E8 Series

User's manual

Trademark Acknowledgments

• SATIR is a trademark of SATIR Europe Ireland Ltd.
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About this IR Camera User Guide

Symbols Used

⚠ **This mark denotes issues that may affect the IR camera's operation.**

▤ **This mark denotes additional topics that complement the basic operation procedures.**

■ **What do the icons listed in the Camera User Guide mean?**
Information displayed on the LCD Monitor (p.18)

Thumb Index

Introduction of camera components and battery loading.

Describes basic functions, learning how to turn on/off the IR camera and work with the control panel and LCD monitor.

Describes working with the camera, from each analysis settings tousing the camera'svarious analysis tools.

Explains how toreview recorded images, erase images and playback voice memos.

Explains how totransfer images or video to a computer.

Youmust readthis sectionbefore connectingyour camera to a computer.

Table of Contents

Functions and operations tables

Read This First

Test Shots

Before you try to shoot important subjects, we highly recommend that you shoot several trial images to confirm that the IR camera is operating and being operated correctly.

Please note that SDS, its subsidiaries and affiliates, and its distributors are not liable for any consequential damages arising from any malfunction of an IR camera or accessory that results in the failure of an image to be recorded or to be recorded in a format that is machine readable.

Warning Against Copyright Infringement

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Safety Precautions

Before using the camera, please ensure that you read and understand the safety precautions described below. Always ensure that the IR camera is operated correctly.

The safety precautions noted on the following pages are intended to instruct you in the safe and correct operation of the IR camera and its accessories to prevent injuries or damage to yourself, other persons and equipment.

Warnings

Read on to learn about using IR camera properly.

Avoid damaging eyesight

> *Warning:* Do not trigger the laser pointer in human or animal eyes. Exposure to the laser produced by the laser pointer may damage eyesight.

Do not disassemble

Do not attempt to disassemble or alter any part of the equipment that is not expressly described this guide

Stop operating immediately if it emits smoke or noxious fumes

Failure to do so may result in fire or electrical shock. Immediately turn the IR camera's power off, remove the IR camera battery or unplug the power cord from the power outlet. Confirm that smoke and fume emissions have ceased.

Stop operating immediately if it is dropped or the casing is damaged

Failure to do so may result in fire or electrical shock. Immediately turn the IR camera's power off, remove the IR camera battery or unplug the power cord from the power outlet.

Do not use substances containing alcohol, benzene, thinners or other flammable substances to clean or maintain the IR camera

The use of these substances may lead to fire.

Remove the power cord on a regular periodic basis and wipe away the dust and dirt that collects on the plug, the exterior of the power outlet and the surrounding area

In dust, humid or greasy environments, the dust that collects around the plug over long periods of time may become saturated with humidity and short-circuit, leading to fire.

Do not handle the power cord if your hands are wet
Handling it with wet hands may lead to electrical shock. When unplugging the cord, ensure that you hold the solid portion of the plug. Pulling on the flexible portion of the cord may damage or expose the wire and insulation, creating the potential for fires and electrical shocks.

Do not cut, alter or place heavy items on the power adapter cord
Any of these actions may cause an electrical short circuit, which may lead to fire or electrical shock.

Use only the recommended power accessories
Use of power sources not expressly recommended for this IR camera may lead to overheating, distortion of the IR camera, fire, electrical shock or other hazards.

Do not place the batteries near a heat source or expose them to directly to flame or heat
Neither should you immerse them in water. Such exposure may damage the batteries and lead to the leakage of corrosive liquids, fire, electrical shock, explosion or serious injury.

Do not attempt to disassemble, alter or apply heat to the batteries
This is serious risk of injury due to an explosion. Immediately flush with water any area of the body, including the eyes and mouth, or clothing, that comes into contact with the inner contents of a battery. If the eyes or mouth contact these substances, immediately flush with water and seek medical assistance.

Avoid dropping or subjecting the batteries to severe impacts that could damage the casings
It could lead to leakage and injury.

Do not short-circuit the battery terminals with metallic objects, such as key holders
It could lead to overheating, burns and other injuries.

Before you discard a battery, cover the terminal with tape or other insulators to prevent direct contact with other objects
Contact with the metallic components of other materials in waste containers may lead to fire or explosions. Discard the batteries in specialized waste facilities if available in your area.

Use only recommended batteries and accessories
Using of batteries not expressly recommended for this equipment may cause explosions or leaks, resulting in fire, injury and damage to the surroundings.

Disconnect the compact power adapter from both the IR camera and power outlet after recharging and when the IR camera is not in use to avoid fires and other hazards
Continuous use over a long period of time may cause the unit to overheat and distort, resulting in fire.

Do not use the battery charger or compact power adapter if the cable or plug is damaged, or if the plug is not fully inserted into the power outlet
The battery charger varies according to region.

Exercise due caution when screwing on the separately sold tele-lens, close-up lens
If the lens is loosened and fallen off, the glass shards may cause an injury.

If your camera is used for prolong periods, the IR camera body may become warm
Please take care when operating the IR camera for an extended period as your hands may experience a burning sensation.

Prevent Malfunction

Read on to learn about preventing malfunction of IR camera

Avoid damaging the detector of the IR camera

Warning: Do not aim the IR camera directly into the sun or at other intense heat source which could damage the detector of the IR camera.

Avoid Condensation Related Problems

Moving the IR camera rapidly between hot and cold temperatures may cause condensation (water droplets) on its external and internal surfaces.

You can avoid this by placing the IR camera in the plastic case (bundle) and letting it adjust to temperature changes slowly before removing it from the case.

If Condensation Forms Inside the IR Camera

Stop using the camera immediately if you detect condensation. Continue to use may damage the IR camera. Remove the PC card, and battery or a household power source, from the IR camera and wait until moisture evaporates completely before resuming use.

Extended Storage

When not using the IR camera for extended periods of time, remove the battery from the IR camera or battery charger and store the IR camera in a safe place. Storing the IR camera for extended periods with battery installed will run down the battery.
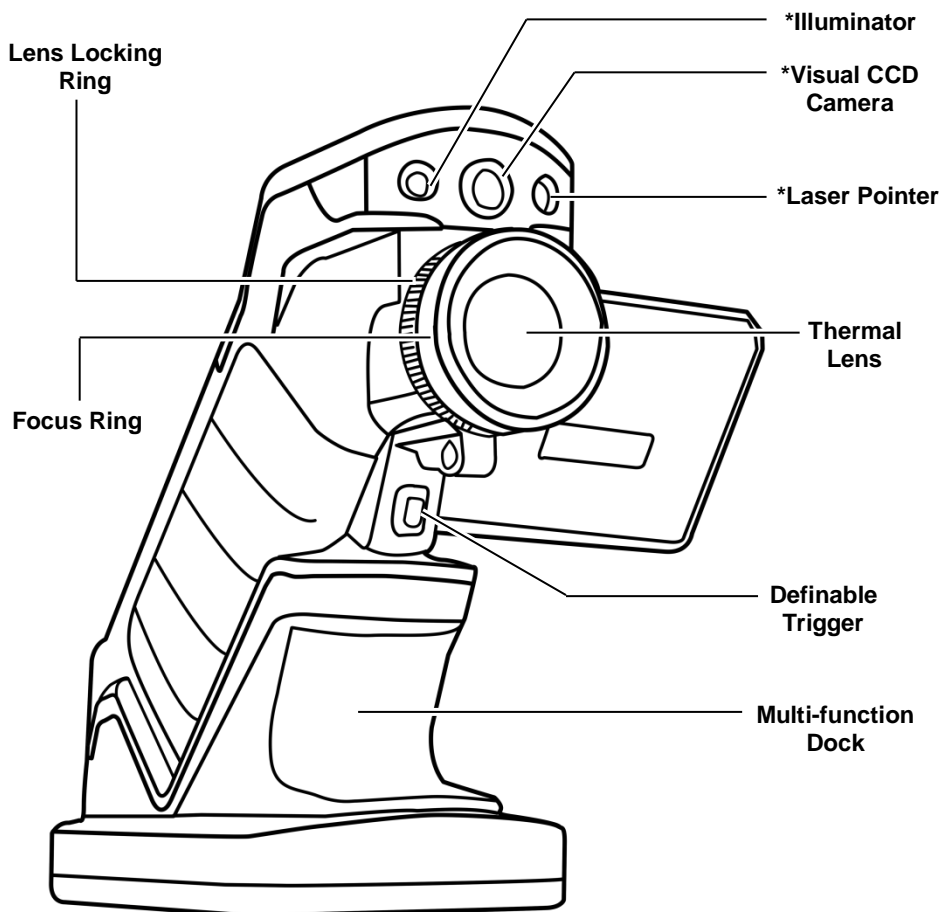
Different Models

Some advanced functions are included only in E8-TN and E8-GN, E8-N only has the fundamental function

Right Reserved

SDSreserves the right to change the functions and configurations of our products without prior notice.

Component Guide

Front View

- ***Illuminator**
- ***Visual CCD Camera**
- ***Laser Pointer**
- **Thermal Lens**
- **Definable Trigger**
- **Multi-function Dock**
- **Lens Locking Ring**
- **Focus Ring**

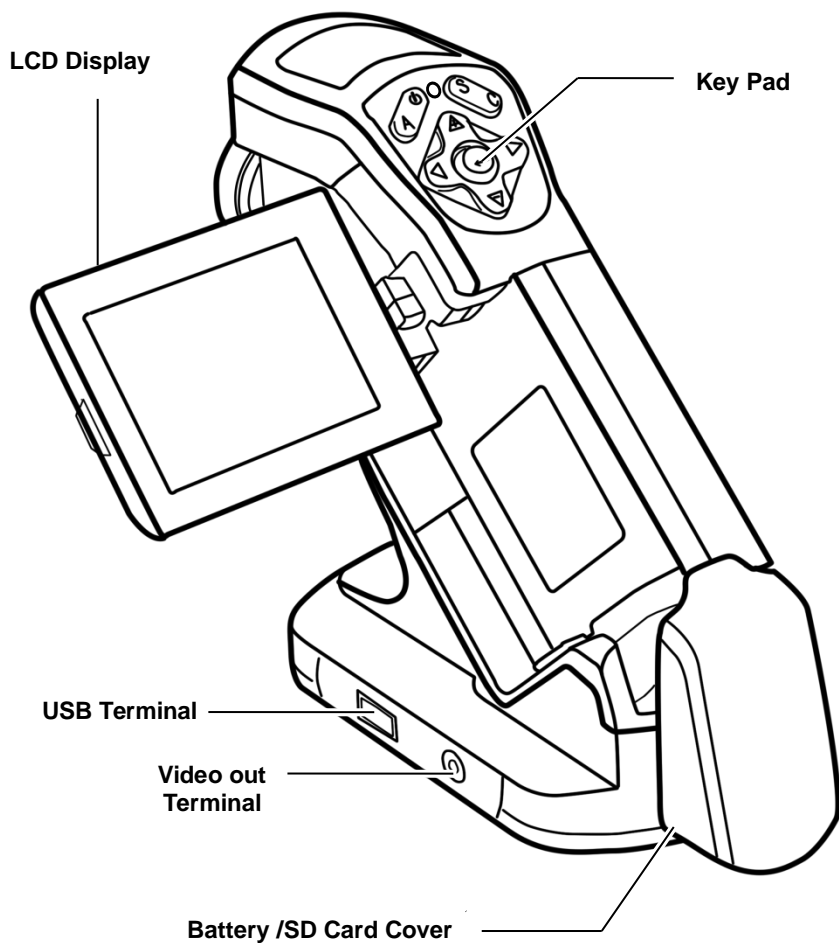*E8-N and the E80 is not equipped with illuminator, visual CCD camera and laser pointer.

