



User Manual

950A,B

Thumb Index

Introduction of camera components and battery loading.

Preparing the IR Camera

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

Basic function

Describes some of the advanced features, such as use the camera's various analysis tools and turning on/off laser pointer etc

Shooting

Explains how to save images and review recorded images.

Playback

Explains how to transfer images to a computer.

Download

Explains how to use the monitor for shooting and playback images.

Connection

Table of Contents

Read This First.....	5
Component Guide.....	10
Front View	10
Bottom/ Dock (optional).....	11
Preparing the IR Camera.....	13
Charging the Battery Pack.....	13
Installing the Battery Pack / SD Card.....	14
Turning the Power On/ Off.....	16
Checking the Information.....	17
Enter NULL mode.....	18
Setting the Date/ Time.....	19
Mode Settings.....	20
Basic Functions.....	21
Using the LCD Monitor.....	21
Selecting Menus and Settings.....	22
Resetting the Setting to Default.....	24
Shooting.....	25
IR Camera Adjustment.....	25
Focus.....	25
Manual Focus.....	25
Image Adjustment.....	26
Auto Adjust.....	26
Manual Adjustment.....	26
Palette settings.....	26
Freezing/ Activating an Image.....	27
Object/Ambient parameter and Alert	28
Setting Analysis Tools.....	30
Spot Analysis.....	30
Saving/Playback Images.....	32
Saving Images.....	32
Playback images.....	32
Download the Images.....	35
Download via SD Card.....	35
Connecting and Download.....	36
Connecting to the dock.....	36
Charging via the dock	37

Connecting to a Monitor.....	38
Accessory.....	39
Troubles Shooting.....	40
Appendix.....	41
Use the optional lens.....	41
Camera Care and Maintenance.....	42
Emissivity table.....	43
Specifications.....	48

Read This First

Please Read

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 HOLDPEAK, 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.



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 in 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

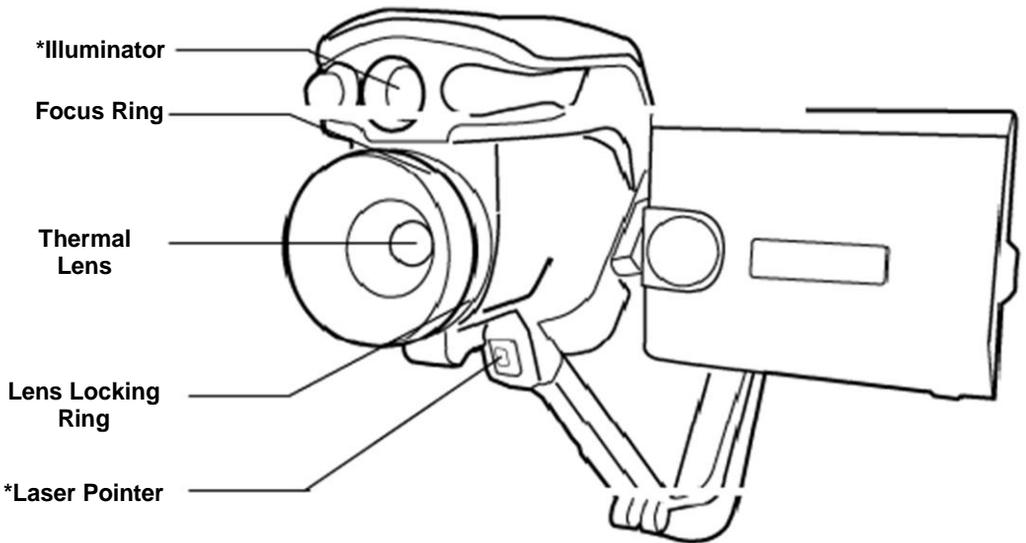
Some advanced functions are included only in E8-TN and E8-GN, E8-N only has the fundamental function

