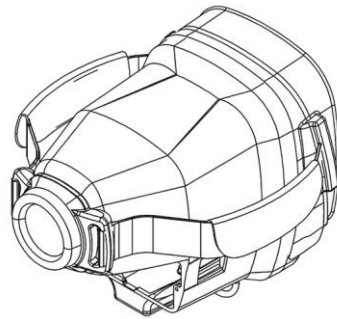


SD1000



K1000

Operating Manual

ENGLISH

K70 POM 001 A-2

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1.0 Introduction

1.1 About Your Product

Thank you for purchasing your brand new, high-specification thermal imaging product from Infrared Systems Group Ltd. Your product has been designed and manufactured in our technical facility, where it has been tested to meet the requirements of the ISO 9001 quality standards.

All information provided in this and any other documentation enclosed with your product is correct at time of going to print and is subject to change without notification. For the purposes of these documents, Infrared Systems Group Ltd. is sometimes referred to as 'ISG INFRASYS'. ISG Infrasy is a trading name of Infrared Systems Group Ltd.

These documents use an 'SD' variant product to depict it's usage and operation. This may differ from your purchased product, however the functionality is exactly the same, unless otherwise stated.

We strongly recommend that you read through the Regulatory Information in the next section of this Operating Manual prior to using your thermal imaging product for the first time.

1.2 More Information

Should you have any queries with regard to this or any other ISG INFRASYS thermal imaging product, please contact our Customer Services team:



Infrared Systems Group Ltd.
Unit 14
Repton Court
Repton Close
Basildon
Essex
SS13 1LN
United Kingdom



+44 (0) 1268 52 77 00



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info@isgfire.co.uk



www.isgfire.co.uk

2.0 Regulatory Information

2.1 Declaration of Conformity

The EC Declaration of Conformity for your model of ISG INFRASYS thermal imager is supplied as a separate document on your Product Documents CD-ROM.

Safe Disposal

This symbol indicates the requirement for a separate waste collection for electronic equipment, batteries and accumulators. All ISG INFRASYS products displaying this symbol must be disposed of or recycled in accordance with EU Directives 2002/96/EC (WEEE) and 2006/66/EC (batteries).



This procedure is described as follows:

Upon reaching the end of its useful life, the thermal imager must be returned to Infrared Systems Group Ltd. in the United Kingdom for suitable disposal under the WEEE directives. ISG INFRASYS will arrange collection at our expense, when notified that the item is no longer required.

Accessory items requiring safe disposal, including battery packs, can be disposed of locally under the regulatory directives of your local authority.

Export Obligations

The technology utilised in ISG INFRASYS thermal imagers is subject to export control regulation by the Government of the UK. Where an export licence applies, once obtained by ISG INFRASYS on behalf of the customer, all parties must strictly adhere to the terms and conditions pertaining to that licence. Otherwise, ISG INFRASYS's authorisation to provide maintenance and further support may be suspended or withdrawn and criminal charges may result against both ISG INFRASYS and the customer.

Where an export licence applies, a copy of the specific terms and conditions pertaining to this licence is enclosed with your product – all users are encouraged to become familiar with them. As an indicative (but not exhaustive) guide, your ISG INFRASYS thermal imager's End User Licence Standard Conditions are reproduced in the next section.

2.2 End User Licence Standard Conditions

- 1) This ISG INFRASYS thermal imager, (the "item"), is licensed by the UK Department for Business, Enterprise & Regulatory Reform for export to Fire, Search and Rescue end users only, solely for use in firefighting, search and rescue operations within the sovereign state of the end user to whom it is originally exported. The export licence document, including all its terms and conditions, carries the force of law under the jurisdiction of the United Kingdom.
- 2) The end-user must maintain the item in their possession at all times and is responsible for its security against theft, loss, unauthorised access or use.
- 3) No loan or temporary surrender of the item is authorised.
- 4) No resale, donation, transfer or disposal by other means of the item is authorised. Therefore, when the item reaches the end of its service life, it must be returned to Infrared Systems Group Ltd. ISG INFRASYS will arrange collection at our expense, when notified that the item is no longer required.

- 5) Maintenance of the item is limited to routine preventative maintenance and installation of field replacement parts only. Disassembly and/or repair of electrical/mechanical assemblies must only be performed by the manufacturer's designated service centres.
- 6) Sale, resale or loan of the item for temporary purposes such as demonstration, rental or lease equipment is prohibited.
- 7) If the item is lost, stolen or destroyed, or unauthorised people have access to it, this must be reported to Infrared Systems Group Ltd. within 21 days. The report must include a description of the incident, to include as appropriate:
 - Who had physical possession of the item
 - What is being done to recover the item
 - Police incident report number
 - Steps taken to prevent another such event
 - If unauthorised personnel had access to the item, who allowed this and what has been done to avoid recurrence
- 8) The end-user must provide a letter of acknowledgement and acceptance of the export licence to ISG INFRASYS prior to shipment of the item.

2.3 Safety Warnings and Exclusions

All users of ISG INFRASYS thermal imagers must read the following safety warnings and exclusions carefully.

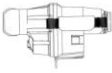
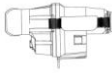
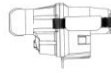















- 1) ISG INFRASYS thermal imagers must only be used by personnel familiar with the usage and limitations of a thermal imaging device, including a general understanding of thermal images and how they are interpreted. It is recommended that the user has gained experience with its usage in simulated emergency conditions, such as a controlled live burn situation. Usage of the ISG INFRASYS thermal imager by unauthorised, unfamiliar or untrained users in a hazardous atmosphere may result in injury or death.
- 2) The ISG INFRASYS thermal imager is not life support equipment and should not be used as such.
- 3) The ISG INFRASYS thermal imager provides a thermal image in normal vision-impairing conditions and is designed to augment any of your existing Standard Operating Procedures. Failure to follow Standard Operating Procedures in a hazardous atmosphere may result in disorientation, injury or death, in the unlikely event that the equipment should fail.
- 4) Always perform a visual check on the equipment prior to use to validate that it has not been damaged or degraded.
- 5) Never use the ISG INFRASYS thermal imager as the sole source of navigation. If system failure occurs, you may become disoriented or lost in a hostile environment, which could result in injury or death.
- 6) The ISG INFRASYS thermal imager is a complex, electro-optical piece of equipment and, just like any other piece of machinery or electronic system, is subject to potential failures. Should a failure occur, the user will no longer have access to the thermal images provided by the thermal imager. Tactical usage of this equipment must not deviate from Standard Operating Procedures used by personnel who do not have the benefit of the equipment.

- 7) While every effort has been made to ensure that your ISG INFRASYS thermal imager is both tough and reliable, the thermal imager is a sophisticated electro-optical system that will fail if it is abused or exposed to environments beyond its design envelope.
- 8) Repeated exposure to high temperature environments without adequate periods for the unit to self-cool may result in degradation or loss of the thermal image, or damage to the internal components. Be sure to allow adequate cool-down periods between high temperature exposures.
- 9) The ISG INFRASYS thermal imager will not provide images through glass, water, or shiny objects. These surfaces act like reflective mirrors to the system.
- 10) The ISG INFRASYS thermal imager will not provide thermal images underwater.
- 11) Batteries supplied with the ISG INFRASYS thermal imager have been selected for specific performance values. Replacement batteries must be obtained ONLY from an authorised ISG INFRASYS service centre. In addition:
 - Never try to dispose of the battery pack by burning or through exposure to a heating device such as a microwave oven – it could explode and cause injury.
 - Never try to disassemble, repair or otherwise tamper with a battery pack.
 - Never short-circuit the battery pack by contacting the terminals with a metal object.
 - Never puncture the battery pack with a sharp object or strike with a hammer or other object.
- 12) Users should be conscious of the battery life. Only enter a hazardous environment when a full battery charge is indicated on the battery charge indicator.
- 13) Failure to exit a hostile environment immediately on observation of the low battery warning may result in system failure in a hostile environment, which could result in injury or death.
- 14) The ISG INFRASYS thermal imager is not rated as "Intrinsically Safe". Do not use the system in environments or atmospheres where static or a spark could cause explosion.
- 15) The ISG INFRASYS thermal imager must be serviced only by authorised personnel. The thermal imager contains high voltage components and therefore, the user should never remove the cover due to risk of shock.

3.0 Getting Started

3.1 Checking the Accessory Kit







Dependant on your order, your thermal imager is supplied with one of the accessory kits detailed below. We recommend that you regularly check that each standard accessory is accounted for, and is in good working order prior to use.

Kit 1		X1	✓	Kit 2		X1	✓	Kit 3		X1	✓
		X2	✓			X2	✓			X2	✓
		X1	✓			X1	✓			X1	✓
		X1	✓			X1	✓			X1	✓
		X1	✓			X1	✓			X1	✓
		X1	✓			X1	✓			X1	✓

If you would like more information on any of our standard accessories, please visit our website at www.isgfire.co.uk.