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Component Guide

LCD Display

Key Pad

USB Terminal

Video out Terminal

Battery /SD Card Cover

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Component Guide

Auto Adjust Key

Power Switch

Power Indicator

Freeze / Activate

Cancel Key

Menu / Enter Key

Cursor Key

USB
Terminal

Video Output
Terminal

Power
Terminal

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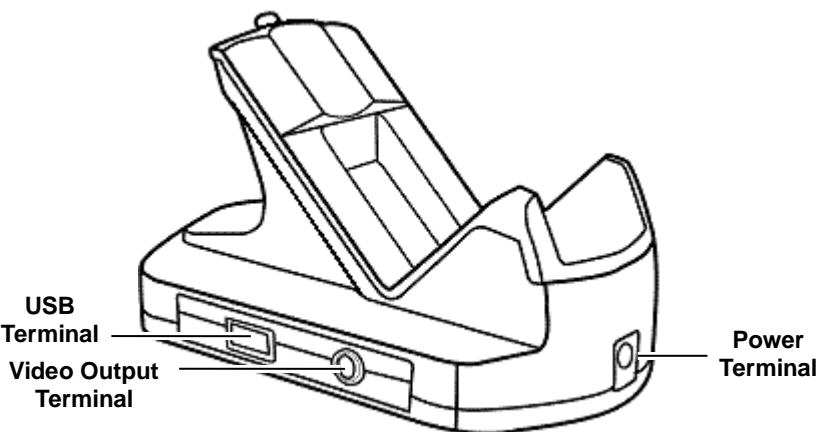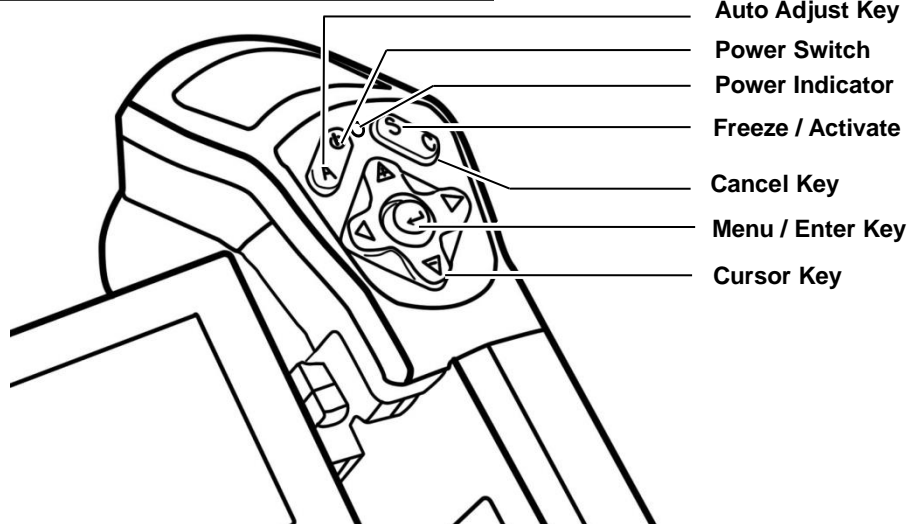
Component Guide

Bottom / Connectors

Multi connector

SD Card Slot

Battery insertion slot

Battery Lock

Lock

Multi connector
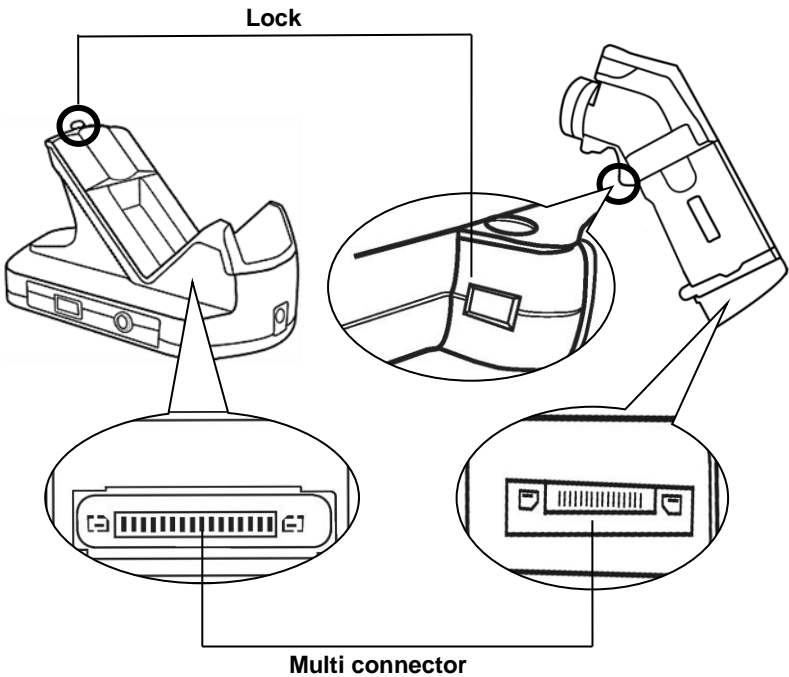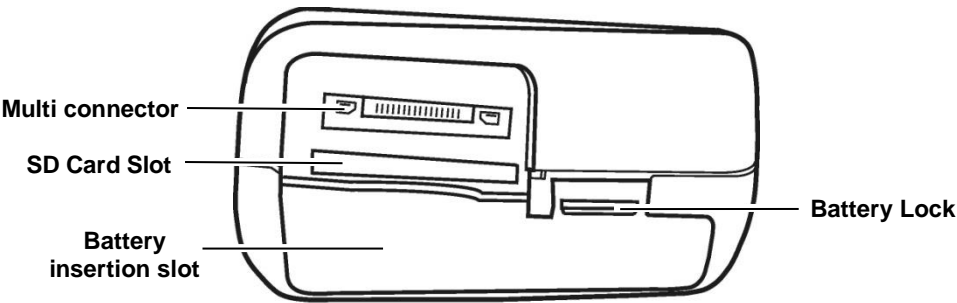
Preparing the IR Camera

Charging the Battery Pack

Follow the steps below to charge the battery pack for the first timeand subsequently when the low battery icon appears on the Display Panel.

1

Align the edge of the battery pack with the line on the battery, then insert the battery in the direction of the arrow.

2 **Attach the power cord to the battery charger and plug the other end into a power outlet.**

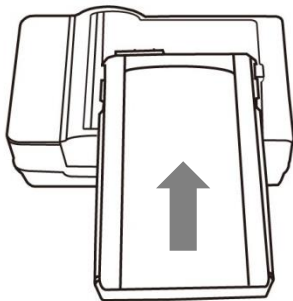- The charge indicator light is red while the battery pack is charging and it turns green when charging is complete.
- After charging, unplug the battery charger and remove the battery pack.

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- This is a lithium ion battery pack so there is no need to discharge it completely before recharging. It can be recharged at any time. However, since the maximum number of charge cycle is approximately 300 (battery life), you are recommended to only charge the battery pack after having discharge it completely to prolong battery life.

- Charging times will vary according to the surrounding humidity and battery pack charge state.

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Preparing the IR Camera

Installing the Battery Pack / SD Card

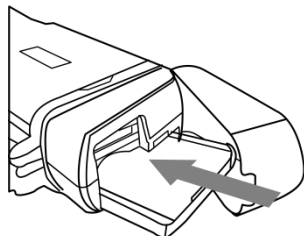Install Battery Pack into the camera as following,

Charge the battery pack before using it for the first time.
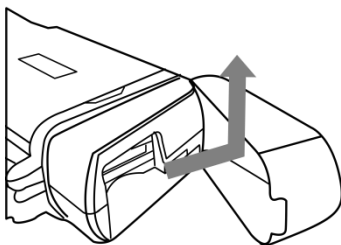
1 **Check if the power is off and slide the battery cover in the direction of the arrow.**

2 **Insert the battery pack.
Insert the battery in the direction of the arrow.**
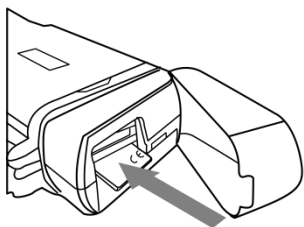
3 **Insert SD card.
Insert the SD card in the direction of the arrow.**

4 **Close the battery / SD card cover.**

• • • • • • • • • • • •

⚠ • Remove the battery pack when the camera is not in use.

• The SD Card must be formatted in FAT32. Otherwise, the IR camera may not recognize the SD card.

Battery Status Symbols
The following icons indicate the battery status on the LCD display.

▮▮▮▮ ▯▮▮▮ ▯ ▮▮	**Sufficient battery charge**
▯ ▮	**Low battery**
▯	**Replace or recharge the battery**

Preparing the IR Camera

Turning the Power On / Off

The power indicator is lit while the power of the camera is on.

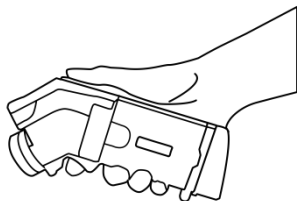**1** **Holding the camera correctly with your right hand, put your thumb above the key pad and put your forefinger in front of the definable trigger.**
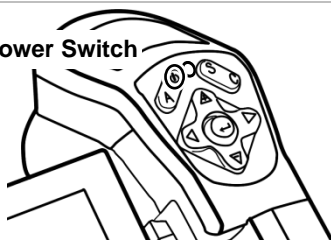
2 Power Switch **Press and hold the power switch for 3 seconds.**
- The power indicator lights green.