Right Reserved

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

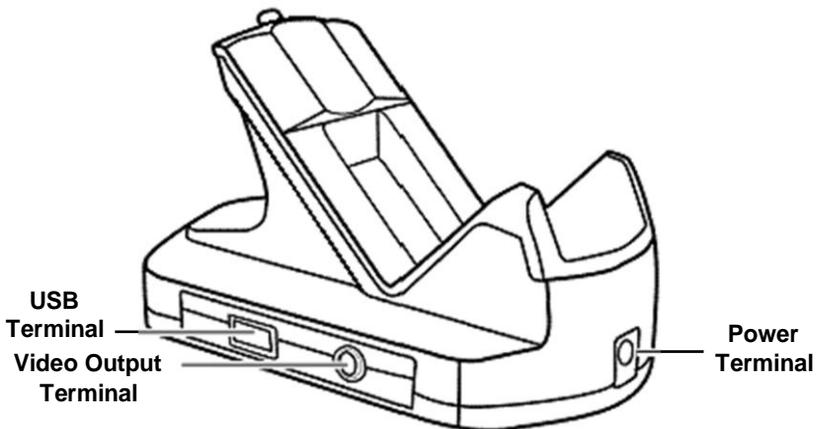
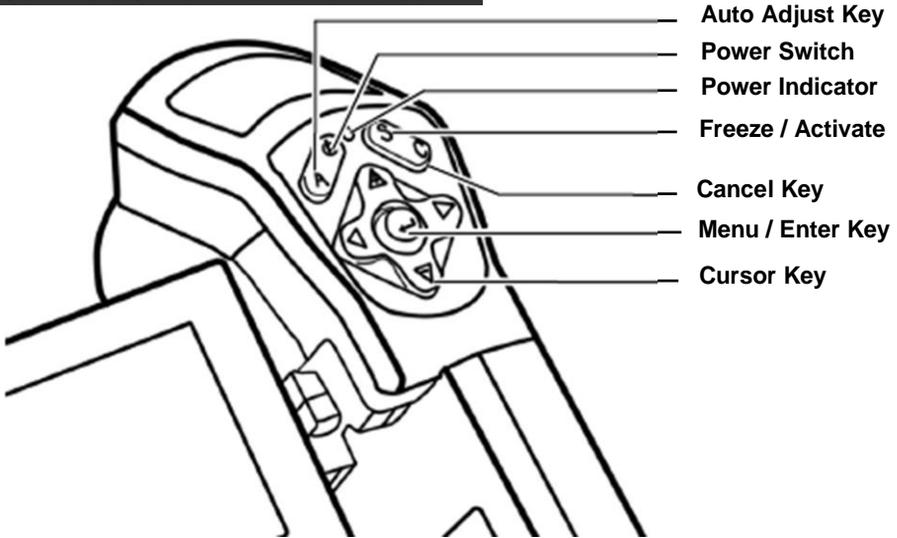
Component Guide

Front View



Component Guide

Controls / Multi-function Dock



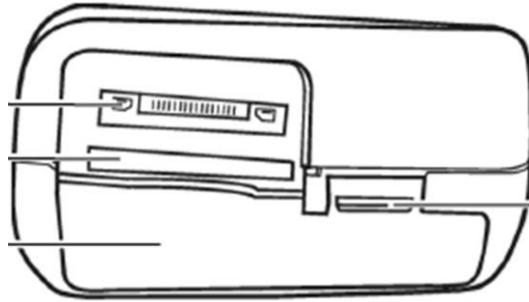
Component Guide

Bottom / Connectors

Multi connector

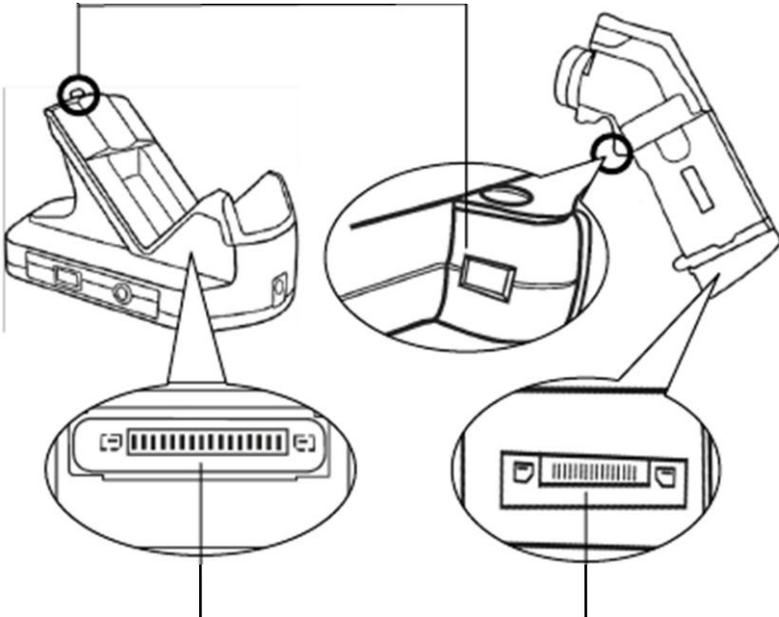
SD Card Slot

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 time and 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.



