	Set up temperature unit, select Fahrenheit or centigrade.
Distance unit	Set up distance unit, select feet or meter.

2. Product function

1) LCD application

You can easily view or playback image by flip LCD.
Please use LCD by taking the following steps.
Turn on LCD.

This machine uses 3.5inch full color LCD.

1. When holding thermal imager, make LCD and thermal imager form an 90° angle, then rotate it to the best angle for observation.

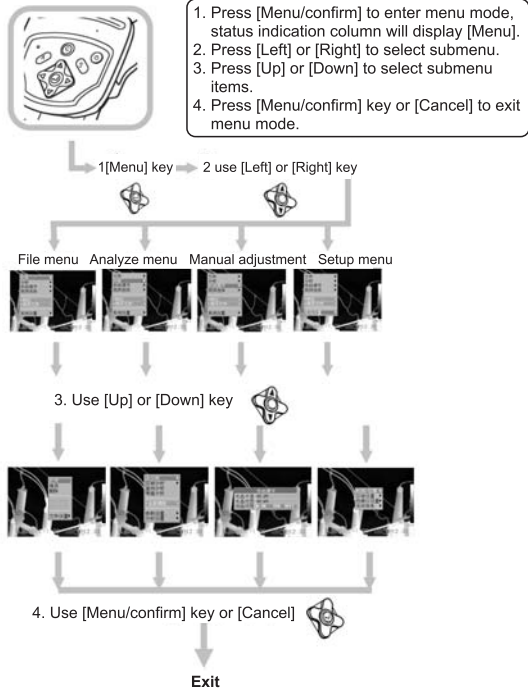



2. Point thermal imager to the target that you want to observe.

- To obtain best picture quality, adjust thermal imager angle to make the object to be observed be in the center of picture displayed by LCD.
- When thermal imager will not be used for a short time, close LCD to turn off display, and prolong battery life.

2) Menu operation

Enter/exit menu mode by taking the following steps:

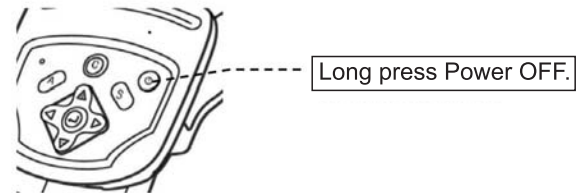


 Menu entries are subject to modification of thermal imager setup.

3) Restore factory settings

You can restore factory settings by taking the following steps.

1. Turn off thermal imager power.



2. Press [Cancel] and [Power switch] at the same time for three seconds, turn on thermal imager. (See arrow in left figure)



After restoring factory settings, data already saved in built-in memory card will not be deleted.

3. Image take

When scenery displayed by the screen is dim, adjust focal length by taking the following steps, until the scenery is clearest.

Adjust focal length

Focusing

1. Make thermal imager in Null mode.
2. Point thermal imager to observation target. It is better to make target be in the center of screen.



3. Rotate focusing ring on camera lens. Do not move observation target when focusing.



4. Adjust until clear image is obtained in screen.



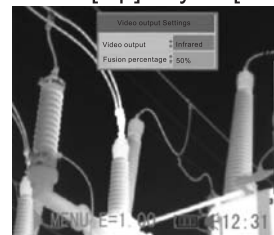
Switch infrared light image (Only UTi160D)

By the visible light camera built in the thermal imager, you can shoot the visible light images corresponding with the infrared images as the reference of the infrared images. Press [Menu/OK] key.

Press [Up] key or [Down] key to select the [Video Selection], and then press [Menu/OK] key.



Press [Up] key or [Down] key to select the [Video Output].



Press [Left] key or [Right] key to select the needed option (infrared: display the infrared image; visible light: display the visible light image; fusion: display the infrared and visible light image, and press [Menu/OK] key.

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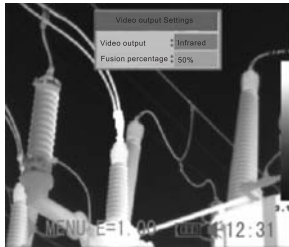


Image fusion mode (Only UTi160D)

Under the image fusion mode, you can observe that the infrared image has been integrated in the visible light image. And you can distinguish the temperature distribution of the object that you measured easily.



Infrared

Under this mode, you can use the analysis tool to analyze the target object. But the image that you see is the traditional infrared image.



Visible light

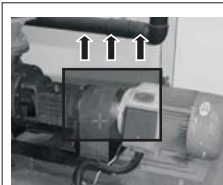
Under this mode, you can see the visible light image, but you can not analyze the target on the image.



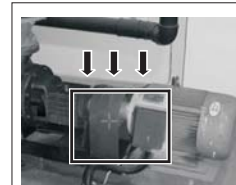
Fusion

Under this mode, you can see that the background is a translucent infrared window on the visible light image. You can use the analysis tool to analyze the target object.

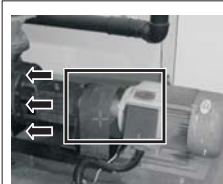
Under the fusion mode, integrate the position of the window by the movement of the combination key.