3
System information
SDS Infrared
Serial Number:
Produced On:
Version:
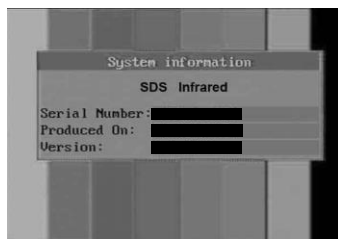
After a while, a startup image will appear on the screen.

4 **Turn off the camera.**
Hold the power switch for 3 seconds.
- The power indicator goes off.

Preparing the IR Camera

Checking the Information on the LCD Monitor

The LCD monitor has a field of vision of 100% of the actual shooting image.
The following displays in information view.

Reading

Max.temperature

Upper limit of color scale

Color scale

Lower limit of color scale

Min. temperature

Time

Battery Charge

Current Emissivity

Activate / Freeze

Operation indicator
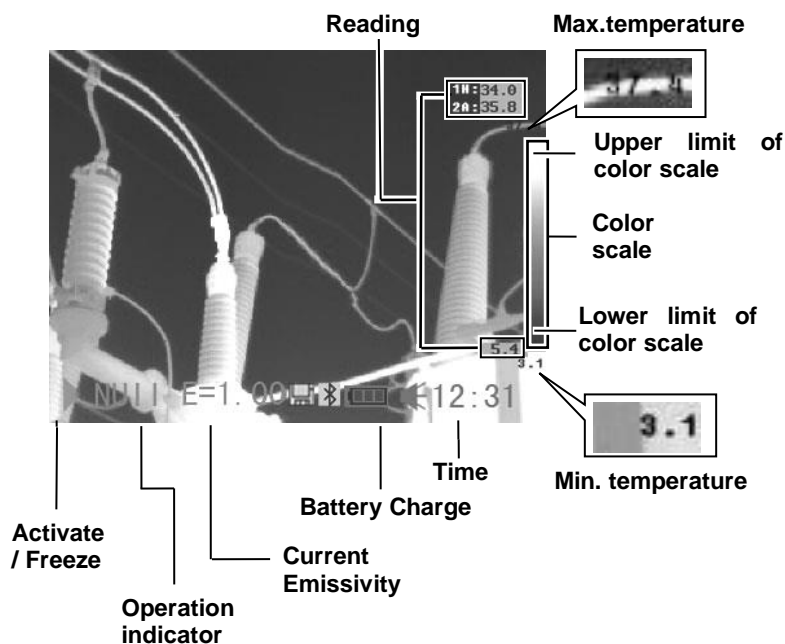
About the operation indicator

The operation indicator shows the current operation status of the camera.

Status of the camera

▶ NULL E=1. 00
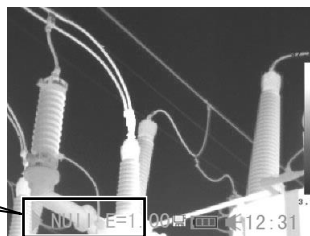
Status of the camera	Menu	Represents the menu mode.	
	Null	Represents the non-menu mode and no analysis tools is selected.	
	*SP1…9	Represents the current analysis tool is spot 1 or spot 2… or spot 9.	
	CAP.	Reprents the current analysis tool is auto-tracking spot.	
	*AR1…5	Represents the current analysis tool is area 1 or area 2… or area5.	
	*PRO.	Reprents the current analysis tool is profile.	
	*ISO.	Represents the current analysis tool is isotherm analysis.	
	E	Current Emissivity value	
	💾	SD card has been inserted.	
	❋	Bluetooth headset has been paired.	

*The status varies according to different model of E8 series.

Before you make any further operation, please enter [Null] mode.

📖 **How to enter [Null] mode:**

Press the *cancel* key repeatedly until see the message of null in the operation indicator.

Preparing the IR Camera

Setting the date and time

You need to set the Data / Time when the IR camera is turned on for the
first time.

1 **Make sure that the IR camera is in null mode.(p.19)**

2 **Press the *MENU/ENTER* key then press the *UP* or *DOWN* arrow on the omni selector to select the [System Setup] menu.**

3 **Press the *UP* or *DOWN* arrow on the omni selector to select [Date & Time] then press the *MENU/ENTER* key.**
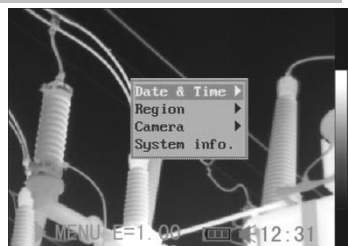
4 **Setting Date and Time**
- Press the *UP* or *DOWN* arrow on the omni selector to select anitem to change.
- Press the *LEFT* or *RIGHT* arrow on the omni selector to set the values.

5 **After adjusting the settings, press the *MENU/ ENTER* key to save changes, or press the *C* key to go back to upper menu without saving.**

Preparing the IR Camera

Local Settings

In this menu item, you can display style of the built-in menu system.

1 **Make sure that the IR camera is in null mode.(p.19)**

2 **Press the *MENU/ENTER* key then press the *UP* or *DOWN* arrow on the omni selector to select the [System Setup] menu.**

3 **Press the *UP* or *DOWN* arrow on the omni selector to select [Local Setup] then press the *MENU/ENTER* key.**
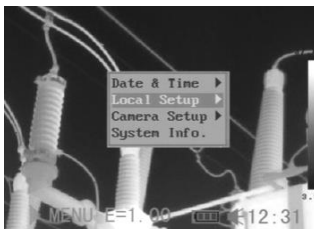
4 **Local Setup.**
   - Press the *UP* or *DOWN* arrow on the omni selector to select afield to change.
   - Press the *LEFT* or *RIGHT* arrow on the omni selector to set the values.

5 **After adjusting the settings, press the *Menu/ Enter* key to save changes, or press the *C* key to exit without saving.**

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📷 About the local settings

Language	Selects the language of the menus and messages.
Video output	Sets the format of the video output of the camera. PAL or NTSC.
Temp unit	Sets the format of the displayed temperature unit of the camera. °C or °F.
Distance unit	Sets the format of the displayed distance unit of the camera. Meter or Foot.

Basic Functions

Using the LCD Monitor

If you wish to use the LCD monitor for shooting, playing back thermal images and adjusting menu settings, follow the instructions below.

1 **Open the LCD displayer in the direction of the arrow.**
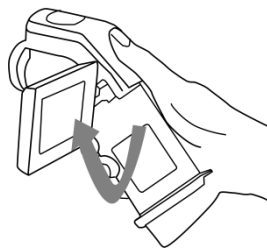
2 **Aim the IR camera at a subject.**

1. For a better temperature measurement, please do make the subject in center of the image that is shown on the LCD monitor.

2. The LCD monitor will turn off when it is closed.

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Basic Functions

Selecting Menus and Settings

You can select the settings by pressing the *MENU/KEY* key.

1 **Press the *MENU / ENTER* key.**

2 **Press the *LEFT* or *RIGHT* arrow on the omni selector.**

3 **Press the *UP* or *DOWN* arrow on the omni selector.**

4 **Press the *MENU / ENTER* button.**
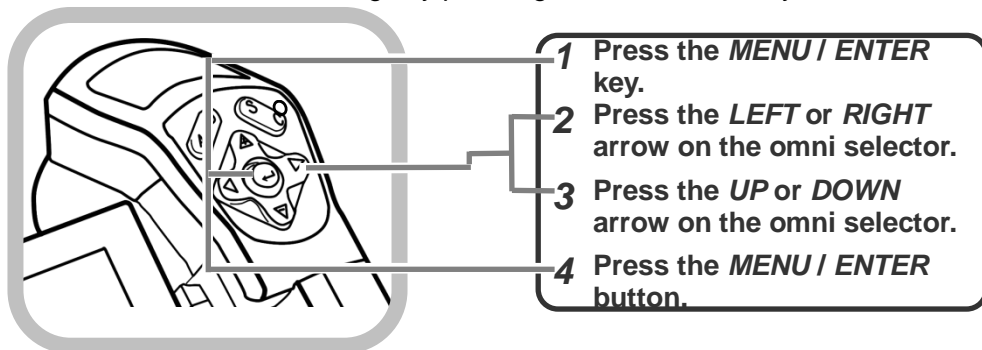
1 **Menu** ➔ *2* **Select a function item using**

File Menu

Analysis Menu

Manual Adjust

Setup Menu
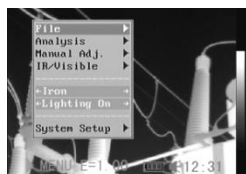
3 **Select setting contents using**
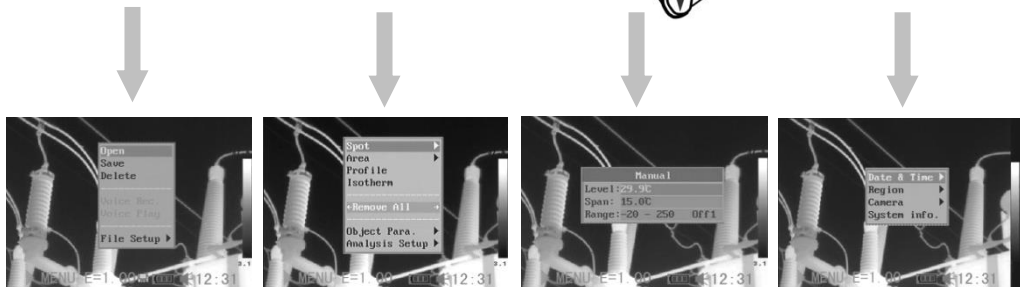
4 **Change the settings using**

Exit

Displayed menu items will vary according to the operation and setting contents.

*The menu items are different according to different type of camera.

Basic Functions

Resetting the Settings to Default

You can reset the menu and button operation settings to default.

1

Turn off the IR camera.(p.17)
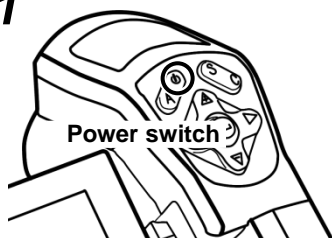
Power switch

2

Press and hold the power switch and C key for seconds.