- 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.

Preparing the IR Camera

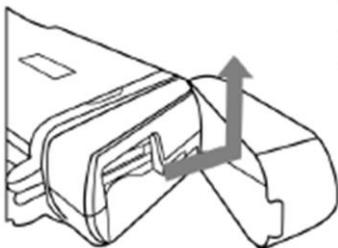
Installing the Battery Pack / SD Card

Install Battery Pack into the camera as following,



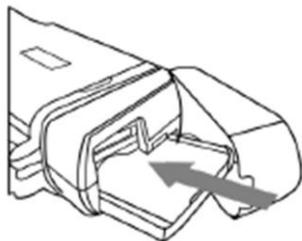
Charge the battery pack before using it for the first time.

1



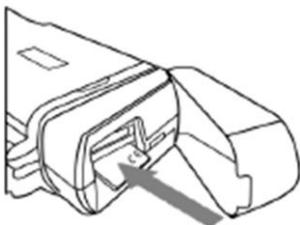
Check if the power is off and slide the battery cover in the direction of the arrow.

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 and Hold the Camera Correctly

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

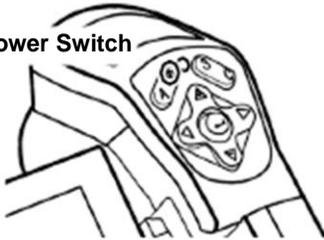
1



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.

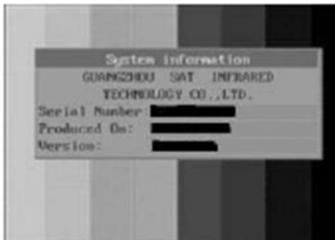
2

Power Switch



Press and hold the power switch for 3 seconds. the power indicator will light green.

3



After a while, a startup image will appear on the screen.

4

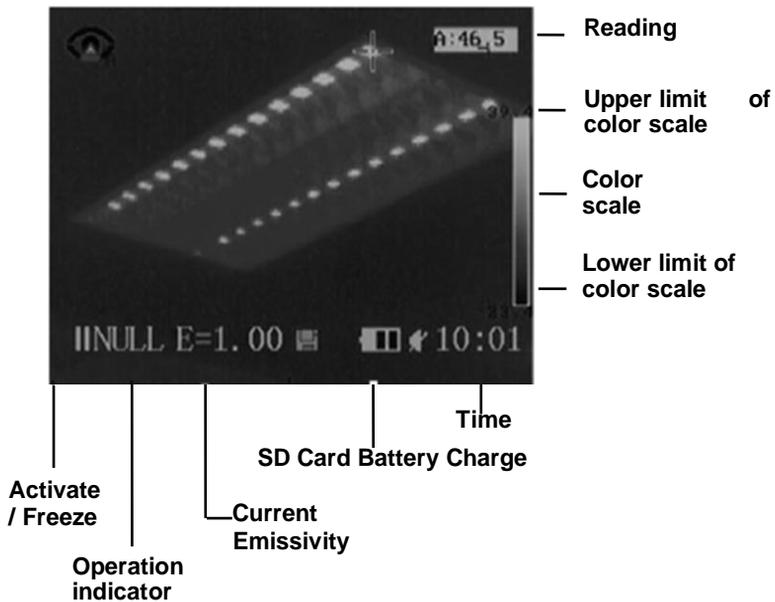
Turn off the camera.

Hold the power switch for 3 seconds, The power indicator goes off.

Preparing the IR Camera

Checking the Information on the LCD Monitor

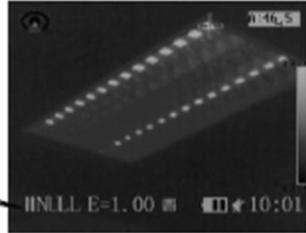
The LCD monitor has a field of vision of 100% of the actual shooting image.
The following displays in information view.



About the operation indicator

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

Status of the camera



Status of the camera	Menu	Represents the menu mode.
	Null	Represents the non-menu mode and no analysis tools is selected.
	SP1	Represents the current analysis tool is spot 1
	CAP.	Represents the current analysis tool is auto-tracking spot.
	E	Current Emissivity value
		SD card has been inserted.