3.2 Optional Accessories

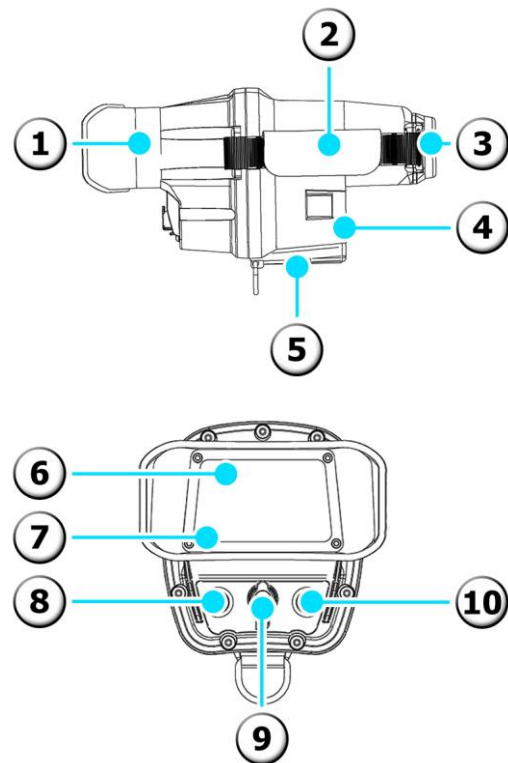
Dependant on your order, you may also have some of the following optional accessories included in your accessory kit. We recommend that you regularly check that each optional accessory is accounted for, and is in good working order prior to use.

	Optional		Optional		Optional
	Optional		Optional		Optional

If you would like more information on any of our optional accessories, please visit our website at www.isgfire.co.uk.

3.3 Understanding the Parts and Controls

- 1) Universal Viewing System (not available on 'K' models)
- 2) Hand straps and pads
- 3) Lens window
- 4) Battery compartment (including battery contacts, and thermal imager identification and warning label)
- 5) Mounting bracket and lanyard 'D' ring
- 6) LCD Display
- 7) Power LED
- 8) Power / Zoom button (red)
- 9) Multi-port connector and dust cover
- 10) Capture / Menu button (yellow)



3.4 Charging the Battery

i Information

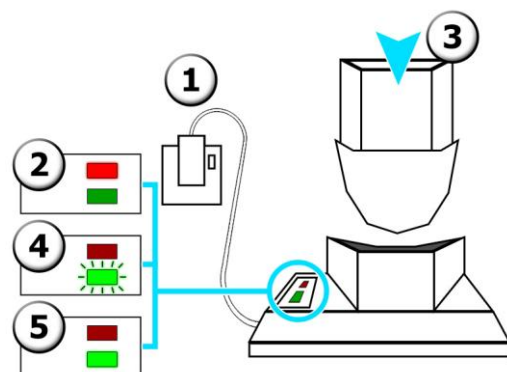
All batteries are fully charged on leaving the factory and are ready for immediate use.

! WARNING

Do not expose the battery charger unit and/or power adapter to rain or moisture.
 Do not attempt to use a charging device to charge a non-ISG INFRASYS approved battery.
 For instructions on how to install your charging device (excluding the Desktop Charger), please refer to the installation guide enclosed with the device.
 Always check the charging device is in good working order before each use.

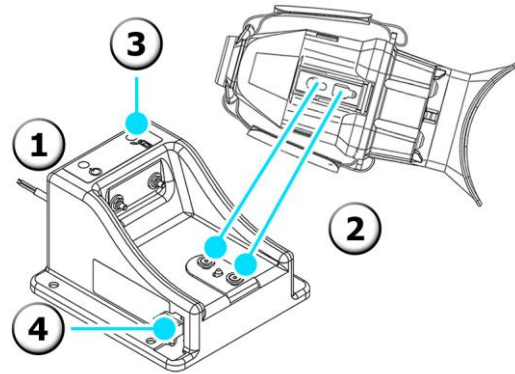
Using a Desktop Charger

- 1) Connect the mains adaptor to the charger, then connect to a mains power outlet and switch on the power.
- 2) Red LED will flash to signify the charger is in 'Standby Mode'.
- 3) Insert the battery into the charger.
- 4) Green LED will flash to signify the battery is charging.
- 5) Green LED will light continuously to signify the battery is fully charged.



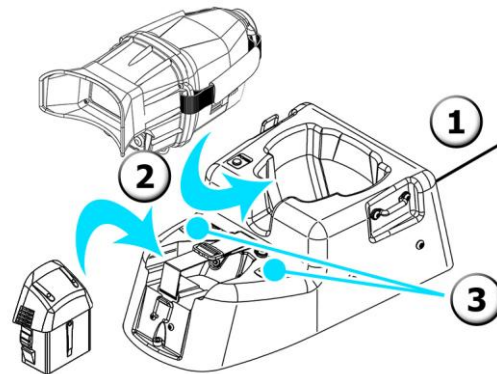
Using a Vehicle Mount Charger (VMC)

- 1) Install the device – see enclosed installation guide.
- 2) Insert the thermal imager, with the external battery contacts facing in towards the charger, into the charging station, ensuring the locator pins are correctly aligned, and push until the thermal imager 'clicks' into place.
- 3) The LED will light green constantly to signify the battery is charged.
- 4) Press the 'Quick-Release' lever down to release the thermal imager from the charger.



Using a Vehicle Mount Twin-Charger (VMTC)

- 1) Install the device – see enclosed installation guide.
- 2) Insert the thermal imager and/or battery, with the external battery contacts facing in towards the charger, into the appropriate charging station and secure using the strap(s).
- 3) The LED will light green constantly to signify the battery is charged. Undo the strap(s) and remove the thermal imager and/or battery from the charger.

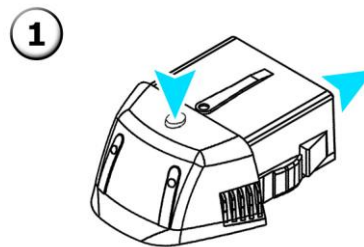


3.5 Preparing the AA Alkaline Battery Cassette (optional accessory)

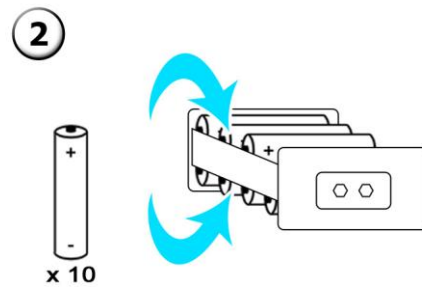
i Information

It is recommended that the positive (+) end of each AA battery cell is inserted into the cassette first, before pushing the negative (-) end into position.

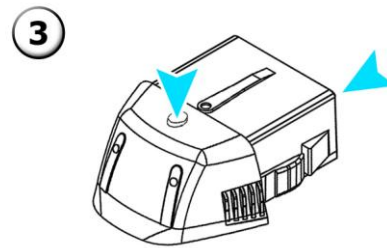
- 1) Depress the release button and slide out the inner compartment.



- 2) Insert 10x AA Alkaline batteries into the inner compartment, ensuring the positive (+) and negative (-) orientation is correct.



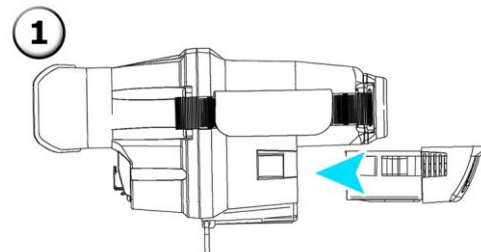
- 3) Depress the button, replace the inner cassette into the outer cassette and release to lock.



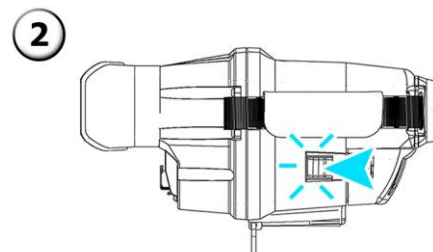
3.6 Inserting and Removing the Battery

Inserting the Battery

- 1) Insert the battery into the battery compartment.

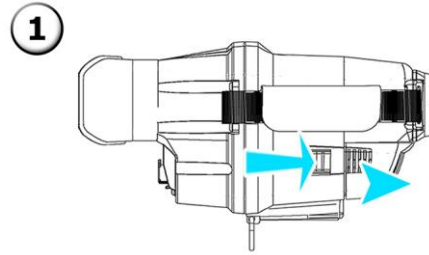


- 2) Push until the battery 'clicks' into place.

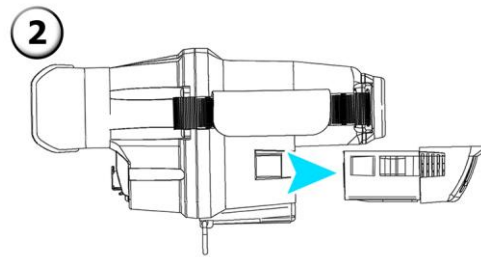


Removing the Battery

- 1) Simultaneously depress the release catches on either side of the battery.