Cancel key

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The data in storage will not be deleted when you reset the menu and button operation settings to default.

Shooting

Manually Focus

1   **Aim that the IR camera at the subject.**
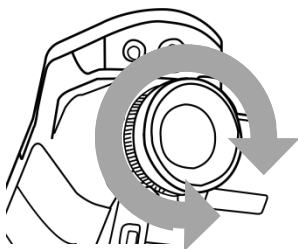
2   **Turn the focus ring to focus on the target.**
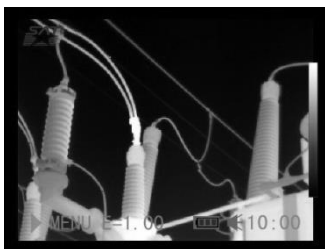
3   **Do not stop turning until the image is clear.**

Shooting

*DuoVisionDisplay modes

Thermal,Visual and DuoVisionimage display

This IR camera records visual images with its built-in digital camera.
You can capture a visual image as a reference to the thermal image.

1 Press the *MENU/ENTER* key.

2 Press the *MENU/ENTER* key then press the *UP*or *DOWN* arrow on the omni selector to select the [IR/Visible] menu.

3 **IR/Visible Setup**

- Press the *UP* or *DOWN* arrow on the omni selector to select anitem to change.
- Press the *LEFT* or *RIGHT* arrow on the omni selector to set the values.
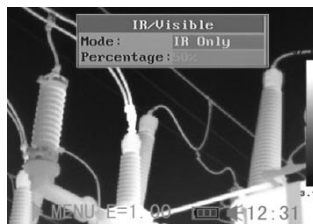
4 Press *UP*or *DOWN* arrow on the omni selector to select [Mode],and press *LEFT or RIGHT*to select a display mode, then press *MENU/ENTER* key.

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*E8-N/E80 is not equipped with a visual CCD camera and it doesn't have the DuoVision Display modes, so you won't see the [IR/Visible] item in its menu.

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Shooting

In **DuoVision** display mode, you can see the thermal images "fuse" into the visible images.

IR only
In this mode, you can use the analysis tools to analyze the target. But what you see is the image with pseudo color.
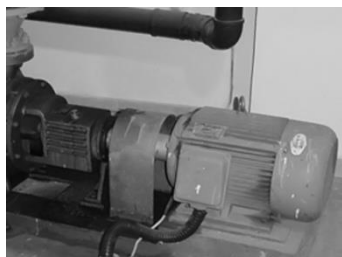
Vision Only
In this mode , you can see the image with full color. But you can not use any analysis tools to analyze the target.

Duo Vision
In this mode, you can see the background image is fullcolor visible image. And the thermal image "fuses" on it in the center square. At the same time you can use any analysis tools to analyze the target.

In the IR and Vision Mix mode, you can press *UP* or *DOWN*arrow to change the span(contrast) of the IR image and press *LEFT* or *RIGHT*arrow to change the level(brightness).

In **DuoVision**display mode, you can move the fusion area via the combination keys.

Moving the fusion square
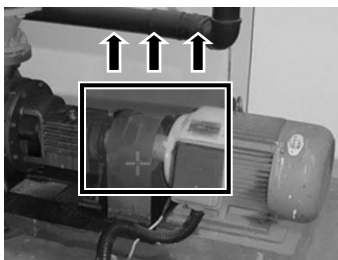
Move thearea up
C + UP
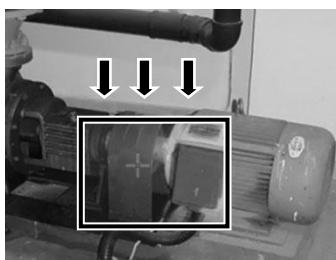
Move thearea down
C + DOWN

Move the area left
C + LEFT
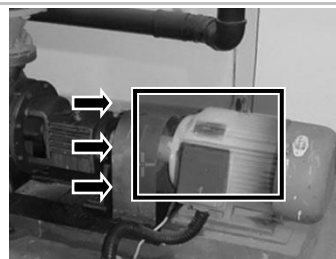
Move the area right
C + RIGHT

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About the IR/Visible settings

IR Percentage	Sets the ratio of IR images and Visual images. The value is from 1% to 100%.

The items above are activated only in [Duo-Vision] mode.

Shooting

Image adjustment

You can adjust the Level (brightness) and Span (contrast) of the image captured by IR camera,manually or automatically.

Auto adjust

The IR camera will automatically adjust the brightness and / or contrast and calibrate when you press the *A* key for the first time. If you press *A* key a second time in 15 seconds, the camera will only adjust brightness and / or contrast.

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You can define the adjustment mode,p.34.

Shooting

Manual adjust

You can adjust the Level and Span of the image manually in the built-in menu system or by pressing arrows on the omni selector. Press *UPor DOWN* arrow to change the span, and press *LEFT or RIGHT* arrow to change the level.

Manual adjust in the menu

1 **Press the *MENU/ENTER* key.**

2 **Press the *UP* or *DOWN* arrow on the omni selector to select the [Manual Adj.] menu.**

3 **Setting Level and Span.**
- Press the *UP* or *DOWN* arrow on the omni selector to select anitem to change.
- Press the *RIGHT* or *LEFT* arrow on the omni selector to set the values.

4 **After this operation, press the *MENU/ENTER* key to save changes, or press the *C* key to go back to the upper menu without saving.**

34
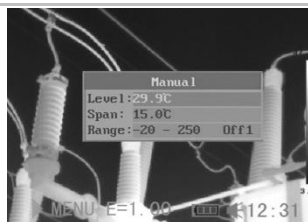
Shooting

Palette settings

1 **Press the *MENU/ENTER* key.**

2 **Press the *UP* or *DOWN* arrow on the omni selector to select the [Iron], press the *LEFT* or *RIGHT* arrow to choose the palette.**

3 **After this operation, press the *MENU/ENTER* key to save changes, or press the *C* key close the menu without saving.**

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The camera provides 6 kinds of palettes: Iron, Iron inverted, Rainbow, Feather, Grey and Grey inverted.

Shooting

Image settings

1 **Press the *MENU/ENTER* key.**

2 **Press the *UP* or *DOWN* arrow on the omni selector to select the [System Setup] menu, then Press the *MENU/ENTER* key.**

3 **Press the *UP* or *DOWN* arrow on the omni selector to select [Camera Setup], then press the *MENU/ENTER* key.**

4 **Set the Image Settings.**
- Press the *UP* or *DOWN* arrow on the omni selector to select anitem to change.
- Press the *RIGHT* or *LEFT* arrow on the omni selector to set the values.
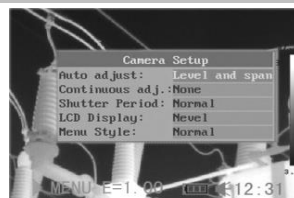
5 **After this operation, press the *MENU/ENTER* key to save changes, or press the *C* key to go back to the upper menu without saving.**

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📑 About the Image Settings

<table>
<tr><td rowspan="4">Auto adjust</td><td colspan="2">Sets the function of A key.</td></tr>
<tr><td>Level and Span</td><td>The camera will automatically adjust the level (brightness) and span (contrast) of the image to the optimum setting.</td></tr>
<tr><td>Level</td><td>The camera will automatically adjust the level (brightness) of the image.</td></tr>
<tr><td>Span</td><td>The camera will automatically adjust the span (contrast) of the image.</td></tr>
<tr><td rowspan="4">Continuous adj</td><td colspan="2">Sets whether or not the brightness and contrast of the the image shown on the screen are adjusted automatically</td></tr>
<tr><td>Level and span</td><td>The brightness and contrast is adjusted automatically.</td></tr>
<tr><td>Level</td><td>The brightness is adjusted automatically.</td></tr>
<tr><td>None</td><td>The brightness and contrast will not be adjusted automatically.</td></tr>
<tr><td>Shutter period</td><td colspan="2">Sets the period of auto-adjusting.</td></tr>
<tr><td>LCD Display</td><td colspan="2">Sets the period of shutting down the LCD Display.</td></tr>
<tr><td>Shut Down</td><td colspan="2">Sets the perid of shutting down the camera.</td></tr>
<tr><td>Laser Adjust</td><td colspan="2">Adjusts the Laser point in the LCD displayer.</td></tr>
<tr><td>Menu Style</td><td colspan="2">Sets the menu style.</td></tr>
</table>

Shooting

Measurement range

Follow the below steps to change the measurement range.

1 **Press the *MENU/ENTER* key.**

2 **Press *UP or DOWN* arrow on the omni selector to select [Manual Adj.], then press *MENU/ENTER* key.**

3 **Selecting measurement range for different lens.**
  - After selecting the [Range] field, press *UP* and *DOWN* arrow on the omni selector **at the same** time to change the measurement range for different lens(p.70).
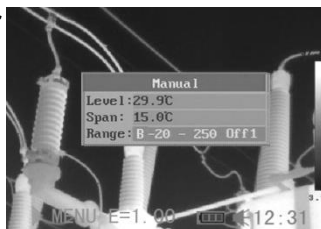
4 **After this operation, press the *MENU/ENTER* key to save the changes or press the C key to go back to the upper menu without saving.**

Shooting

Freezing / Activating an image

You can activate / freeze a thermal image by pressing the **S** key on the keypad.

1 **Check that the IR camera is in null mode.(p.19)**

2 **Press the S key, then the image is freezing.**

3 **Press the S key again, then the image is active.**

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Shooting

Setting object/globalsettings

1 **Press the *MENU/ENTER* key.**

2 **Press *UPor DOWN* arrow on the omni selector to select [Analysis], then press the *MENU/ENTER* key.**

3 **Press *UP* or *DOWN* arrow on the omni selector to select [Object Para.], then press the MENU/ENTER key.**

4 **Setting analysis parameter.**
- Press the *UP* or *DOWN* arrow on theomni selector to select anitem to change.
- Press the *LEFT* or *RIGHT* arrow on the omni selector to set the values.

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5 After this operation, press the *MENU/ENTER* key to save changes, or press the *C* key to go back to the upper menu.without saving.

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About the analysis parameters

Object	Selects the object of which you want to set the parameters.
Emiss	Different material has different emissivity. Use different emissivity to measure different material.
Distance	Different object has different distance to the IR camera. Use different distance to measure different object.
Amb Temp	Input ambient temperature.
Humidity	Input ambient humidity.
Comp Obj	Comp Obj1 can be set as any spot and area; Comp Obj2 can be set as ref. temp. and any spot and area.Differential of their temperature will be showed at the right bottom corner of the screen. For example, Comp Obj1 is Spot1(35.4℃) and Comp Obj2 is Ref Temp(30℃)，then the final reading will be 5.4℃
Ref Temp	Sets a reference temperature to compare with the spot/area/profile tool.