How to enter [Null] mode:

Press the **C** key repeatedly until see the message of null in the operation Indicator

If you select menu, except submenu of [Analysis], you can press MENU/ENTER key to close the menu window.

Preparing the IR Camera

Setting the date and time

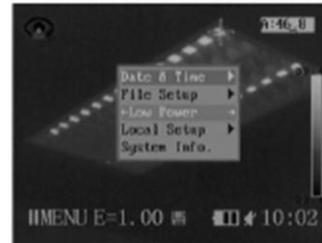
You need to set the Data / Time when the IR camera is turned on for the first time.

1 Make sure that the IR camera is in null mode.(p.18)

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

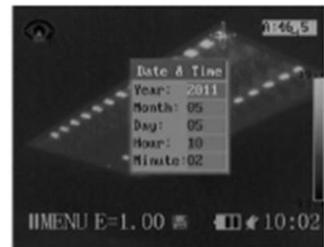


3 Press the **UP** or **DOWN** arrow on the omni selector to select **[Date & Time]** then press the **MENU/ENTER** key.



4 Setting Date and Time

- Press the **UP** or **DOWN** arrow on the omni selector to select an item 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.

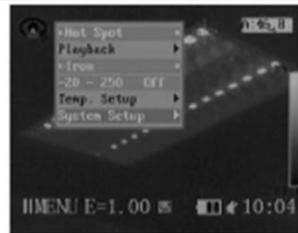
Preparing the IR Camera

Mode Settings

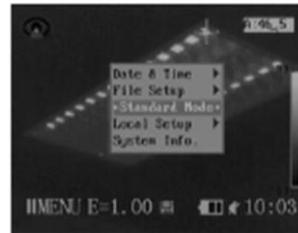
In this menu item, you can display style of the built-in menu system.

1 Make sure that the IR camera is in null mode.(p.18)

- 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 *LEFT* or *RIGHT* arrow on the omni selector to select [Standard Mode] or [Low Power]



The default is the Low Power mode. Low Power mode: continuous operation does not turn off automatically 30 seconds LCD display, for 5 minutes without operating automatic shutdown.

Basic Functions

Using the LCD Monitor

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 Hold the thermal camera and open the LCD at 90°, then turn it to the best angle for observation**



-
- 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.

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.

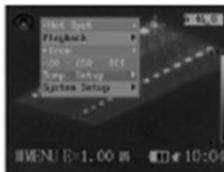
→ **1 Menu** → **2** Select a function item using



Playback

Temp. Setup

System Setup

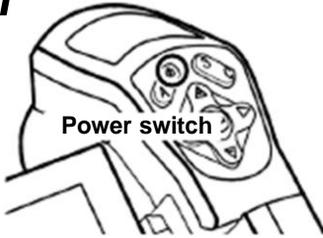


Basic Functions

Resetting the Settings to Default

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

1



Turn off the IR camera. (p.16)

2



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



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

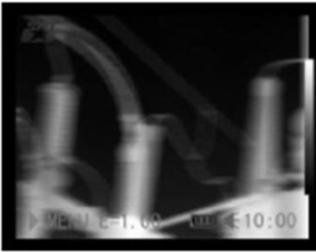
Shooting

IR Camera Adjustment

Manually Focus

1 Check that the IR camera is in null mode.(p.18)

2



Aim that the IR camera at the subject.

3



Turn the focus ring to focus on the target.

4



Do not stop turning until the image is clear.

Shooting

IR Camera Adjustment

Image adjustment

Auto adjust

The IR camera will automatically adjust the brightness and / or contrast and calibrate when you press the **A** key .

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 Up and Down arrow to change the span, and press Left and Right arrow to change the level.

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.

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

Shooting

IR Camera Adjustment

Freezing / Activating an image

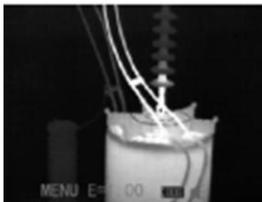
You can activate / freeze a thermal image by pressing the **S** key on the keypad.

1 Check that the IR camera is in null mode.

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



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



Shooting

Fulfill the Analysis Function

Object、 Ambient parameter and Alert

1 Press the *MENU/ENTER* key.

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



3 Setting analysis parameter.

- Press the *UP* or *DOWN* arrow on the omni selector to select an item to change.
- Press the *LEFT* or *RIGHT* 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.