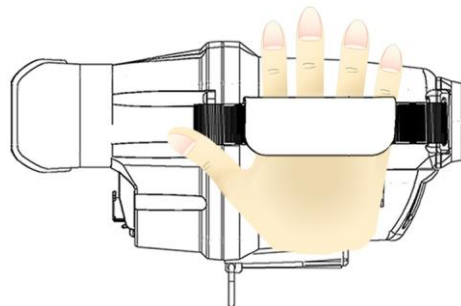
- 2) Slide the battery out of the compartment.



3.7 Preparing to Handle the Thermal Imager

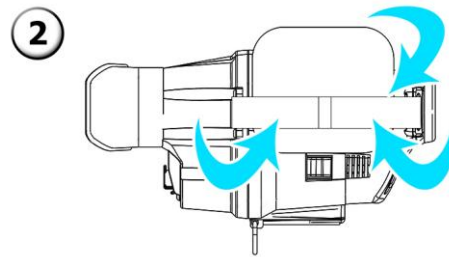
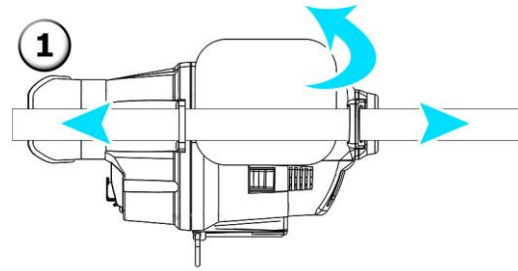
Holding the Thermal Imager

Insert your hand through the hand strap as shown.



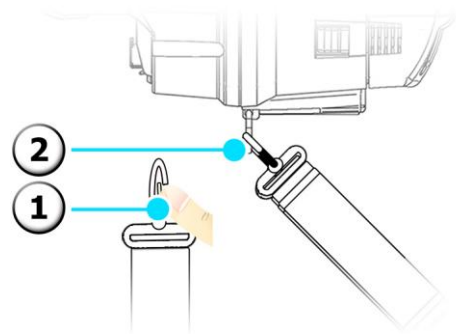
Adjusting the Hand Strap

- 1) Peel back the velcro hand pad and strap and adjust as required.
- 2) Refasten the strap and velcro hand pad.



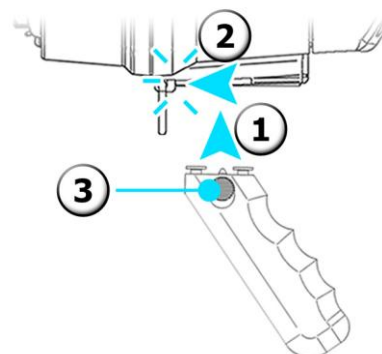
Attaching a Lanyard

- 1) Push open the clip on the lanyard.
- 2) Insert clip round the 'D' ring and release.



Attaching a Grip Handle

- 1) Align the locator pins on the grip with the locator holes on the mounting bracket and then push the grip into the mounting bracket
- 2) Slide the grip towards the rear of the thermal imager until the grip 'clicks' into place.



Removing a Grip Handle

- 3) Push the button on the grip downwards and slide the grip towards the front of the thermal imager until it is released.

4.0 Basic Operation

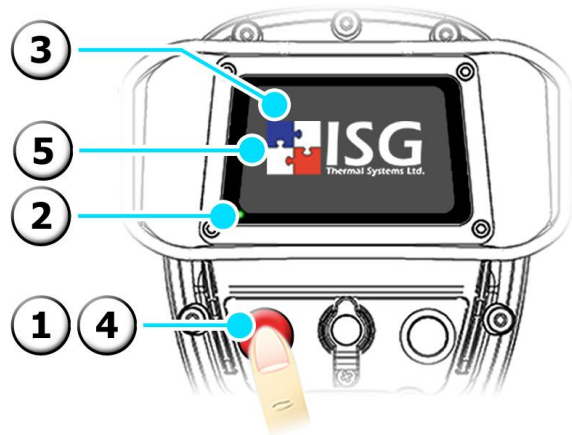
4.1 Power On and Off

WARNING

Always fit a fully charged battery prior to use in an emergency operation. Never disconnect the battery without undertaking the turn off procedure.

Power On

- 1) Press the Power / Zoom button (red).
- 2) Power LED lights continuously and start-up screen is displayed for 10 seconds (approx.), signifying that the start-up sequence has been initiated.
- 3) Live thermal image is displayed with a DTM readout given in the top right corner to signify the thermal imager is operating in Normal Imaging Mode.



Power Off

- 4) Press and hold the Power / Zoom button (red).
- 5) Release when the desired action symbol is displayed:

 Power Off

 Abort Power Off

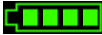































4.2 Understanding the On-screen Display

- 1) Time & Date (if displayed)
- 2) Crosshair
- 3) Power LED
- 4) DTM readout
- 5) Colour Reference Bar
- 6) Battery Bar



4.3 Universal Symbols and Meanings

This product uses Universal Symbols to aid all user's interpretation of the information being displayed. This list briefly describes the meaning of each symbol that may be displayed when using this product.

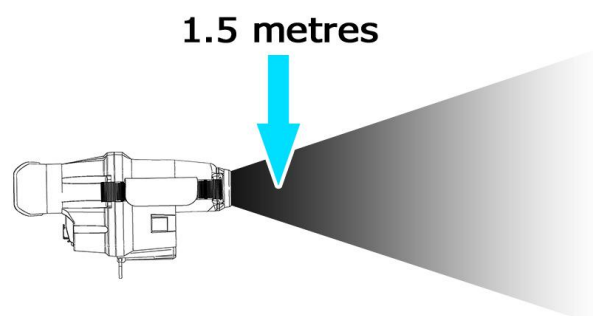
1) Battery 100%		17) Polarity Switch Black Hot	
2) Battery 75%		18) Settings Menu	
3) Battery 50%		19) View File	
4) Battery 25%		20) Previous Page	
5) Battery <5% (flashing)		21) Previous File	
6) Power		22) Next File	
7) Return		23) Next Page	
8) Exit		24) Delete File	
9) X2 Zoom		25) Delete All Files	
10) X4 Zoom		26) Change the Day	
11) Capturing		27) Change the Month	
12) Recording		28) Change the Year	
13) Wait		29) Change the Hour	
14) Browse Menu		30) Change the Minute	
15) Colour Palette Select		31) Change the Second	
16) Polarity Switch White Hot		32) Change Display Options	

4.4 Focus Range

This product uses an automatic focus feature that ensures the user can always receive the best detailed image at all times.

This product has an approximate focus range of 1.5 metres to infinity (∞).

This means that objects that are imaged from less than 1.5 metres away may appear slightly blurred on the display.



4.5 About ICE™

ICE™ (Intelligent Contrast Enhancement) is a patented* innovation from ISG INFRASYS. This technology operates to automatically enhance background contrast when viewing extremely hot objects.

This improves visibility for the user as hot objects and cooler surroundings are clearly visible simultaneously. The extra information is vital when viewing extreme temperatures in 1000+ Mode and increases the user's effectiveness, as well as their safety.

This image shows how ICE™ improves visibility in practice.



*Patent No. GB2435977

4.6 Sensitivity Modes

The ICE™ system thermal imager incorporates two distinct sensitivity modes and selects the appropriate mode automatically by analysing the thermal characteristics of the scene.

Information

When the thermal imager switches sensitivity modes, a momentary interruption of the displayed image may be experienced.

Normal Mode

'Normal Mode' is automatically selected when viewing low to medium ambient temperature scenes and/or when any hot objects in the scene are either below approximately 300 °C, or are very small.

In this mode the thermal imager's sensitivity is optimised to maximise the clarity of the lower-temperature parts of the scene, enabling crystal-clear imaging of the ambient scene as well as displaying small, localised hotspots up to 500 °C without saturation.



1000+ Mode

'1000+ Mode' is automatically selected when viewing extreme heat conditions, for example, in flash over situations or other extreme emergency situations where safety could be compromised.

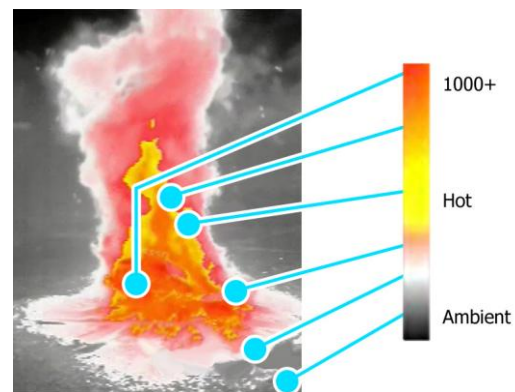
In this mode the dynamic range is set to maximum to provide clear imaging of scene temperatures in excess of 1000 °C without saturation, designed to allow easy analysis of structures and other hot/burning materials while retaining excellent visibility of low-temperature background detail to facilitate rapid egress.



4.7 Colour Reference Bar

The graduated scale colour palette provides a visual indication of the range of scene temperatures detected, enabling rapid recognition of hot spots.