The reading of Comp. Obj
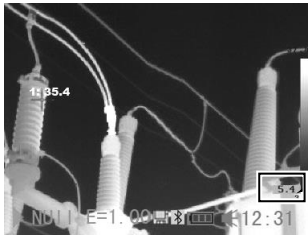
Reading

Shooting

Setting analysis settings

1 **Press the *MENU/ENTER* key.**

2 **Press the *UPor DOWN* arrow on the omni selector to select the [Analysis] menu, then press the *MENU/ENTER* key.**

3 **Press *UPor DOWN* arrow on the omni selector to select [Analysis Setup], then press the *MENU/ENTER* key.**

4 **Setting analysis parameter.**
- Press the *UP* or *DOWN* arrow on theomni selector to select anitem to change.
- Press the *LEFT* or *RIGHT* arrow on the omni selector to set the values.

5 **After this operation, press the *MENU/ENTER*key to save changes, or press the *C* key to go back to the upper menu without saving.**

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About the analysis settings

*Alert	There are two kinds of temp-alert: Upper-limit alert and Lower-limit alert. 1.Upper-limit alert Set item "alert" as [on],and "Capture spot" as [maximum],then spot analysis tool "max sp10" will automatically capture the hottest spot within the screen, if this temperature is higher than the value you set in "alert temp",the reading on top-right screen will turn into RED,and also sound of beepin. 2.Lower-limit alert Set item "alert" as [on],and "Capture spot" as [minimum],then spot analysistool "mini sp10" will automatically capture the coldest temperature within the screen,if this temperature is lower than the value you set in "alert temp",the reading on top-right screen will turn into RED,and also sound of beepin. **Note**:select spot analysis tools [capture max.]&[capture min.] in menu"Analysis".
*Alert Temp	Sets the temperature limit of "Alert".
Correct Temp	Corrects the measured temperature value of the camera to ensure the measurement accuracy under special circumstances.
Saturation Color	When it's on, Green will take place of the color that stands for the highest temperature.
*Isotherm Width	Sets the width of isothermal interval. The width can be adjusted from 0.1℃ to the upper limit of the maximum temperature measurement range under this condition.
*Isotherm Color	Sets the color of the isotherm interval. Transparent, Green, Black and White are available.

*Isotherm Type	Sets the isothermal analysis mode. There are five modes: Dual Above, Dual Below, Above, Below and Interval.	
	Dual Above	Display the isothermal interval in a color and the parts with the higher temperatures than the upper limit of the isothermal interval in a different color
	Dual Below	Display the isothermal interval in a color and the parts with the lower temperatures than the lower limit of the isothermal interval in a different color
	Above	Display the isothermal interval and the parts with the higher temperature than the upper limit of the isothermal interval in the same color
	Below	Display the isothermal interval and the parts with the lower temperature than the lower limit of the isothermal interval in the same color
	Interval	Display the isothermal interval in one color and all the other parts are displayed in the normal pseudocolor mode
*Isotherm Alert	The value is from 1 to 255, and it means 1/255 to 255/255 of the screen. For example, if the span of isotherm is 35℃ to 40℃ and the isotherm alert is 100. If the proportion of isotherm area between 35℃ to 40℃ is over 100/255, alarm will ring.	

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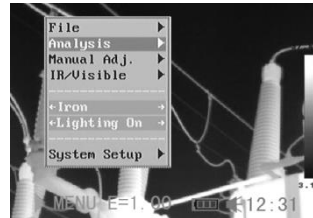*Temperature alert and isotherm settings are only for E8-TN and E8-GN.

Shooting

Setting analysis tools

This topic briefly explains how to set the analysis tools on the thermal image.

Spot analysis

1 **Press the *MENU/ENTER* key.**

2 **Press the *UP* or *DOWN* arrow on the omni selector to select the [Analysis] menu.**

3 **Press the *UP* or *DOWN* arrow on the omni selector to select the [Spot] menu.**

4 **Setting the spot analysis.**

- Press the *UP* or *DOWN* arrow on the omni selector to select a spot, then press *MENU/ ENTER* Key.
- Spot 10 will automatically track the hottest and coldest temperature spot within an area of which the shape and size can be set by the user(p.46). Press *LEFT* or *RIGHT* to select the Maximum spot or Minimum spot.
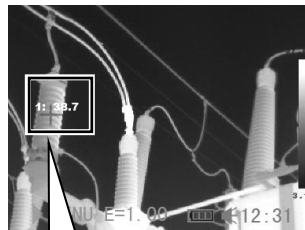
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5 Moving the spot.

- Start from Step 1 to set or select a spot a analysis spot.
- Press the *UP*, *DOWN*, *LEFT*, *RIGHT* arrow on the omni selector to move the activated spot.
- Press *Menu/Enter* key to fix the position of the spot.

📝 Temperature reading of spot changes in real-time.

Spot NO.

Temperature reading

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6 Removing the spot

- Start from Step 1 to set or select an analysis spot.
- Press C key to remove the spot.

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⚠ *E8-N/E80 has only one analysis spot; E8-TN has four analysis spots. The menu showed in the photo of step 4 is different according to different models.

Shooting

*Area analysis

1 **Press the *MENU/ENTER* key.**

2 **Press the *UP* or *DOWN* arrow on the omni selector to select the [Analysis] menu.**
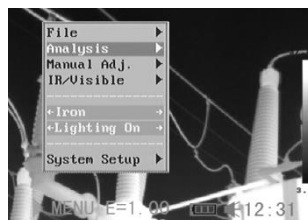
3 **Press the *UP* or *DOWN* arrow on the omni selector to select the [Area] menu.**

4 **Setting the analysis area.**
- Press the *UP* or *DOWN* arrow on the omni selector to select aarea, then press *MENU/ENTER* Key. One or more box will appear on the screen.
- A reading will appear at the top right corner. It is the reading of the highest/lowest/average temperature of the current area.
- H is short for highest temperature, L for lowest temperature, and A for average temperature.
- Press *LEFT* or *RIGHT* to select to show the Maximumor Minimum or Average temperature of the area.

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- If Area 5 is selected, Maximum and Minimum and Average temperature of it will appear at the same time.

5 Moving the area.
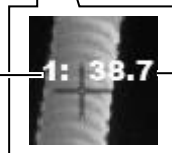
- Start from Step 1 to set or select an an area analysis.
- Press the *UP*, *DOWN*, *LEFT*, *RIGHT* arrow on the omniselector to move the activated area.

Area NO.

Temperature readingchanges in real-time.
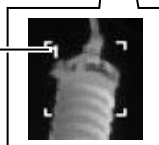
Readings
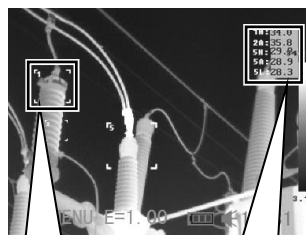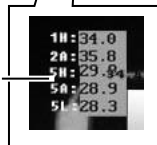
6 Removing the area

- Start from Step 1 to set or select an area analysis.
- Press C key to remove the activated area.

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About changing the shape of the analysis area
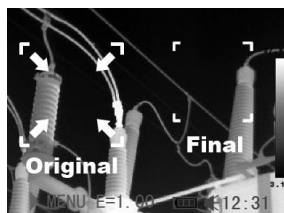
UPPER and LEFT arrow
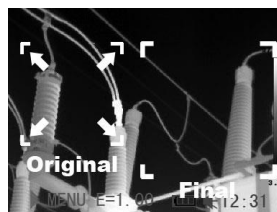
UPPER and RIGHT arrow

LOWER and LEFT arrow   **LOWER and RIGHT arrow**

*E8-N/E80/E8-TN don't have the area analysis function, so you won't see the [Area] item in their analysis menu.

Shooting

*Profile analysis

1 **Press the *MENU/ENTER* key.**

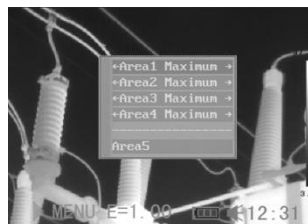*2* **Press the *UP* or *DOWN* arrow on the omni selector to select the [Analysis] menu.**

3 **Press *UP* and *DOWN* arrow on the omni selector to select [Profile], then press the *Menu/Enter* key. A profile will appear on the screen.**

4 **Moving the profile analysis.**
- Start from Step 1 to set or select a profile analysis.
- Press the *UP*, *DOWN* arrow on the omni selector to move the profile.

Temperature distribution
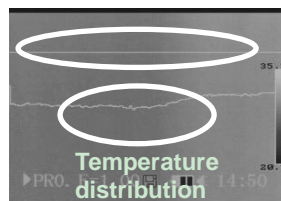
5 **Removing the profile analysis.**
- Start from Step 1 to set or select a profile analysis.
- Press C key to remove the activated profile.

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*E8-N/E80/E8-TN don't have the profile function, so you won't see the [Profile] item in their analysis menu.

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Shooting

Fulfill the Analysis Function

*Isotherm analysis

1 **Press the *MENU/ENTER* key.**

2 **Press the *UPorDOWN* arrow on the omni selector to select the [Analysis] menu.**

3 **Press *UP or DOWN* arrow to select [Isotherm], then press the *Menu/Enter* key. Areas of concern will be highlighted with color.**
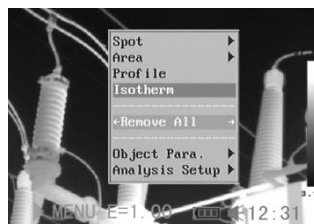
4 **Setting isotherm range.**
- Start from Step 1 to set or select isotherm analysis.
- Press the *UP* or *DOWN* arrow on the omni selector to select isotherm range.
- IL and IH will appear at the bottom right corner. It is the high limit (IH) and low limit (IL) of the isotherm range.
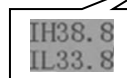
To change isotherm type, isotherm width, isotherm alert and highlight color, see p.41.

*E8-N/E80 doesn't have the isotherm analysis function, so you won't see the[isotherm] item in its analysis menu.

Shooting

Remove analysis tools

This topic briefly explains how to remove analysis tools you place on the screen.