About the analysis 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.
Alert Temp	Set item "alert" as [on], and "Capture spot " as [maximum], 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. On the contrary if set "Capture spot" as [minimum and the 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.]
Alert switch	Set item "alert" on or off.

Shooting

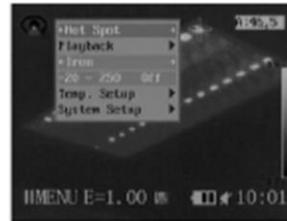
Fulfill the Analysis Function

Setting analysis tools

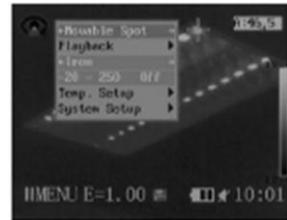
This topic briefly explains how to set the analysis tools on the thermal image.

Spot analysis

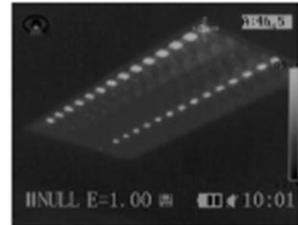
- 1 Press the *MENU/ENTER* key.
- 2 Press the *UP* or *DOWN* arrow on the omni selector to select the top line of the menu, there are four options which are [Movable Spot] [Vision only] [Hot Spot] [Cold Spot].select the desired item and press *MENU/ENTER* key.



- 3 Select [Movable Spot] and press *MENU/ENTER* key , then Press the *UP ,DOWN ,LEFT , RIGHT* arrow on the omni selector to move the activated spot. Temperature reading of the spot changes in real-time.



- 4 Select [Hot Spot] or [Cold Spot] then press *MENU/ENTER* key the camera will automatically track the hottest and coldest temperature spot



1. Select [Vision Only], press the *MENU/ENTER* key, the spot and corresponding temperature in the screen will be removed.
2. You can do fixed-point analysis by turning on the laser pointer.

Shooting

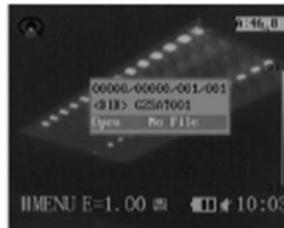
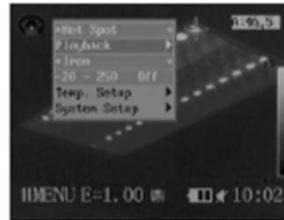
Saving/Playback the Image

Saving image

You can save the image in the menu system after you freeze an image (p.34), or save it directly by holding the **S** key on the omni selector for 3 seconds without freezing an image.

Playback image

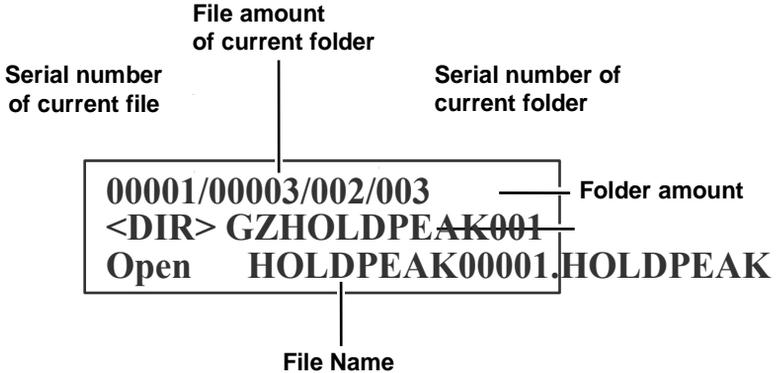
- 1** Press the *MENU/ENTER* key.
- 2** Press *UP* or *DOWN* arrow on the omni selector to select [Playback], then press the *MENU/ENTER* key to save the image.
- 3** Press *UP,DOWN,LEFT,RIGHT*, on the selector to select an image, then press *MENU/ENTER* key to open it.





How to select an image

- 1 After you opening an image, a message shown as below will appear in the bottom-left screen.



- 2 If the image you wish to open or delete is not in the current folder, press the **UP** or **DOWN** arrow on the omni selector repeatedly to select the image.
- 3 Press the C key, then press the S key, you can activate the image.



Selecting the folder and filename

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 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.