The Colour Reference Bar (right) is displayed on the right-hand edge of the screen and provides a point of reference for the user to quickly identify the different temperature ranges in the scene.



4.8 Direct Temperature Measurement

The Direct Temperature Measurement (DTM) feature gives a temperature readout of a fixed point on the screen. The DTM feature is accurate to ± 5 °C for 0 °C - 100 °C, and $\pm 10\%$ for 101 °C - 1000 °C.

i Information

The measured temperature is based on an assumed target emissivity of 0.95.

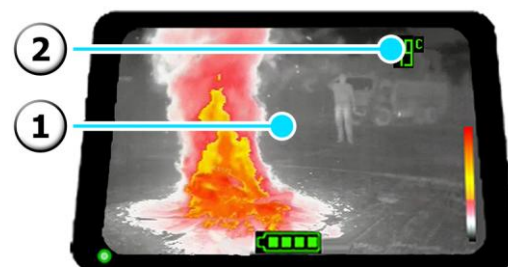
The measurement indicated is not a measure of air temperature.

Unless otherwise specified at the time of order, the unit of measurement (i.e Centigrade or Fahrenheit) is preset at the factory to the normal standard for the designated country.

In order to obtain an accurate measurement of a hot object in a scene, the thermal imager may switch between different sensitivity modes. This is completely normal.

Operate DTM

- 1) Aim the crosshair directly over the object to be measured.
- 2) Read the temperature.



4.9 Ambient Temperature Measurement (Optional Feature)

The Ambient Temperature Measurement (ATM) operates using a sensor located underneath the battery compartment on the mounting bracket of the product.

Information

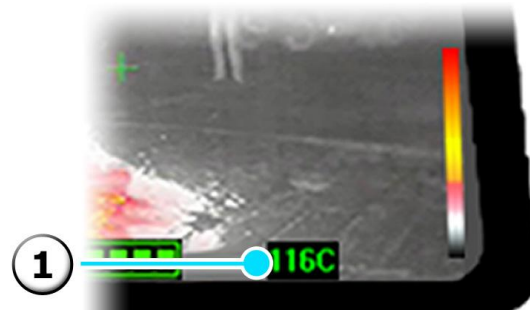
Unless specified otherwise at the time of order, the unit of measurement, in terms of degrees Centigrade or Fahrenheit, is preset at the factory to the normal standard for the designated country.

WARNING

The measurement indicated does not accurately reflect the user's immediate environment, and refers specifically to the ATM of the environment within a 50 cm radius of the product. Additional factors can affect the accuracy of the ATM readout and therefore the feature should only be used as a guide, and should never allow the user to deviate from their standard operating procedures.

The Ambient Temperature Measurement (ATM) feature gives the user a readout of the ambient air temperature of the immediate surrounding environment to the product. The ATM feature operates in 5 °C increments and is accurate to ± 5 °C within a 50 cm radius of the product.

- 1) ATM temperature readout.



5.0 Advanced Operation

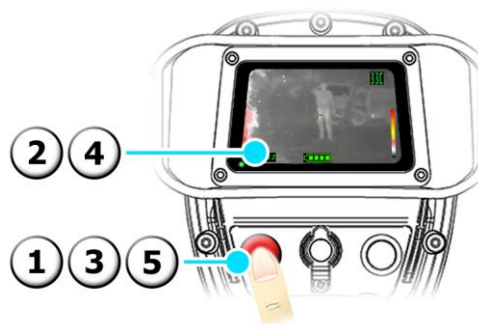
5.1 Zoom On and Off

i Information

X4 Zoom is only available on products that operate with a high-resolution detector. Where X4 Zoom is not available, please disregard points 3 and 4 in the instructions below.

Zoom On

- 1) From Normal Imaging Mode, press the Power / Zoom button (red).
- 2) The live thermal image is magnified by a factor of 2 and the X2 Zoom symbol (**X2**) is displayed.
- 3) To operate with X4 Zoom, press the Power / Zoom button (red) again.
- 4) The live thermal image is magnified by a factor of 4 and the X4 Zoom symbol (**X4**) is displayed.



Zoom Off

- 5) Press the Power / Zoom button (red) to return to Normal Imaging Mode.

5.2 Recording a Video File

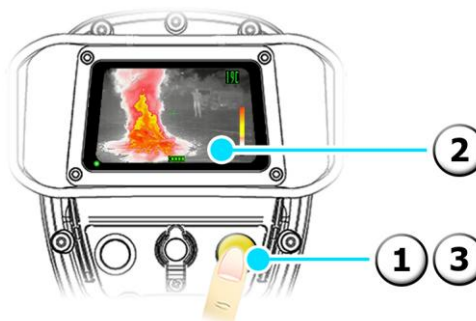
i Information

The Video Capture feature is not available on thermal imagers where Image Capture is installed. Video Capture enables the user to record for 6.5 hours or 100 files (depending on which capacity is reached first), and can be used when in Normal Imaging Mode or when using the Zoom feature. Whilst recording, the Zoom feature remains fully functional.

The Time & Date will be displayed as preset by the user. To change the Display Time & Date settings, please refer to Section 5.10 of the Operating Manual.

To Record

- 1) From Normal Imaging Mode, or when in Zoom, press the Capture / Menu button (yellow).
- 2) The device records the live thermal image and the Recording symbol (**REC**) is displayed.



To Stop

- 3) Press the Capture / Menu button (yellow) to stop recording.

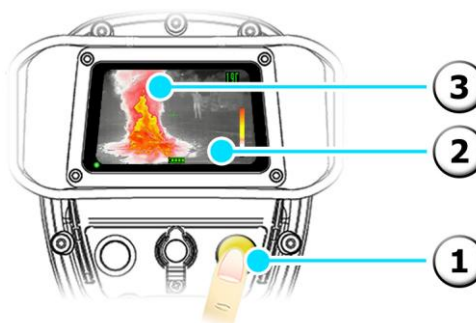
5.3 Capturing a Still Image

i Information

The Image Capture feature is not available on thermal imagers where Video Capture is installed. Image Capture enables the user to capture 30 still images to an on-board memory, and can be used when in Normal Imaging Mode or when using the Zoom feature. The Time & Date will be displayed as preset by the user. To change the Display Time & Date settings, please refer to Section 5.10 of the Operating Manual.

To Capture

- 1) From Normal Imaging Mode, or when in Zoom, press the Capture / Menu button (yellow).
- 2) The live thermal image is captured and the Capture symbol (🟩) is displayed.
- 3) The Wait symbol (⌚) is displayed adjacent to the memory location (24) to signify the image is being saved.



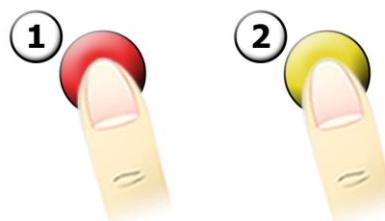
5.4 Operating the Menu Structure

i Information

Upon entering any level of the 'menu structure', the thermal imager will revert to Normal Imaging Mode if no action is executed by the user for 10 seconds. The executable action in the menu is identified by a black background.

To Navigate Through the Menu

- 1) Press the Power / Zoom button (red) to highlight the next action.

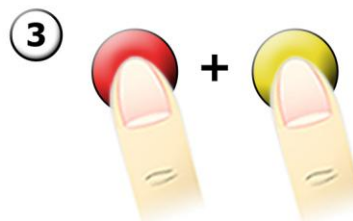


To Execute an Action in the Menu

- 2) Press the Capture / Menu button (yellow) to execute the highlighted action.

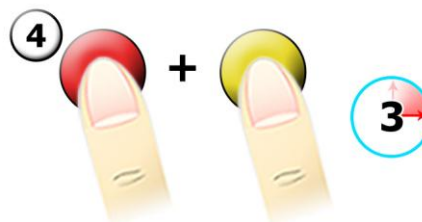
To Return to the Previous Menu

- 3) Press the Power / Zoom button (red) and the Capture / Menu button (yellow) together. The Return symbol (🏠) is displayed and the thermal imager returns to the previous menu.



To Exit All Menus

- 4) Press and hold the Power / Zoom button (red) and the Capture / Menu button (yellow) together for 3 seconds (approx.). The Exit symbol (🚪) is displayed and the thermal imager returns to Normal Imaging Mode.





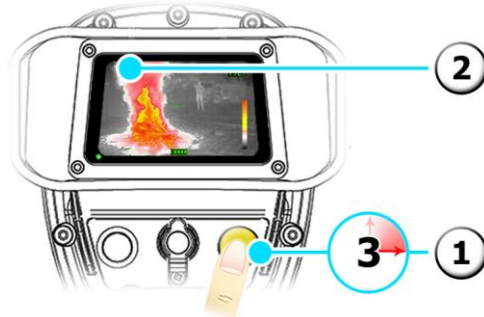
5.5 Using the Main Menu

i Information

Please refer to Section 5.4 of this Operating Manual for instructions on how to navigate through the Main Menu, execute an action in the Main Menu, or exit the Main Menu.