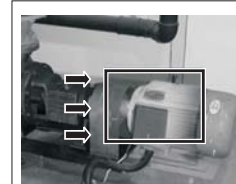
Move upward:
UP key + C key



Move down:
Down key + C key



Move to the left:
Left key + C key



Move to the right:
Right key + C key

1) Thermal imager adjustment

Image adjustment

You can select automatic image control or manual control of color temperature mid-value and color temperature

Automatic adjustment

You can adjust the image by directly pressing down [Automatic adjustment] key (key A)

- You can set automatic adjustment type.

Start photographing

Adjustment of thermal imager

Manual adjustment

Temperature mid-value and color temperature can be set by menu or directional keys on main machine. Press [Up] or [Down] key to change color temperature range, and press [Left] or [Right] to change temperature mid-value.

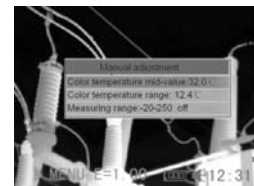
Adjust in menu

1. Press [menu/confirm] key.
2. Press [Up] or [Down] to select [Manual adjustment], and press [menu/confirm].



3. Set up color temperature mid-value and color temperature range.

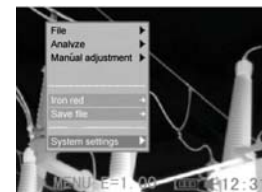
- Press [Up], [Down] to select required [color temperature mid-value] or [color temperature range].
- Press [Left], [Right] key to change set.



4. Press [menu/confirm], save all modifications. If you don't want to save those modifications, press [Cancel] directly.

Palette settings

1. Press [Menu/confirm] key.
2. Press [Up] or [Down] to select [iron red], press [Left] or [Right] to select different palettes.



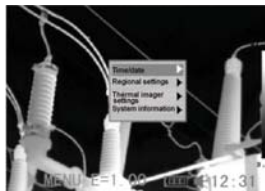
3. Press [Menu/confirm] key, save all modifications. If you don't want to save those modifications, press [Cancel]. This thermal imager provides 6 pseudo-color modes, which are iron red, anti-iron red, rainbow, medical, white glow and black glow.

Image settings

1. Press [Menu/confirm] key.
2. Press [Up] or [Down] key to select [System Settings]. And press [Menu/confirm] key.

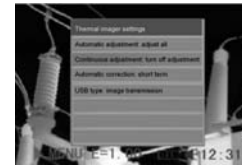


3. Press [Up] or [Down], select [Thermal imager settings], and press [Menu/confirm] key.



4. Set up thermal imager settings.

- Press [Up], [Down] key to select parameters which needed to be modified.
- Press [Left], [Right] key to modify value.



5. Press [Menu/confirm] key, save all modifications. If you don't want to save those modifications, press [Cancel].

● Image settings

Automatic adjustment

After pressing down [Automatic adjustment], thermal imager will automatically adjust the following items.

1. Adjust all

Thermal imager will automatically adjust color temperature mid-value and color temperature range of image to optimal status.

2. Window mid-value

Thermal imager will automatically adjust color temperature mid-value of image to optimal status.

3. Window range

Thermal imager will automatically adjust color temperature range of image to optimal status.

Continuous adjustment

Set whether thermal imager will automatically adjust color temperature mid-value and color temperature range of image.

1. Window mid-value

Thermal imager will automatically adjust color temperature mid-value of image to optimal status.

2. Adjust all

Thermal imager will automatically adjust color temperature mid-value and color temperature range of image to optimal status.

3. None

Thermal imager will not automatically adjust color temperature mid-value and color temperature range of image.

Automatic correction

Set up period of automatic adjustment.

USB type

Connect to computer, and transmit images to computer.

Auto power-off settings

Auto power-off time

Laser adjustment

Turn on laser adjustment, and open point 1 Analyze. Then laser will automatically coincide with point 1. Turn off laser adjustment.

Menu style

Select menu style.

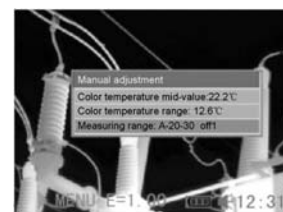
Temperature measurement range

Set up temperature measurement range by taking the following steps.

1. Press [Menu/confirm].
2. Press [Up] or [Down] to select [Manual adjustment]



3. Select temperature measurement range for different lens.
 - Select [Temperature measurement range], press [Up] and [Down] together, select different temperature range corresponding to lens.



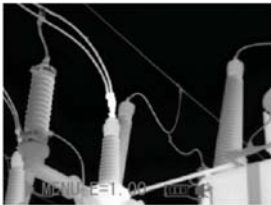
4. Press [Menu/confirm] key, save all modifications. If you don't want to save those modifications, press [Cancel].

When you are photographing, you can freeze the picture by [image freeze/activation]key, and carry out simply analysis on main machine.

Freeze / activate image

You can freeze or activate images by menu or directly pressing [image freeze/activation].

1. Press [image freeze/activation] key, image is frozen.
The image shown in screen is the target you photographed before freezing.



2. Press [image freeze/activation] key again, image is activated. You can continue to observe target.



2) Temperature measurement settings

Set up target and environment parameters

1. Press [Menu/confirm] key.
2. Press [Up] or [Low] to select [Analyze]. Press [Menu/confirm], enter to Menu.



3. Press [Up] or [Down] to select [Parameter settings], press [Menu/confirm] key to enter Menu.



4. Set up radiance, distance, environment temperature and humidity.
 - Press [Up], [Down] key to select items which needed to be modified.
 - Press [Left], [Right] key to modify value.