Remove analysis tools

1 **Press the *MENU/ENTER* key.**

2 **Press the *UP or DOWN* arrow on the omni selector to select the [Analysis] menu.**

3 **Press the *UP or DOWN* arrow on the omni selector to select [Remove Spot].**
   - Press the *LEFT* or *RIGHT* arrow on th omni selector to select to remove all the spots/areas/profile or remove all the analysis tools

4 **Press the *MENU/ENTER* key to remove all the spots.**

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You can also delete a single analysis tool by pressing C key after selecting the analysis tool. Please seep43,p45,p46.

Shooting

Saving the Image

You can save the image in the menu system after you freeze an image (p.37), or save it directly by holding the *S* key on the omni selector for 3 seconds without freezing an image.

1 **Press the *MENU/ENTER* key.**

2 **Press the *UP* or *DOWN* arrow on the omni selector to select the [File] menu.**

3 **Press *UP or DOWN* arrow on the omni selector to select [Save], then press the *Menu/Enter* key to save the image.**

The display mode decides the save image type.(p.28)

4 **The name of saving image will be displayed on the screen.**

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The image will be saved in the current folder, p.55.

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Shooting

Attaching Voice Memos to Images

You can introduce an image with voice recording. Only E8-GN has this function.

Voice recording

You can attach up to 30 seconds voice memo to an image.

1 **Install the Bluetooth(optional) headset.**

2 **Freeze an image (p.37), thenpress the *MENU/ENTER* key.**

3 **Press the *UP or DOWN*arrow on the omni selector to select the [File] menu.**

4 **Press *UP or DOWN* arrow on the omni selector to select [Voice REC.], then press the *Menu/Enter* key.**

- The **[Voice Recording]** message will appear on the LCD monitor.

5 **Speak toward the microphone of the headset. To stop recording, press the *C* key.**

6 **Save the image (p.50).**

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The storage capacity of the memory will not decrease when you attach voice comment to an image.

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Shooting

Setting the Trigger

You can set the definable trigger with different function,such as saving image,laser and turning on the illuminator.

Setting definable trigger

1 **Press the *MENU/ENTER* key.**

2 **Press the *UP or DOWN*arrow on the omni selector to select [Lighter On].**

- Press the *LEFT* or *RIGHT*arrow on the omni selector to select *Lighter On*/*Save File*/*Laser On/ Freeze Live.*

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About the function of definable trigger

*Lighting on	You can activate the illuminatorby pressing the trigger. You can get clear visible images in darkness when you turn on the illuminator.
Save File	Save the image by pressing the trigger for 3 seconds.
*Laser on	You can activate the laser pointer by pressing the trigger. Do not trigger the laser pointer in human or animal eyes.Exposure to the laser produced by the laser pointer may damage eyesight.
Freeze/Live	Freeze or activate an image.
Auto adjust	Automatically adjust the brightness and contrast.

*E8-N/E80 is not equipped with laser and illuminator.

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Playback and Erase

Opening Images

You can view and analyze the recorded images on the LCD monitor.
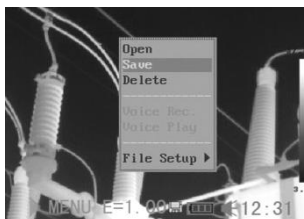
1 **Press the *MENU/ENTER* key.**

2 **Press the *UP or DOWN* arrow on the omni selector to select the [File] menu.**

3 **Press *UP or DOWN* arrow on the omni selector to select [Open], then press the *MENU/ENTER*key.**

4 **Press *LEFT or RIGHT* arrow on the omni selector to select an image，then press *MENU/ENTER* key to open it. How to select an image,refer to(p.54).**

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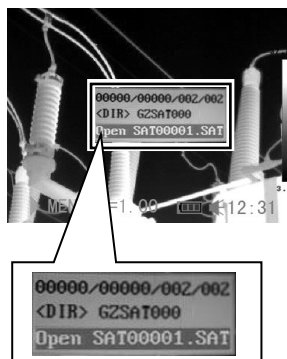
You can analyze and attach voice memo to a recorded image when you open it.

You can press the **A**, **C** and **S** key together to set the folder name to sat00001.

How to select an image

1 After you select **[Open]** or **[Delete]** option under **[File]** menu, a message shown as below will appear in the bottom-left screen.

File amount of current folder

Serial number of current file

Serial number of current folder

```
00001/00003/002/003 —— Folder amount
<DIR>GZSAT001 ——
Open  SAT00001.SAT
```
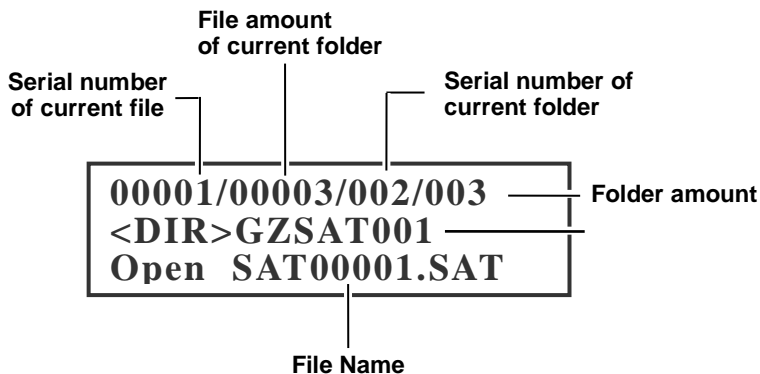
File Name

2 If the image you wish to open or delete is not in the current folder, press the [*LEFT*] or [*RIGHT*]arrow on the omni selector repeatlyto select the image.

3 Press the **S** key, you can activate the image.

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📷 Selectingthe folder and filename

1 Press the *MENU/ENTER* key.

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2 Press the *UP* or *DOWN* arrow on the omni selector to select the [File] menu, then press the *MENU/ENTER* key.

3 Press the *UP* or *DOWN* arrow on the omni selector to select the [File Setup] menu, then press the *MENU/ENTER* key.
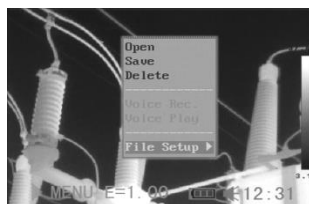
4 Press the *UP* or *DOWN* arrow on the omni selector to select the [Directory Name] menu, then press the *LEFT* or *RIGHT* arrow to select the folder.[File number] is the number of file in current folder.

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5 Press the *UP* or *DOWN* arrow on the omni selector to select the [File Name] menu, then press the *LEFT* or *RIGHT* arrow to select the filename.

Playback and Erase

Playback Memos

You can playback voice comment of an image when you attached a voice comment with it.

1 **Bind the *Bluetoothheadset (optional, p.67).**

2 **Open an image, refer to (p.53).**

3 **Press *MENU/ENTER* key then press *UP* or *DOWN* arrow on the omni selector to select the [File] menu.**

4 **Press *UP* or *DOWN* arrow on the omni selector to select [Voice Play], then press the *Menu/Enter* key.**

- A **[Playing Record]** message will appear on the LCD monitor.
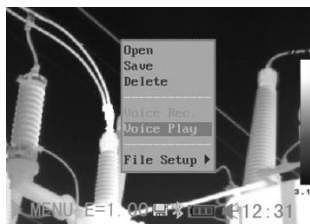
5 **You can terminate the playback of voice comment by pressing the *C* key.**

• • • • • • • • • • • •

*Bluetooth is only for E8-GN

Playback and Erase

Erasing Images

Please note that erased images cannot be recovered.
Exercise caution before erase an image.

1 **Press *MENU/ENTER* key then press *UP* or *DOWN* arrow on the omni selector to select the [File] menu.**
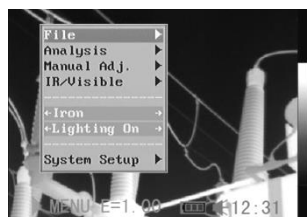
2 **Press *UP* or *DOWN* arrow on the omni selector to select [Delete], then press the *MENU/ENTER* key.**
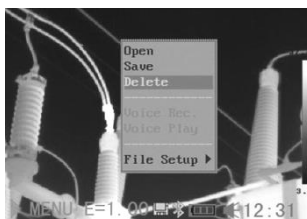
3 **Select an image, refer to (p.54), then press *MENU/ENTER* key to delete the selected image.**

4 **Press the *C* key to exit.**

Download the Images

Download the images via SD card

You can get the SD card out of camera, and download the images to the computer via the supplied SD card reader.

1 **Open the battery / SD card cover.**
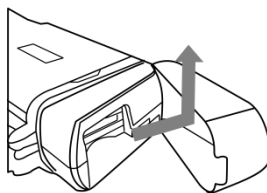
2 **Press the SD card lightly, then the SD card will pop-up automatically.**
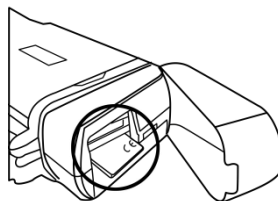
3 **You can download the IR images via the supplied SD card reader.**

Connection and Download

You can transmit real-time IR video and charge the battery, when you connect between IR camera and multi-functional dock.
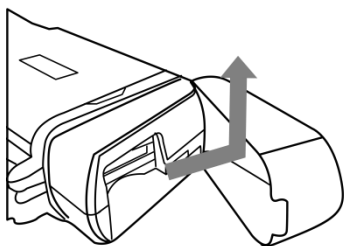
1 **Open the battery/SD card cover in the direction of the arrow.**
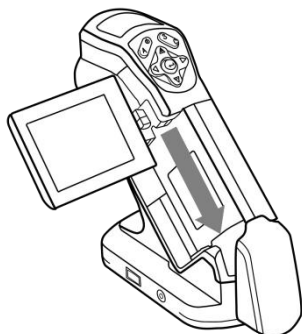
2 **Lay the dock on a horizontal flat, then put the camera on the dock in the direction of the arrow.**

Press the camera gently down to the dock in the direction of the flute in the dock.

3 **Now you can use the multi-functional dock.**

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Connection and Download

Charging via the dock

You can charge the battery via the supplied power adaptor.