To Enter the Main Menu

- 1) From Normal Imaging Mode, or when in Zoom, press and hold the Capture / Menu button (yellow) for approximately 3 seconds.
- 2) The thermal imager enters the Main Menu () and automatically highlights the Browse symbol ().



5.6 Browsing Saved Files




i Information

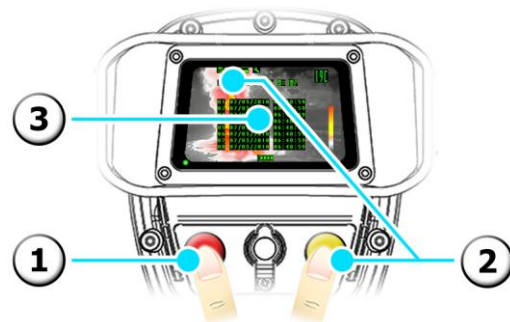
If no saved files are available, the thermal imager will automatically return to the Main Menu. Please refer to Section 5.4 of this Operating Manual for instructions on how to navigate through the Browse Menu, execute an action in the Browse Menu, or exit the Main Menu.

If the Highlight Next File action is executed whilst the bottom-most file is highlighted, the thermal imager will automatically go to the next page and highlight the next available file.


If the Highlight Previous File action is executed whilst the top-most file is highlighted, the thermal imager will automatically go to the previous page and highlight the next available file.

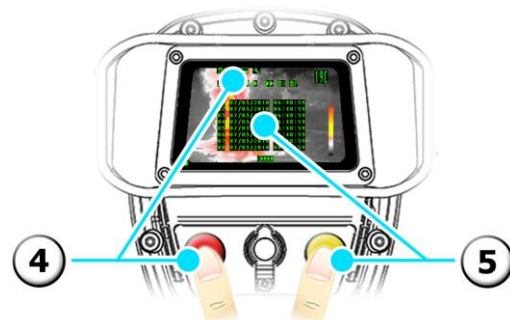
To Enter the Browse Menu

- 1) From the Main Menu, press the Zoom/Power button (red) until the Browse symbol () is highlighted.
- 2) Press the Capture / Menu button (yellow). The thermal imager enters the Browse Menu () and automatically highlights the View File symbol ().
- 3) The file list is displayed in the middle of the screen and the first file in the list is automatically highlighted.



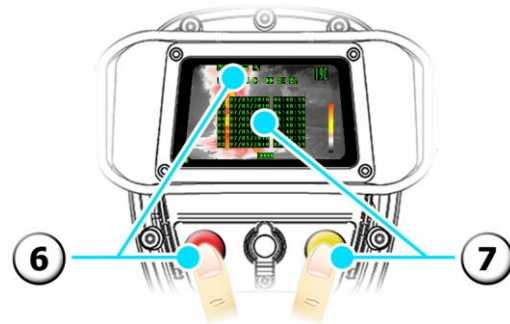
To Highlight the Next File

- 4) From the Browse Menu, press the Zoom/Power button (red) until the Next File symbol () is highlighted.
- 5) Press the Capture / Menu button (yellow). The file list refreshes and the next file is now highlighted.



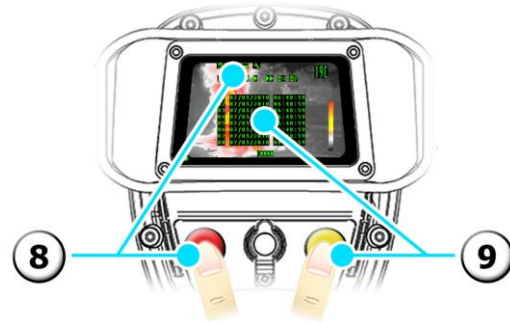
To Highlight the Previous File

- 6) From the Browse Menu, press the Zoom/Power button (red) until the Previous File symbol (◀) is highlighted.
- 7) Press the Capture / Menu button (yellow). The file list refreshes and the previous file is now highlighted.



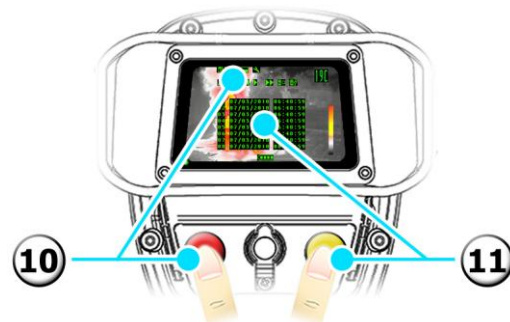
To Go to the Next Page

- 8) From the Browse Menu, press the Zoom/Power button (red) until the Next Page symbol (▶) is highlighted.
- 9) Press the Capture / Menu button (yellow). The file list refreshes and the next page of files is now displayed with the top-most file automatically highlighted.



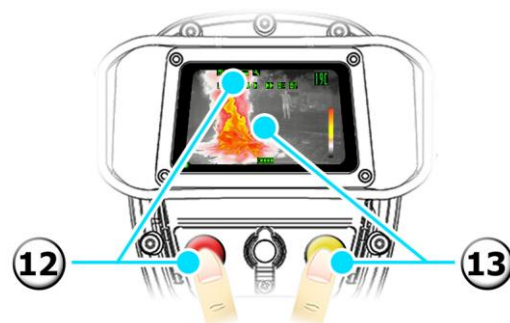
To Go to the Previous Page

- 10) From the Browse Menu, press the Zoom/Power button (red) until the Previous Page symbol (◀) is highlighted.
- 11) Press the Capture / Menu button (yellow). The file list refreshes and the previous page of files is now displayed with the bottom-most file automatically highlighted.



To View a File

- 12) Highlight the desired file and then, from the Browse Menu, press the Zoom/Power button (red) until the View File symbol (📄) is highlighted.
- 13) Press the Capture / Menu button (yellow). The file is played back on the display.



5.7 Deleting Saved Files

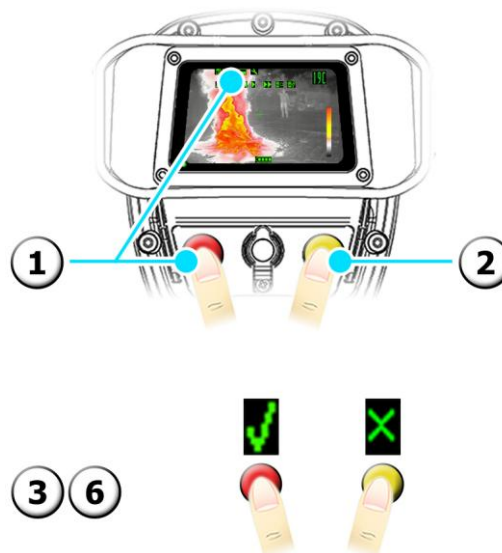
i Information

If all saved files have been deleted, the thermal imager will automatically return to the Main Menu.

If the delete action is aborted, the thermal imager will automatically return to the Browse Menu. Please refer to Section 5.4 of this Operating Manual for instructions on how to navigate through the Browse Menu, execute an action in the Browse Menu, or exit the Main Menu.

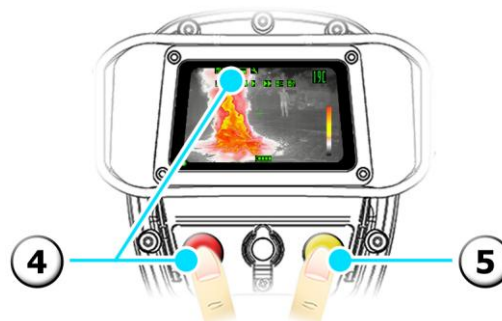
To Delete a Single File

- 1) Highlight the desired file and then, from the Browse Menu, press the Zoom/Power button (red) until the Delete Single File symbol (🗑️) is highlighted.
- 2) Press the Capture / Menu button (yellow) to go to the Confirm Delete Menu.
- 3) Press the Capture / Menu button (yellow) to confirm the delete action, or press the Zoom/Power button (red) to abort the delete action.



To Delete All Files

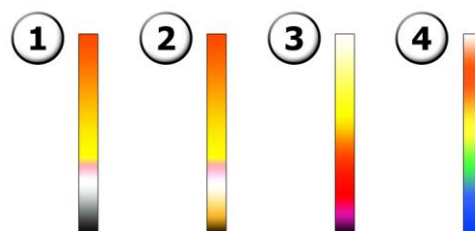
- 4) Highlight the desired file and then, from the Browse Menu, press the Zoom/Power button (red) until the Delete All Files symbol (🗑️) is highlighted.
- 5) Press the Capture / Menu button (yellow) to go to the Confirm Delete Menu.
- 6) Press the Capture / Menu button (yellow) to confirm the delete action, or press the Zoom/Power button (red) to abort the delete action.