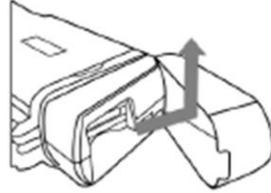


Download the Images

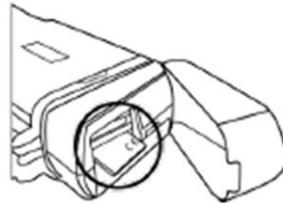
Download the images via SD card

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 cover.



- 2** Press the SD card lightly, then the SD card will pop-up automatically.



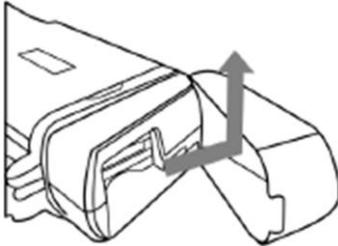
- 3** You can download the IR images via the supplied SD card reader.

Connection and Download

Connecting the dock

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 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

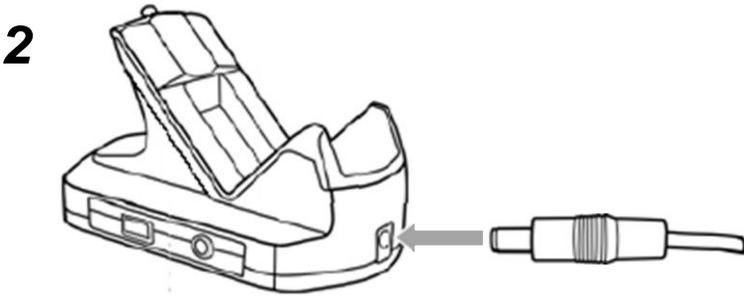
Now you can use the multi-functional dock.

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.



- 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.



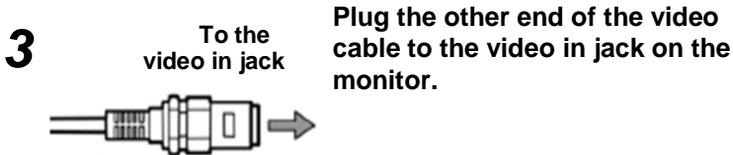
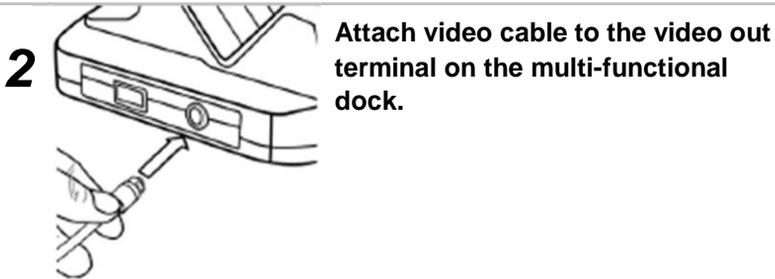
It's better to charge the battery by the battery charger. (p.13)

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 Shut down the camera



4 Turn on the camera's power

Accessory

Use the sun shield (Optional)

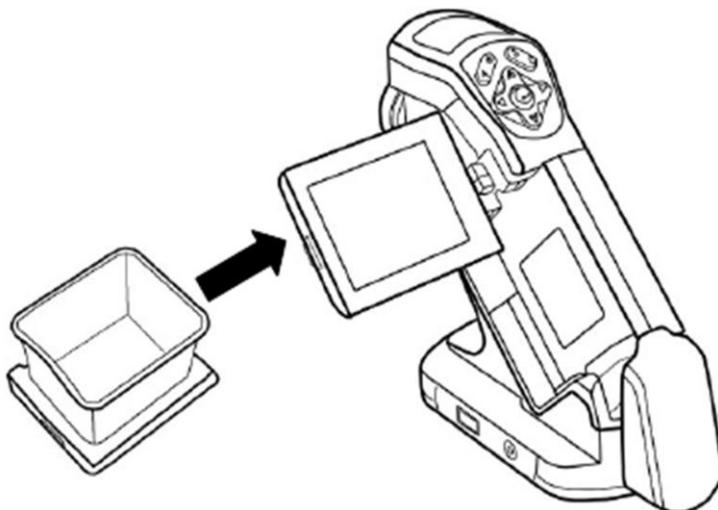
You will see more clearly with sun shield when you are shooting outdoors in the sun..