1 **Attach power adaptor to the power terminal on the
multi-functional dock.**

2
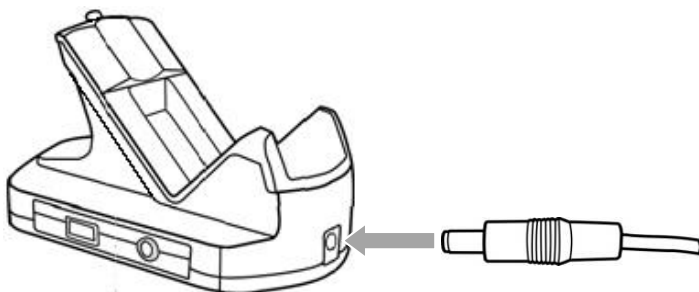
3 **Attach the power cord to the dock and plug the other end into a
power outlet.**

4
- The power LED of camera flickers while the battery pack is charging
  and it lights green when charging is complete.
- Unplug the power adaptor from the power outlet,after charging.

Connection and Download

Connecting to a monitor

A video-compatible monitor connected via the video cable (supplied) can be used to view and analyze images you shoot.
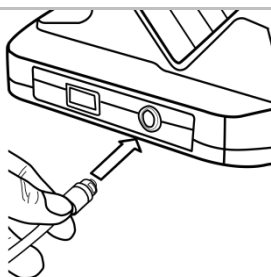
1 Attach video cable to the video out terminal on the multi-functional dock.

2 To the video in jack

Plug the other end of the video cable to the video in jack on the monitor.

Connection and Download

Connection

Connect the USB cable (optional) to the computer's USB port and the multi-functional dock's terminal. Only E8-GN has the USB function.

> • **You do not need to turn off the computer or camera when making this connection.**
> • **Please refer to your computer manual for information regarding the location of the USB port**

USB PORT
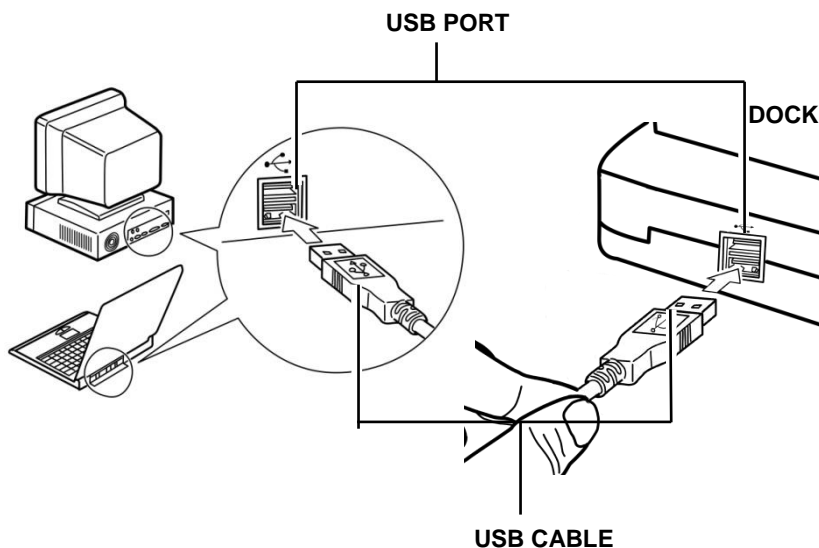
DOCK

USB CABLE

The USB port can only be used with optional real-time software.

Connection and Download

Installing the driver

Attach the supplied USB cable (optional) to the computer's USB port and the USB terminal of the dock, p.59. Set the real-time disk (optional) to the CD-ROM driver.

UsersofWindowsXPProfessionalmustfirstloginasanAdministrator(computersystemadministrator)toinstallprogram.

1	*(i) Found New Hardware* [×] EZ-USB FX2	**After a few moments, the following dialog will appear.**
2	Welcome to the Found New Hardware Wizard	**Select *[No, not this time]* then click *[Next >]*.**
3	This wizard helps you install software for: EZ-USB FX2	**Select *[Install from a list or location (Advanced)]* then click *[Next >]*.**
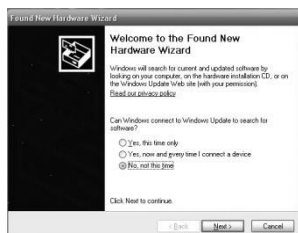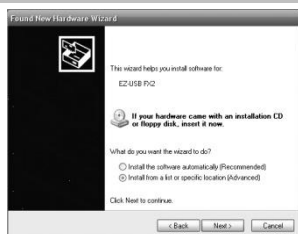
4 Select *[Include this location in the search]* then click *[browse]*. Locate the directory of the driver, and click *[Ok]* to return to the previous window. Then click *[Next>]*.

5 Click *[Continue Anyway]*.

6 Click *[Finish]* to finish the driver installation.

Connection and Download

Transfer Video via USB

You can analyze and save the thermal video in computer directly via the USB by the optional real-time software.

1 **Power on the camera, connect the camera and the dock, p.59.**

2 **Connect the dock and computer via USB cable (optional), p.62.**

3 **The operation system will recognize the camera after install the driver, p.61.**

4 **You can analyze the real-time video, and save it in your computer's disk.**
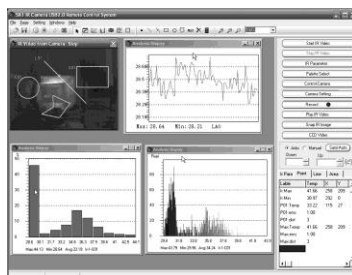
Real-time transfer

Troubles shooting

When you have any problems in the process of connecting the IR camera to a computer to use optional real-time software, check this first.

First,ChecktheFollowing

1. Doesyourcomputercomplywiththeserequirements?
   Ensure thesystemhasabuilt-inUSBportanditcomeswithWindowsXPpreinstalled.
   TheUSBinterfaceisnotsupportedforsystemsnotcomplyingwitheabove conditions.
2. Isthecameracorrectlyconnectedtothecomputer?
   See *Page 62* forconnectioninstructions.
3. Isthebatterychargedsufficiently?
   Youshoulduseahouseholdpowersourcetopowerthecamerawhenitis connectedtoacomputer.

If the Problem Is Not Mentioned Above

If the USB driver is not correctly installed, it is possible that Windows is not recognizing the USB Driver. Please contact your motherboard's manufacturer for the latest driver.

The USB2.0 real-time transmission function may not properly work under some model of motherboard's chipset. In this case, connect the IR camera to another computer which is based on the chipset of Intel configuration or NVidia configuration and try again.

Connection and Download

Use the *Bluetooth headset

Follow the steps to install the Bluetooth headset (optional) first time.

1 **Turn off the camera and Bluetooth headset.**

2 **Turn on the Bluetooth headset first.**
Press and hold the power button about 4 seconds. And then you can see the power indicator begins to blink red and blue. The headset is in pairing status in 90 seconds.

The power button and the power indicator.
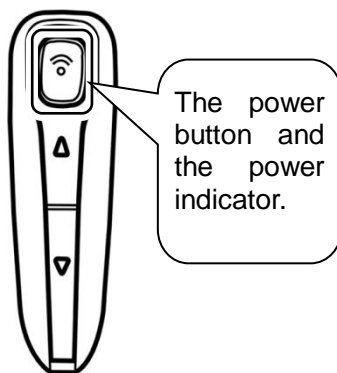
3 **Turn on the camera.**
You can see the green indicator of camera lights and the blue indicator flashes at the same time. In this mode, camera is preparing to pair the Bluetooth headset.

4 **Press the power button of Bluetooth headset to pair the headset and camera.When the pairing is successful,blue indicator of the headset flashes slowly.**
Then you can see the Bluetooth icon $\ast$ **on the middle-bottom screen, p.19.**

Make sure that the camera is not too far from the Bluetooth headset.If possible, try to take the Bluetooth headset closer to the camerain step 4.

5 **After pairing the camera and headset first time. In next time, turn on the headset to check the power indicator blinks blue, and then turn on the camera, you can use it.**

📝 Press *C* key and *Enter* key together to free the Bluetooth headset.

6 **Wear the headset, you can record the vioce memos (p.51) or play back the memos (p.56) now.**

● ● ● ● ● ● ● ● ● ● ● ● ●

⚠ *Bluetooth headset is not the standard accessory of E8-N/E80 and E8-TN. The picture is for reference and the sample is subject to the real product which you will receive.

Accessory

You will see more clearly with sun shield when you are shooting outdoors in the sun.

1
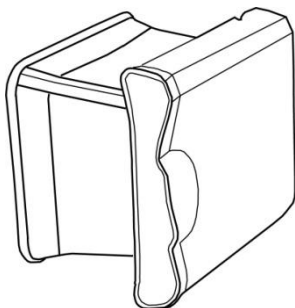
Install the sun shield inthe direction of the arrow by following the below guide.

2
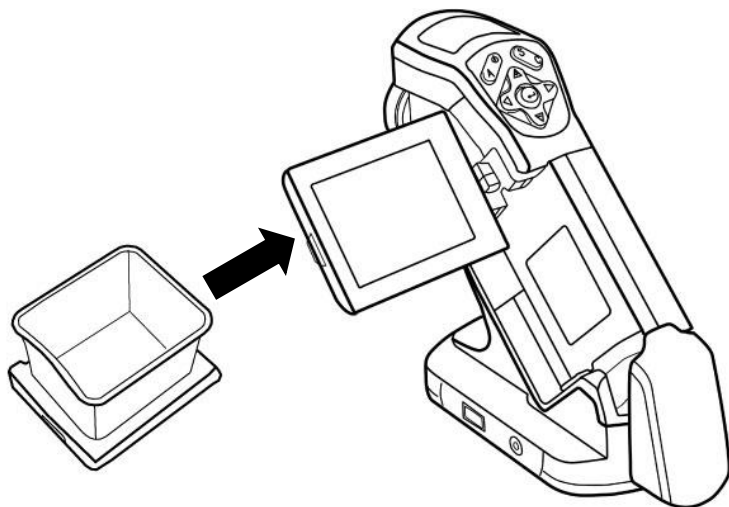
Accessory

Use the optional lens

There are 5 optional lenses for the E8 series. You can change the lens as follow.