5.8 Selecting a Colour Palette

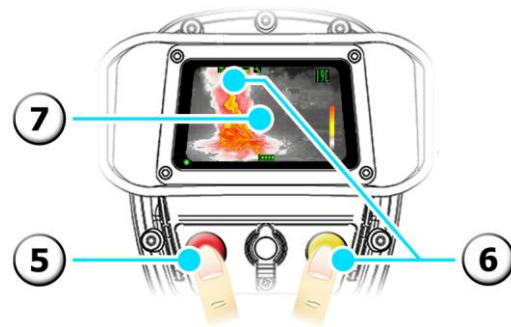
Description of Available Palettes

- 1) ICE™ colour palette (🎨1)
- 2) Autumnal colour palette (🎨2)
- 3) Ironbow colour palette (🎨3)
- 4) Rainbow colour palette (🎨4)



To Select a Colour Palette

- 5) Press the Zoom/Power button (red) until the Select Colour Palette symbol (m1) is highlighted.
- 6) Press the Capture / Menu button (yellow) repeatedly until the desired palette number appears next to the Palette symbol (m).
- 7) The palette will change to reflect the number selected.



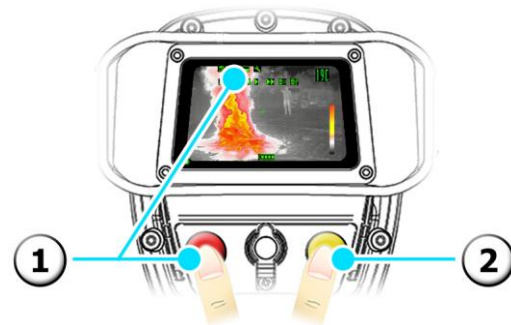
5.9 Switching the Polarity

i Information

The Polarity Switch feature is only available when either the ICE™ colour palette (m1) or the Autumnal colour palette (m2) is selected. If the Polarity Switch feature is used on a palette other than those specified, a cross symbol (X) will be displayed to signify acknowledgement of the command.

To Switch the Polarity

- 1) Press the Zoom/Power button (red) until the Polarity Switch symbol (m) is highlighted.
- 2) Press the Capture / Menu button (yellow) to reverse the current polarity to Black Hot (m).



5.10 Changing the Time & Date Settings




i Information

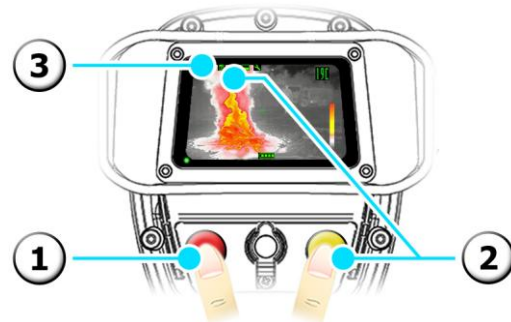
Please refer to Section 5.4 of this Operating Manual for instructions on how to navigate through the Settings Menu, execute an action in the Settings Menu, or exit the Main Menu.

If a Change Settings action is executed whilst the Day field = 31, the Month field = 12, the Hour field = 24, or the Minute/Second field = 60, the field will cycle to 01.


If a Change Settings action is executed whilst the Year field = 2040, the field will cycle to 2010.

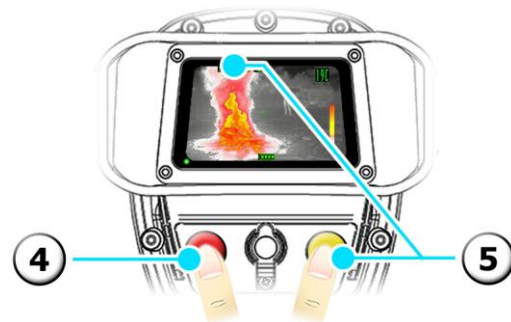
To Enter the Settings Menu

- 1) From the Main Menu, press the Zoom/Power button (red) until the Settings symbol () is highlighted.
- 2) Press the Capture / Menu button (yellow). The thermal imager enters the Settings Menu () and automatically highlights the Day symbol () .
- 3) The time and date are displayed above the Settings Menu and the corresponding field is automatically highlighted.




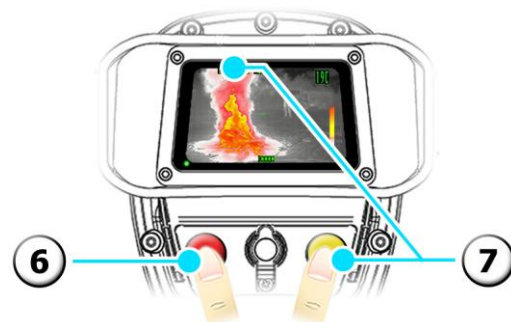
To Change the Day

- 4) From the Settings Menu, press the Zoom/Power button (red) until the Day symbol () is highlighted.
- 5) Press the Capture / Menu button (yellow). The Day field will increment by a factor of 1.




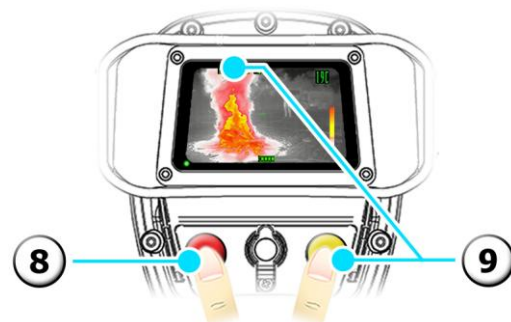
To Change the Month

- 6) From the Settings Menu, press the Zoom/Power button (red) until the Month symbol () is highlighted.
- 7) Press the Capture / Menu button (yellow). The Month field will increment by a factor of 1.



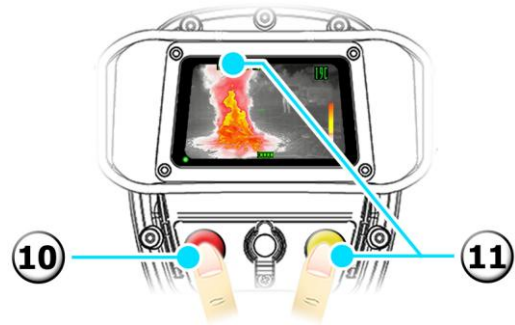
To Change the Year

- 8) From the Settings Menu, press the Zoom/Power button (red) until the Year symbol () is highlighted.
- 9) Press the Capture / Menu button (yellow). The Year field will increment by a factor of 1.



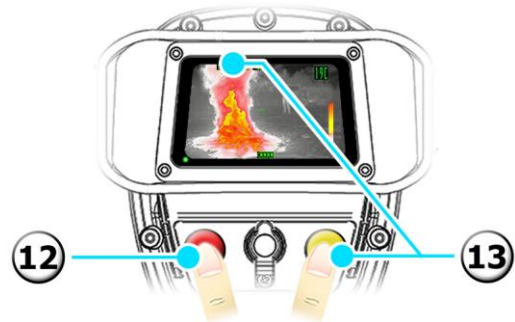
To Change the Hour

- 10) From the Settings Menu, press the Zoom/Power button (red) until the Hour symbol (HH) is highlighted.
- 11) Press the Capture / Menu button (yellow). The Hour field will increment by a factor of 1.



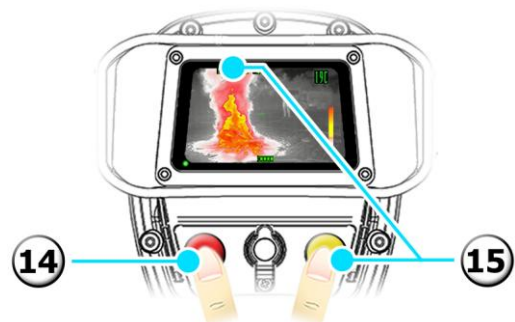
To Change the Minute

- 12) From the Settings Menu, press the Zoom/Power button (red) until the Minute symbol (MM) is highlighted.
- 13) Press the Capture / Menu button (yellow). The Minute field will increment by a factor of 1.






To Change the Second

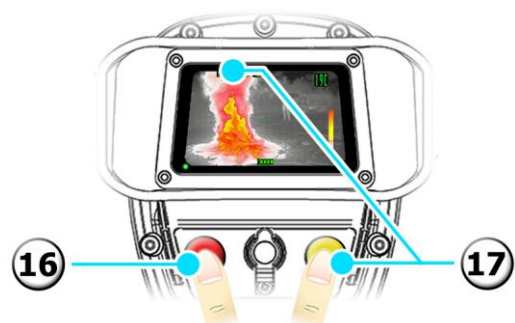
- 14) From the Settings Menu, press the Zoom/Power button (red) until the Second symbol (SS) is highlighted.
- 15) Press the Capture / Menu button (yellow). The Second field will increment by a factor of 1.



