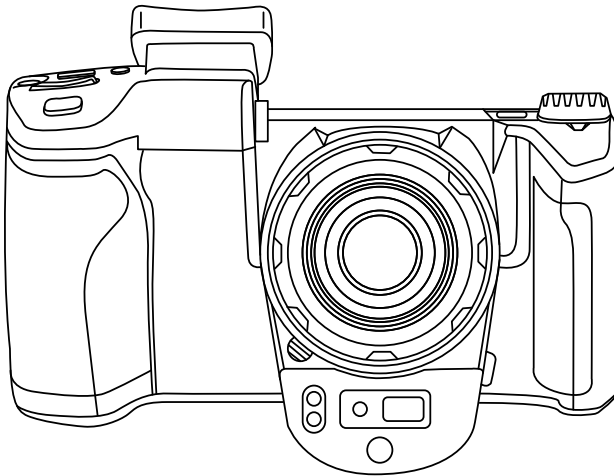




I-CAM 380/I-CAM 640 P-SERIES

USER MANUAL

PLEASE READ THIS MANUAL BEFORE SWITCHING THE UNIT ON.
IMPORTANT SAFETY INFORMATION INSIDE.



ICI cameras fall under US Federal Law and Export Control.

Revision History

11.2021-001	Document created
11.2021-002	Specifications updated
05.2022-001	Spelling, grammar, and technical inaccuracies fixed
07.2022-001	Updated the digital camera resolution

Contents

1. Disclaimers	8
1-1 Terms and Conditions	8
1-2 U.S. Government Regulations	8
1-3 Copyright	8
1-4 Quality Assurance	8
1-5 Customer Help	8
2. User Notice	9
2-1 Calibration	9
2-2 Accuracy	9
2-3 Cybersecurity	9
2-4 Disposal of Electronic Waste	9
2-5 Intended Use	10
2-6 Manual Update	10
2-7 Scope of Application	10
2-8 Authoritative Versions	10
2-9 Training	11
3. Safety Information	12
4. Technical Specifications	14
5. Package Includes	16
6. Structure	17
5-1 Appearance and Definitions of Interface	17
7. Quick Start Instructions	19
7-1 Tripod Setup	19
7-2 Battery Installation	21
7-3 Memory Card	23
7-4 Charging Instructions: Option 1	25
7-5 Charging Instructions: Option 2	26
7-6 Lens installation	27
8. Operation Instructions	28
8-1 How to Charge the Battery	28
8-1-1 Charging via Battery Charging Base	28
8-1-2 Charging via Power Adapter	28
8-2 Power On/Off the Device	29
8-3 User Interface	29
8-3-1 Open the main menu	30
8-3-2 Close the main menu	30
8-4 Flashlight and Laser	30
8-4-1 Power On/Off the Flashlight	30
8-4-2 Power On/Off the Laser	31
8-4-3 Laser Range	31
8-5 Manual Focus/Auto Focus	32

8-6	Non-uniformity Correction.....	32
8-7	Digital Zoom	32
8-8	LCD/Viewfinder Toggle	33
8-9	Image Mode	33
8-9-1	Picture-in-Picture	33
8-9-2	Infrared.....	34
8-9-3	Visible.....	34
8-9-4	Enhanced Mode (MIF)	34
8-10	Enable/Disable Super Resolution	35
8-11	Capture an Image or Video	35
8-11-1	Auto Saving.....	35
8-11-2	Media Freezing.....	36
8-11-3	Confirmed Saving	36
8-11-3-1	Manually Saving Media	37
8-12	Panoramic Imaging.....	37
8-12-1	Enable Panoramic Imaging.....	37
8-12-2	Disable Panoramic Imaging.....	38
8-13	Interval Photography/Videography	38
8-13-1	Photography Settings	38
8-13-2	Videography Settings	39
8-14	Real-time Thermal Analysis	40
8-14-1	Temperature Range.....	40
8-14-2	Emissivity	40
8-14-3	Analysis Objects.....	42
8-14-3-1	Create Analysis Objects.....	42
8-14-3-2	Linear Analysis Objects	42
8-14-3-3	Free Hand Analysis Objects.....	43
8-14-3-4	Temperature Differential Analysis (ΔT)	43
8-14-3-5	Adjust Analysis Object Settings	44
8-14-3-6	Move an Analysis Object.....	44
8-14-3-7	Resize an Analysis Object	45
8-14-3-8	Delete an Analysis Object	45
8-14-3-9	Delete ALL Analysis Objects.....	46
9-14-4	Level & Span	46
8-14-4-1	Auto Gain Control (AGC).....	46
8-14-4-2	Manual Level & Span Adjustment	47
8-14-4-3	Semi-Auto Gain Control (S-AGC)	47
9-14-5	Isotherms	48
8-14-5-1	Hot Isotherm.....	48
8-14-5-2	Cold Isotherm	48
8-14-5-3	Mid-Field Isotherm.....	49
8-14-5-4	Extra-Field Isotherm	49
8-14-5-5	Disable an Isotherm	50