1 **Loosen the standard lens, and screw the optional lens as follow.**
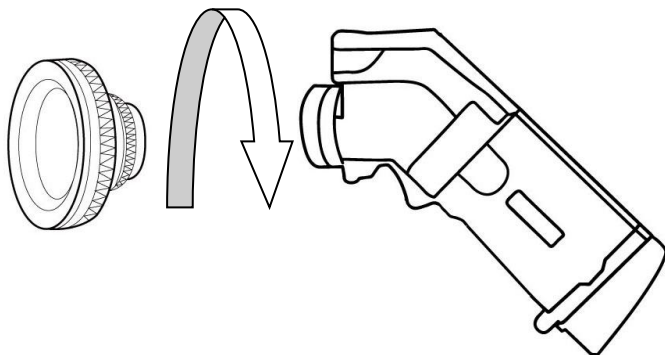
2 **Set up the measurement range. Press UP and Down key on the arrow at the same time to change to type of lens. (p.36).**

Refer to the below table to see what type of lens the letterstands for.
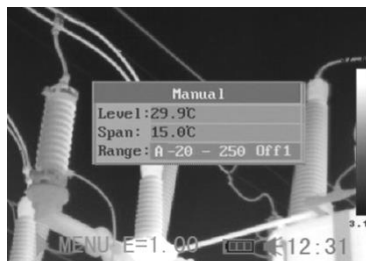
Type	Null	A	B	C	D	E
Lens	20°	12.8°	38°	3.8°	6.4°	9°

Troubles Shooting

Problem	Cause	Solution
Camera will not operate	Power is not turned on	• Turn on the camera. See *Turning the Power On / Off* (p.17).
	Insufficient battery voltage	• Fully charge the battery.
	Poor contact between camera and battery terminals	• Wipe the terminals with a clean, dry cloth.
Camera will not record	Internal memory is full	• If required, download the images to a computer and erase them to make some space.
	Internal memory not formatted correctly	• Format the internal memory in FAT32 format.
Battery pack consumed quickly	Battery pack capacity reduced because of disuse for one year or more after being fully charged.	• Replace the battery pack with a new one.
	Battery life exceeded	• Replace the battery pack with a new one
Battery pack will not charge	Poor contact between battery pack and battery charger.	• Clean the battery terminals with clean cloth. • Connect the power cord to the battery charger and insert its plug firmly into the power outlet.
	Battery life exceeded	• Replace the battery pack with a new one.

Appendix

Camera Care and Maintenance

Use the following procedures to clean the camera body, lens, LCD monitor and other parts.

Camera Body	**Wipe the body clean with soft cloth or eyeglass lens wiper.**
Lens	**First use a lens blower to remove dust and dirt, then remove any remaining dirt by wiping the lens lightly with soft cloth.** • Never use synthetic cleaners on the camera body or lens.
LCD monitor	**Use a lens blower brush to remove dust and dirt. If necessary, gently wipe the LCD monitor with soft cloth or an eyeglass lens wiper to remove stubborn dirt.** • Never rub or press forcefully on the LCD monitor. These actions may damage it or lead to other problems.
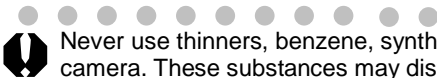
● ● ● ● ● ● ● ● ● ● ● ● ●
Never use thinners, benzene, synthetic cleaners or water to clean the camera. These substances may distort or damage the equipment.

Appendix

Material	Temperature（°C）	Emissivity approximation
Metal		
Aluminum		
Polished aluminum	100	0.09
Commercial aluminum foil	100	0.09
Electrolytic chromeplate alumina	25～600	0.55
Mild alumina	25～600	0.10～0.20
Strong alumina	25～600	0.30～0.40
Brass		
Brass mirror (highly polished)	28	0.03
Brass oxide	200～600	0.61～0.59
Chrome		
Polished chrome	40～1090	0.08～0.36
Copper		
Copper mirror	100	0.05
Strong copper oxide	25	0.078
Cuprous oxide	800～1100	0.66～0.54
Liquid copper	1080～1280	0.16～0.13
Gold		
Gold mirror	230～630	0.02

Appendix

Emissivity table (continue)

Material	Temperature（°C）	Emissivity approximation
Iron		
Polished cast iron	200	0.21
Processed cast iron	20	0.44
Polished tempered iron	40～250	0.28
Polished steel ingot	770～1040	0.52～0.56
Raw welded steel	945～1100	0.52～0.61
Surface ferric oxide	20	0.69
Completely rusty surface	22	0.66
Rolled iron plate	100	0.74
Oxidized steel	198～600	0.64～0.78
Cast iron (Oxidizing at 600°C)	198～600	0.79
Steel (Oxidizing at 600°C)	125～520	0.78～0.82
Electrolytic ferric oxide	500～1200	0.85～0.89
Iron plate	925～1120	0.87～0.95
Cast iron, heavy ferric oxide	25	0.80
Tempered iron, ferric oxide	40～250	0.95
Melting surface	22	0.94
Melting cast iron	1300～1400	0.29
Melting mild steel	1600～1800	0.28
Liquid steel	1500～1650	0.42～0.53
Pure liquid iron	1515～1680	0.42～0.45

Appendix

Emissivity table (continue)

Material	Temperature（°C）	Emissivity approximation
Lead		
Pure lead (Non-oxidization)	125～225	0.06～0.08
Mildly oxidized	25～300	0.20～0.45
Magnesium		
Magnesia	275～825	0.55～0.20
Magnesia	900～1670	0.20
Hg	0～100	0.09～0.12
Nickel		
Electroplate polishing	25	0.05
Electroplate	20	0.01
non-polishing		
Nickel wire	185～1010	0.09～0.19
Nickel plate (oxidized)	198～600	0.37～0.48
Nickel oxide	650～1255	0.59～0.86
Nickel alloy		
Nickel-chrome (heat-resistance) alloy wire (shining)	50～1000	0.65～0.79
Nickel-chrome alloy	50～1040	0.64～0.76
Nickel-chrome (heat resistance)	50～500	0.95～0.98
Nickel-silver alloy	100	0.14
Silver		
Polished silver	100	0.05

Appendix

Emissivity table (continue)

Material	Temperature（°C）	Emissivity approximation
Stainless steel		
18-8	25	0.16
304(8Cr,18Ni)	215～490	0.44～0.36
310(25Cr,20Ni)	215～520	0.90～0.97
Tin		
Commercial tin plate	100	0.07
Strong oxidization	0～200	0.60
Zinc		
Oxidizing at 400°C	400	0.01
galvanized shining iron plate	28	0.23
Ash zinc oxide	25	0.28
Non-metal materials		
Brick	1100	0.75
Fire brick	1100	0.75
Graphite (lamp black)	96～225	0.95
Porcelain enamel (white)	18	0.90
Asphaltum	0～200	0.85
Glass (surface)	23	0.94
Heat-resistance glass	200～540	0.85～0.95
Calcimine	20	0.90
Oak	20	0.90

Appendix

Material	Temperature（°C）	Emissivity approximation
Carbon piece		0.85
Isolation piece		0.91～0.94
Sheet metal		0.88～0.90
Glass pipe		0.90
Loop type		0.87
Porcelain enamel products		0.90
Porcelain enamel designs		0.83～0.95
Solid materials		0.80～0.93
Ceramics (vase type)		0.90
Film		0.90～0.93
Mica		0.94～0.95
Flume mica		0.90～0.93
Glass		0.91～0.92
Semiconductor		0.80～0.90
Transistor (plastics sealed)		0.30～0.40
Transistor (metal) Diode		0.89～0.90
Transmitting loop		
Pulse transmission		0.91～0.92
Level chalkiness layer		0.88～0.93
Top loop		0.91～0.92

Appendix

Emissivity table (continue)

Material	Temperature（°C）	Emissivity approximation
Electric materials		
Epoxy glass plate		0.86
Epoxy hydroxybenzene plate		0.80
Gilded sheet copper		0.30
Solder-coated copper		0.35
Tin-coated lead wire		0.28
Brass wires		0.87～0.88
Block talcum terminal		0.87

Specification

All data is based on SDS's testing standard. Subject to change without notice.

Model	E8-N	E8-TN	E8-GN
ImagingPerformance			
Field Of View/Mini. Focus Distance	20° x15°/0.1m		
Thermal Sensitivity(N.E.T.D)	0.1°C@30°C		
Detector Type	Focal Plane Array (FPA), uncooled microbolometer		
IR Resolution	160 x120		
Spectral Range	8-14um		
Focus Mechanism	Manual Focusing		
I.F.O.V(With Standard Lens)	2.2 mrad		
Image Presentation			
Image Modes	Thermal	Thermal/Visible /DuoVision	Thermal/Visible /DuoVision
Fusion	No	Yes	Yes
Image Annotation	No	No	Voice Annotation
Display	2.5" TFT Screen		
Visible Light Camera Resolution	640 x 480 Full-color		
Measurement			
Temperature Range	-20°C~250 °C		
Accuracy	±2°C Or ±2% Of Reading		
Measurement Modes /Analysis tools	1 movable spot, auto hot/cold spot, △t	4 movable spots, auto hot/cold spot, isotherm, △t	9 movable spots, auto hot/cold spot,profile, area box, isotherm, △t
Temperature Alarms	No	Yes	Yes
Set-up Controls	Language/Date And Time Format/Palettes/Units		
Measurement Corrections	Ambient Temperature/EmissivityCorrection/ Distance/ Humidity		

Storage			
Storage Type/Capacity	SD Card/2 GB Removable, Up to 16G		
Formats	.SAT	.SAT/.CCD	
Laser Pointer/Illuminator			
Classification/Type	No	Class 2,1mW/ 635 nm (red)	Class 2,1mW/ 635 nm (red)
Illuminator	No	Yes	Yes
Power Source			
Battery Type/Operating Time	Rechargeable Lithium-Ion Battery/Approximately 3 Hours		
AC adaptor	8V-11V Output to Camera		
Power Management	Sleep Mode		
Environmental			
Operating Temperature	-15°C to +50°C (5°F to 122°F)		
Storage Temperature Range	-40°C to +70°C (-40°F to +158°F)		
Humidity	95% relative humidity +25°C to +40°C (+77°F to +104°F) non condensing		
Encapsulation	IP54		
Shock/Vibration	25G/2G		
Physical Characteristics			
Weight	Less than 500g(Battery included)		
Dimensions	172mm x 80mm x 162mm		
Interfaces			
USB (Cable included)	No	No	Yes
Video Output	NTSC/PAL		
Bluetooth Earphone	No	No	Yes
Tripod mounting	1/4"_20		
Software			
SatIrReport	Standard Version		
Optional Lens			
38 degree wide angle Lens	Yes		
12 degree Lens	Yes		
6 degree lens	Yes		
3.8 degree lens	Yes		

Manufacturer Contact Infomation

Manufacturer Information

SATIR Europe (Ireland) Co. Ltd
Marley's Business Park
Marley's Lane
Drogheda
Co. Louth
Ireland

TEL: **+353 (0)41 9844371**
URL: www.satir.com
E-Mail: **service@satir.com**