To Change the Display Settings

- 16) From the Settings Menu, press the Zoom/Power button (red) until the Display Settings symbol (VV) is highlighted.
- 17) Press the Capture / Menu button (yellow) repeatedly to select the desired Display Setting as appropriate:

-  Always display Time & Date
-  Only display Time & Date when recording
-  Never display Time & Date



6.0 Alternative Methods to View Live/Saved Thermal Images

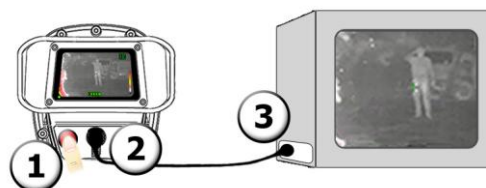
6.1 Using an External Monitor to View a Live Thermal Image

To perform this action, you will require an external monitor and video cable.

i Information

The thermal imager is configured at the factory for the normal TV standard of the designated country, either as PAL or NTSC, unless requested otherwise at the time of order.

- 1) Turn on the thermal imager.
- 2) Connect the video cable to the thermal imager's Multi-port connector type video output.
- 3) Connect the video cable to the external monitor.



6.2 Using a PC to View a Live Thermal Image

To perform this action you will require a PC and the USB Video Kit (optional accessory).

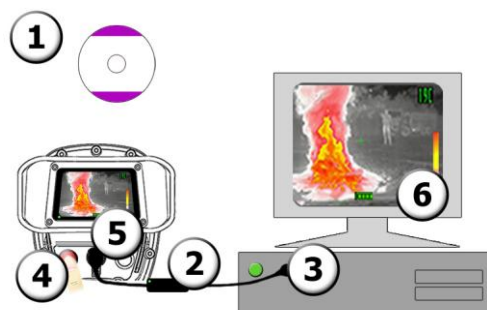
The Minimum PC Specification required to use the USB Video Kit is as follows:

- Pentium 1.5 GHz processor or equivalent
- Windows 2000 or XP operating system
- 256 Mb Internal RAM
- USB 1.1/2.0
- CD-ROM drive for software installation

i Information

It may be necessary to adjust the settings on your PC (e.g. Contrast, Brightness etc.) to enhance the video quality and best reflect the live thermal image.

- 1) Install the application using the installation instructions enclosed with the USB Video Kit.
- 2) Connect the video cable to the USB video bus via the supplied connector.
- 3) Connect the video bus to the PC's USB port.
- 4) Turn on your thermal imager.
- 5) Connect the video cable to the thermal imager's Multi-port connector type video output.
- 6) Open the installed software application to view live thermal images on the PC.



6.3 Using a PC to View or Transfer Saved Files

To perform this action you will require a PC and the USB Video Kit (optional accessory).

The Minimum PC Specification required to use the USB Video Kit is as follows:

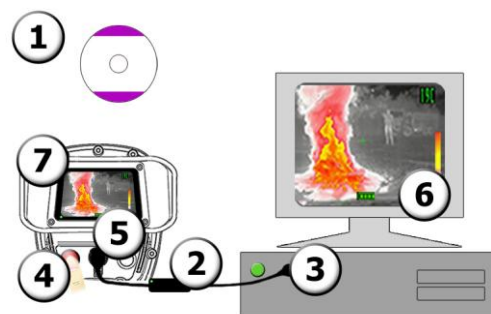
- Pentium 1.5 GHz processor or equivalent
- Windows 2000 or XP operating system
- 256 Mb Internal RAM
- USB 1.1/2.0
- CD-ROM drive for software installation

Information

It may be necessary to adjust the settings on your PC (e.g. Contrast, Brightness etc.) to enhance the video quality and best reflect the saved files.

Viewing Saved Files

- 1) Install the application using the installation instructions enclosed with the USB Video Kit.
- 2) Connect the video cable to the USB video bus via the supplied connector.
- 3) Connect the video bus to the PC's USB port.
- 4) Turn on your thermal imager.
- 5) Connect the video cable to the thermal imager's Multi-port connector type video output.
- 6) Open the installed software application to view live thermal images on the PC.
- 7) Access the Browse Menu using the buttons on your thermal imager and select the file you wish to playback.



Transferring Saved Files

- 1) Ensure the thermal imager is operating in Browse Mode and browse the image to be downloaded.
- 2) Record the image by using the software application installed on your PC. Be sure to follow the application's instructions.



7.0 Trouble Shooting

If you are experiencing problems with your thermal imager, please refer to this checklist. If the problem persists, please contact ISG INFRASYS Customer Services or your local distributor.

7.1 Power Source

Problem	Cause	Solution	Sect.
The power does not turn on or the power LED will not light	Battery pack is exhausted	Replace or charge the battery	3.4
	Battery pack is not correctly attached	Attach the battery pack correctly	3.6
	Battery contacts are not making connection	Clean battery contacts of the thermal imager and batteries	3.3
The thermal imager switches off by itself	Battery pack is exhausted	Replace or charge the battery	3.4
The battery will not charge	Battery pack is not fully inserted into charger	Insert the battery fully	3.4
	Battery charging contacts are not making connection	Clean charging contacts of the batteries and charger	3.3

7.2 Imaging

Problem	Cause	Solution	Sect.
The image is not appearing on the screen or appears blurred	The lens window is dirty	Clean the lens window	3.3
	An obstacle is obstructing the thermal imager lens window	Remove the obstacle	3.3
The thermal imager will not focus	The lens window is dirty	Clean the lens	3.3
	An obstacle is obstructing the thermal imager lens.	Remove the obstacle	3.3
The thermal imager produces a clicking sound every 15 to 30 seconds	The thermal imager is refreshing the image. This is normal.	No fault	-
The image frequently pauses for a fraction of a second	The thermal imager is changing mode upon experiencing significant changes in scene temperature. This is normal.	No fault	-
Cannot see the heat source through the window, in the water or through rubble	Thermal imagers cannot produce images through infrared-opaque materials such as glass or water	No fault	-

7.3 Functions

Problem	Cause	Solution	Sect.
The digital temperature measurement does not seem to represent the room temperature	The DTM only measures the temperature of an object within the scene at the centre of the cross wire, and not the air temperature	No fault	-
The thermal imager is on but the buttons do not function correctly or respond slowly	Most functions require pressing and holding down the buttons to prevent accidental activation	Perform the correct switching operations	5.0
Cannot record video	The internal memory is full	Delete some files	5.5
Cannot download images to my computer	Incorrect video transfer equipment used	Obtain a USB video kit	6.3
	Computer specification compatibility issues	Ensure PC meets minimum specification	6.2/6.3

8.0 Additional Information

8.1 Maintenance Information

Following use, the thermal imager should always be cleaned and inspected for damage.

In the event of damage being detected (for example, cracked or broken window or housing), the thermal imager should be withdrawn from service immediately and returned to an authorised service centre for repair.

The thermal imager should be cleaned using warm soapy water and non-abrasive cleaners. Allow the thermal imager to dry before replacing it into the carry case.

Ensure all battery contacts of the thermal imager and the batteries are clean and free from debris as this may prevent electrical connection.

It is recommended that the IR window and display be treated with anti-fog solutions as used on SCBA/BA facemasks.

To ensure long service life, it is recommended that the thermal imager and its accessories are stored in a temperate environment (15°C to 25°C, moderate humidity) at all times.

The batteries should always be removed from the thermal imager before storage for extended periods.

8.2 Warranty Agreement

Infrared Systems Group Ltd. warrants the thermal imager and its accessories to be free from defects in materials and workmanship for a period of twenty-four (24) Months from the date of shipment from the factory. This warranty is in lieu of all other warranties expressed or implied.

This warranty applies to the following:

- Thermal imager
- Batteries
- Battery charger system
- Carry case
- Standard and optional accessory items

This warranty does not apply to fabric components as they can be adversely affected by undue exposure to heat, sun, ozone or other hostile conditions.

Warranty Disclaimer

This warranty shall be null and void if ISG INFRASYS determines that the thermal imager or its accessories have been damaged by neglect, misuse, accident, abuse, power surges, over-exposure to heat, abnormal wear and tear, or other perils outside the design tolerances of the thermal imager.

The following additional conditions shall void all warranties:

- Unauthorised repair, modification or alteration of the thermal imager and/or its accessories
- Damage caused by failure to use and/or maintain the thermal imager and/or its accessories in accordance with the manufacturer's written instructions
- Damage in shipping

- Damage caused by use of a non-approved battery or battery charger
- Non-service related damage
- Damage caused by improper storage or transportation



Information

THE USE OF NON-FACTORY AUTHORISED PARTS OR COMPONENTS, OR FAILURE TO MAINTAIN AND USE THE SYSTEM AS DIRECTED IN THE OPERATING MANUAL, VOIDS ALL WARRANTIES.

Responsibilities of ISG INFRASYS Under The Warranty

Provided the end user/distributor detects and reports (in writing) defects to ISG INFRASYS within the warranty period, ISG INFRASYS shall either repair or replace either the components or the System, at its sole option, once its responsibility has been determined under the warranty. This repair/replacement shall be the user's sole and exclusive remedy.

ISG INFRASYS shall determine responsibility under the warranty and advise the end user/distributor of warranty coverage or any charges associated with repair/replacement of components or the system outside warranty-covered repair/replacement.