8-14-5-6	Isotherm Settings	50
8-14-6	Temperature Alarms	51
8-14-6-1	Enable an Alarm	51
8-14-6-2	Threshold Settings	51
8-14-6-3	Audible Alarm	52
8-14-6-4	Visual Alarm	52
8-14-7	Palette	52
8-14-7-1	Programmed Options.....	52
8-14-7-2	Custom Palette	53
8-15	Image Processing.....	53
8-15-1	Analysis Area.....	53
8-15-2	Image Zooming	54
8-15-3	Post-Capture Analysis	55
8-15-4	Thermography Settings.....	55
8-15-4-1	Reflected Temperature.....	55
8-15-4-2	Target Distance	56
8-15-4-3	Humidity	56
8-15-4-4	Atmospheric Transmission	57
8-15-4-5	Optical Transmission.....	57
8-16	Annotations	58
8-16-1	Voice Annotations.....	58
8-16-2	Sketch-on-Image	58
8-16-3	Typed Notes	59
8-17	Reports.....	60
8-17-1	Create a Report.....	60
8-17-2	Print a Report.....	61
8-17-3	Report Settings.....	61
8-17-3-1	Report Logo.....	61
8-17-3-2	Headers	62
8-17-3-3	Footers.....	62
8-17-3-4	PDF Template.....	63
8-18	Media Management.....	63
8-18-1	Review Media.....	63
8-18-2	Review Media on SD Card	64
8-18-3	Delete Media.....	64
8-18-4	Favorite Media.....	65
8-18-5	Renaming Media.....	65
8-18-6	Media Information	66
8-18-7	Export Media.....	66
8-19	Settings.....	67
8-19-1	Heads-up Display Settings	67
8-19-2	Image Watermarks	67
8-19-3	Global Thermography Preference Settings	68

8-19-3-1	Create New Preference Settings.....	68
8-19-3-2	Edit Preference Settings.....	69
8-19-3-3	Delete Preference Settings	69
8-19-3-4	Restore Default Preference Settings.....	70
8-19-4	Password Protection Settings	70
8-19-4-1	Enable Password Protection.....	70
8-19-4-2	Disable Password Protection	71
8-19-4-3	Change the Password.....	71
8-19-5	C button Settings	72
8-19-6	Temperature Units	72
8-19-7	Distance Units.....	73
8-19-8	General Save Settings	73
8-19-8-1	Visible Camera Settings	73
8-19-8-2	Laser Ranging	74
8-19-9	Power Management Settings.....	74
8-19-9-1	Sleep (Hibernation) Mode.....	74
8-19-9-2	Automatic Shutoff	75
8-19-10	Connection Services	75
8-19-10-1	Wi-Fi Settings	75
8-19-10-2	Personal Hotspot	76
8-19-10-3	Local IP Information.....	77
8-19-10-4	Cloud Services.....	78
8-19-10-5	Bluetooth Settings	78
8-19-11	Display Brightness Settings	79
8-19-12	Volume Settings.....	79
8-19-13	Date and Time Settings	80
8-19-13-1	24 Hour Time	80
8-19-13-2	Time Zones.....	80
8-19-13-3	Manually Set Date/Time.....	80
8-19-14	Language Settings	81
8-19-15	Storage Information.....	81
8-19-16	Device Information	82
8-19-17	License Information	82
8-19-18	Synchronous Data	83
8-19-19	Format the SD Card.....	83
8-19-20	Factory Reset the Device	84
8-19-21	Device Software Upgrade.....	84
9.	ThermoTools Software	85
9-1	Recommended System Requirements	85
9-2	Software Installation	85
9-3	Uninstall the Software	87
10.	Cleaning and Maintenance	88
10-1	Cleaning the Germanium Lens.....	88