1



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

2



Troubles Shooting

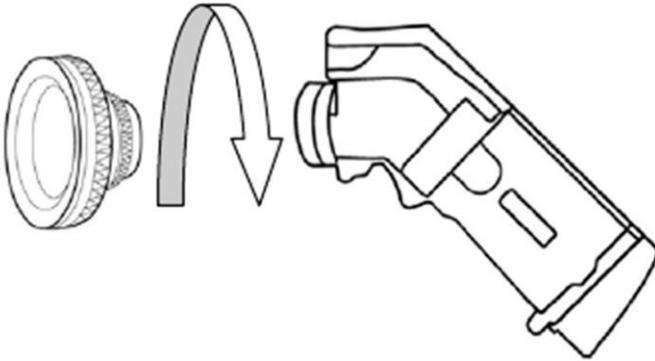
Problem	Cause	Solution
Camera will not operate	Power is not turned on	<ul style="list-style-type: none"> Turn on the camera. See <i>Turning the Power On / Off</i> (p.16).
	Insufficient battery voltage	<ul style="list-style-type: none"> Fully charge the battery (p.13).
	Poor contact between camera and battery terminals	<ul style="list-style-type: none"> Wipe the terminals with a clean, dry cloth.
Camera will not record	Internal memory is full	<ul style="list-style-type: none"> Insert new internal memory If required, download the images to a computer and erase them to make some space.
	Internal memory not formatted correctly	<ul style="list-style-type: none"> Format the internal memory in FAT32 format. Replace the internal memory with a new one, if the internal memory still can't work
Battery pack consumed quickly	Battery pack capacity reduced because of disuse for one year or more after being fully charged.	<ul style="list-style-type: none"> Replace the battery pack with a new one.
	Battery life exceeded	<ul style="list-style-type: none"> Replace the battery pack with a new one
Battery pack will not charge	Poor contact between battery pack and battery charger.	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Replace the battery pack with a new one.

Accessory

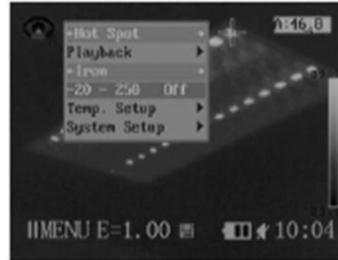
Use the optional lens

There are 3 optional lenses. You can change the lens as follow.

- 1** Loosen the standard lens, and screw the optional lens as follow.



- 2** Press UP and Down key on the arrow at the same time to change to type of lens. Refer to the below table to see what type of lens the letter stands for, then press LEFT or RIGHT key to set up the measurement range



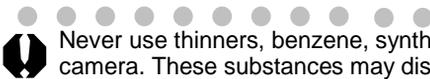
Type	Null	A	B	D
Lens	20°	12.8°	38°	6.4°

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. <ul style="list-style-type: none">▪ 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. <ul style="list-style-type: none">▪ 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

Emissivity table

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

Emissivity table (continue)

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 HOLDPEAK's testing standard. Subject to change without notice.

MinIR specification		
Type	950A	950B
Image performance		
FOV/Min.focus distance	10°x7.5°/0.1m	12.5°x9.4°/0.1m
Thermal sensitivity	0.08°C@30°C	
Detector type	UFPA	
Resolution	80x60	100x80
Spectral range	8-14um	
Focus	Manual	
Spatial resolution	2.2mrad	2.2mrad
Image presentation		
Image mode	IR Only	
LCD Display	2.5" TFT screen	
Temperature measurement		
Measurement range	-20°C~250 °C	
Accuracy	±2°C, ±2% of readings	
Measurement mode	fixed center spot, auto hot/cold spot	
Setting	time/ Pseudo color	
Correction	Emissivity, ambient temperature, distance, relative humidity	
Image storage		
Type	Removable 2 GB SD, up to 16G	
File format	.MIR	
Battery system		
Battery type / working time	Rechargeable lithium batteries / 3 hours	
Working voltage	DC 8V-11V	
Power-saving mode	Sleep mode	
Environment specification		
Operating temperature range	-15°C to +50°C	

Storage temperature range	-40°C to +70°C
Humidity	95%, non-condensing
Encapsulation	IP54
Shock / Vibration	25G/2G
Physical characteristic	
Weight	<500g (With battery)
Size	172mm x 80mm x 162mm
Software	
MiniReport	Standard Version



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