Following a warranty repair by ISG INFRASYS, all carriage, insurance and freight costs associated with the shipment of the material back to the end user/distributor, shall be borne by ISG INFRASYS.

Any such repair, whether under warranty or otherwise, shall not be construed as an extension of the warranty period.

Responsibilities of the End User and/or Distributor Under the Warranty

To maximise speed of return and repair, ISG INFRASYS operates the Service Direct facility, available to all customers within the European Union – please contact ISG INFRASYS for full details and to obtain an RMA code (see below). In all other cases, the end user shall return the unit to the authorised ISG INFRASYS distributor from whom the thermal imager was purchased. Thereafter it is the responsibility of the distributor to return the unit in accordance with the instructions herein.

The end user/distributor shall obtain a Returned Material Authorisation (RMA) code prior to returning the thermal imager or accessory. The end user/distributor shall ship the returned materials to ISG INFRASYS with the RMA code prominently displayed on the outside of the packaging and a headed letter with the return address and a brief description of the fault placed inside the package.

Non-Warranty Repairs

In the event that ISG INFRASYS determines that the repair is not covered by the warranty, ISG INFRASYS shall inform the end user/distributor and provide an estimated cost of repair. Upon receipt of a purchase order from the end user/distributor, ISG INFRASYS shall undertake the repair and return the thermal imager. All carriage, insurance and freight costs shall be borne by the end user/distributor. Any such repair, whether under warranty or otherwise, shall not be construed as an extension of the warranty period.

Transfer of the Warranty

ISG INFRASYS's obligations under this warranty are limited to the original end user unless prior written consent has been issued by ISG INFRASYS to transfer the Product to another location, end user or application.

8.3 Technical Specifications

Physical Characteristics	SD1000	K1000
Dimensions (L x W x H):	284 mm x 144 mm x 145 mm (11.2" x 5.7" x 5.7")	185 mm x 130 mm x 149 mm (7.3" x 5.1" x 5.9")
Weight (excluding battery):	1.2 kg (2.6 lbs)	1.2 kg (2.6 lbs)
Shell colour:	Orange and Black	Orange and Black
Shell material:	Radel R 5100	Radel R 5100
Hand strap material:	Kevlar	Kevlar
IR protection window:	Hard-coated Germanium	Hard-coated Germanium
Tripod mount:	¼" BSW fixing	¼" BSW fixing

Display Characteristics	SD1000	K1000
Technology:	Colour liquid crystal display (LCD)	Colour liquid crystal display (LCD)
Viewing mode:	Universal (Up-to-Face/Arm's Length)	Wide angle (Arm's Length)
Size (diagonal):	165 mm (6.5") equivalent (magnified)	90 mm (3.5")
Luminance:	230 cd / m ²	250 cd / m ²

Environmental Characteristics	SD1000	K1000
Operating temperature:	-35 °C to ~450 °C (-31 °F to ~840 °F) (limited exposure)	-35 °C to ~450 °C (-31 °F to ~840 °F) (limited exposure)
Operating duration:	20 minutes @ 120 °C (250 °F), 8 minutes @ 260 °C (500 °F)	20 minutes @ 120 °C (250 °F), 8 minutes @ 260 °C (500 °F)
Storage temperature:	-25 °C to +55 °C (-13 °F to +131 °F) if retained in carry case	-25 °C to +55 °C (-13 °F to +131 °F) if retained in carry case
Sealing:	IP67, resists water immersion at 1.0 m (3.3') depth	IP67, resists water immersion at 1.0 m (3.3') depth
Contaminant resistant:	Yes	Yes
Withstand drop:	1.8 m, (6') any orientation	2.0 m (6'6") any orientation

Electrical Characteristics	SD1000	K1000
Power consumption:	5 W nominal	5 W nominal
Continuous operating time:	5 h (SuperCell Plus) @ 23 °C (73 °F)	5 h (SuperCell Plus) @ 23 °C (73 °F)
Low power warning:	Onscreen indicator	Onscreen indicator

Performance Characteristics	SD1000	K1000
Detector:	Uncooled IR microbolometer	Uncooled IR microbolometer
Sensor material:	Amorphous Silicon (ASi)	Amorphous Silicon (ASi)
Resolution:	384 x 288	384 x 288
Thermoelectric cooler:	None	None
Spectral response:	8 µm to 14 µm	8 µm to 14 µm
R:S (Range/Sensitivity) Ratio	13,500	13,500
Sensitivity (nominal):	50 mK	50 mK
Scene update rate:	50 Hz (PAL) or 60 Hz (NTSC)	50 Hz (PAL) or 60 Hz (NTSC)
Dynamic range:	Automatic, variable dynamic range control	Automatic, variable dynamic range control
Modes of operation:	ICE™ (Normal & Thousand Plus)	ICE™ (Normal & Thousand Plus)
Field of view:	PAL: 54° / NTSC: 46°	PAL: 54° / NTSC: 46°
Focus range:	1.5 m (4.9') to infinity	1.5 m (4.9') to infinity

Operational Characteristics	SD1000	K1000
Pushbutton controls:	Power, Zoom, Video Capture	Power, Zoom, Video Capture
Readiness time:	10 seconds nominal	10 seconds nominal
Image optimisation:	Automatic, no user adjust needed	Automatic, no user adjust needed
Video standard:	PAL (European) or NTSC (American) TV standard	PAL (European) or NTSC (American) TV standard
Video output:	Composite 1.0 V, 75 Ω terminated Multi-port connector	Composite 1.0 V, 75 Ω terminated Multi-port connector

Temp. Measurement Range:	0 °C to 1000 °C (32 °F to 1832 °F)	0 °C to 1000 °C (32 °F to 1832 °F)
Temp. Measurement Accuracy:	± 5 °C (0 °C to 100 °C) & ± 10% (101 °C to 1,000 °C)	± 5 °C (0 °C to 100 °C) & ± 10% (101 °C to 1,000 °C)
Temp. Measurement Emissivity:	0.95	0.95
Spot measurement distance:	480:1	480:1
Colourisation:	ICE™ Enhanced Dual Transparent Colour	ICE™ Enhanced Dual Transparent Colour
Colour temperature scale:	Single palette indicator bar	Single palette indicator bar
Video Capture:	6.5 hour memory capacity	6.5 hour memory capacity
Time & Date:	Yes	Yes
Zoom feature:	x1, x2 and x4 magnification	x1, x2 and x4 magnification
Selectable Colour Palettes:	4	4
Polarity Switch:	Yes	Yes

SuperCell-Plus Batteries

Battery technology:	Ni-MH Rechargeable
Recharge time:	2.5 hours nominal
Recharge cycles:	1000
Net weight:	0.52 kg (1.15 lbs)
Sealing:	IP56

Desktop Charger

PSU supply voltage:	99 to 264 VAC, 50/60 Hz
Operating voltage:	24 V
Size (L x W x H):	160 mm x 95 mm x 85 mm (6.3" x 3.7" x 3.3")
Weight (including PSU):	0.35 kg (0.77 lbs)
Operating temperature:	0 °C to 30 °C (32 °F to 86 °F)
Storage temperature:	-20 °C to +55 °C (-4 °F to +131 °F)
Sealing:	IP20

Vehicle Mount Charger

PSU supply voltage:	9 to 30 VDC (100 to 240 VAC optional)
Output Port:	Powered directly from input voltage
Current (12 VDC Operation):	1.5 A
Current (24 VDC Operation):	0.8 A
Size (L x W x H):	168 mm x 146 mm x 94 mm (6.6" x 5.7" x 3.7")
Weight:	1 kg (2.2 lbs)
Operating temperature:	0 °C to 30 °C (32 °F to 86 °F)
Storage temperature:	-20 °C to +55 °C (-4 °F to +131 °F)
Sealing:	IP20

Vehicle Mount Twin-Charger

PSU supply voltage:	12 to 24 VDC
Current (12 VDC Operation):	3.0 A
Current (24 VDC Operation):	1.6 A
Size (L x W x H):	390 mm x 235 mm x 125 mm (1.28' x 0.77' x 0.41')
Weight:	2.2 kg (4.85 lbs)
Operating temperature:	0 °C to 30 °C (32 °F to 86 °F)
Storage temperature:	-20 °C to +55 °C (-4 °F to +131 °F)

Carry-Case

SD1000

K1000

Size (L x W x H):	485 mm x 392 mm x 192 mm (1.59' x 1.29' x 0.63')	406 mm x 330 mm x 174 mm (1.33' x 1.08' x 0.57')
Weight with foam insert:	4 kg (8.8 lbs)	3 kg (6.6 lbs)
Certificate:	IP67 Stanag 4280 / DefStan 81-41	IP67 Stanag 4280 / DefStan 81-41

Eco-Box Case

SD1000

K1000

Size (L x W x H):	478 mm x 367 mm x 198 mm (1.57' x 1.20' x 0.65')	478 mm x 367 mm x 198 mm (1.57' x 1.20' x 0.65')
Weight with foam insert:	1 kg (2.2 lbs)	1 kg (2.2 lbs)