10-2	Disinfecting the Camera Surface	88
10-3	Device Calibration	88
10-4	Storage.....	88
11.	Troubleshooting.....	89
11-1	Thermal imager does not power on	89
11-2	Thermal imager shuts off unexpectedly.....	89
11-3	No thermal image.....	89
11-4	Unclear or dark visible images.....	89
11-5	Camera out of focus	89
11-6	Temperature data is missing or has strange readings	89
11-7	Temperature readings are incorrect	90
11-6	Memory card error	90
12.	About ICI	91

1. Disclaimers

1-1 Terms and Conditions

Warranty Terms and Condition of Sale are made available online at:

<https://infraredcameras.com/support/terms-and-conditions-of-sale/>

1-2 U.S. Government Regulations

This product may be subject to U.S. Export Regulations. Please send any inquiries to support@infraredcameras.com

1-3 Copyright

© 2021, Infrared Cameras, Inc. All rights reserved worldwide. No parts of the software including source code may be reproduced, transmitted, transcribed or translated into any language or computer language in any form or by any means, electronic, magnetic, optical, manual or otherwise, without the prior written permission of Infrared Cameras, Inc.

The documentation must not, in whole or part, be copied, photocopied, reproduced, translated or transmitted to any electronic medium or machine readable form without prior consent, in writing, from Infrared Cameras, Inc. Names and marks appearing on the products herein are either registered trademarks or trademarks of Infrared Cameras, Inc. and/or its subsidiaries. All other trademarks, trade names or company names referenced herein are used for identification only and are the property of their respective owners.

1-4 Quality Assurance

Infrared Cameras, Inc. is committed to a policy of continuous development; therefore we reserve the right to make changes and improvements on any of the products without prior notice.

1-5 Customer Help

For customer help, visit:

<https://infraredcameras.com/support/>

E-mail:

support@infraredcameras.com

2. User Notice

2-1 Calibration

Annual calibration to the thermal camera is recommended. Contact customer service to schedule maintenance.

2-2 Accuracy

For very accurate results, we recommend that you wait a minimum of 5 minutes after you have started the camera before measuring a temperature.

2-3 Cybersecurity

After the products are connected to the Internet, they may face risks including but not limited to network attacks, hacker attacks, virus infections, etc. The company will not be responsible for the abnormal operation of the products and any loss or liability caused therefrom shall be at your own risk.

2-4 Disposal of Electronic Waste

Electrical and electronic equipment (EEE) contains materials, components and substances that may be hazardous and present a risk to human health and the environment when waste electrical and electronic equipment (WEEE) is not handled correctly.

Equipment marked with the below crossed-out wheeled bin is electrical and electronic equipment. The crossed-out wheeled bin symbol indicates that waste electrical and electronic equipment should not be discarded together with unseparated household waste, but must be collected separately.

All local authorities have established collection schemes under which residents can dispose of equipment at a recycling center or other collection points, or WEEE will be collected directly from households. More detailed information is available from the administration of the relevant local authority. Always dispose of waste in accordance with local, state, and federal regulations.



2-5 Intended Use

The I-Cam Series cameras are used for surface temperature assessment of energy emitted from the first 1/1000th of an inch of a subject.

Environment of use: industrial and petrochemical buildings, electrical plants, security rooms, science labs, animal reserves as well as environmental conservatories, and aerial integrations, among others.

You agree that this product is for civilian use only, and shall not use applications that may infringe the rights of third parties, medical and safety devices or other applications where product failure may lead to life-threatening or personal injury, as well as weapons of mass destruction, chemical and biological weapons, nuclear explosions, unsafe use of nuclear energy, dangerous or humanitarian purposes. Any loss or liability caused therefrom shall be at the your own risk.

2-6 Manual Update

The user manual will be updated from time to time. To access the latest manuals, translations of manuals, and notifications, go to:

<https://infraredcameras.com/product-resources/>

The manufacturer reserves the right to alter the specifications of the product without prior notification. The manufacturer allows himself the right to modify without any preliminary opinion the technical specifications of the product.

2-7 Scope of Application

Infrared Cameras, Inc. issues generic manuals that cover several cameras within a model line.

This means that this manual may contain descriptions and explanations that do not apply to your particular camera model. This manual may contain technical inaccuracies or typographical errors.

2-8 Authoritative Versions

The authoritative version of this publication is English. In the event of divergences due to translation errors, the English text has precedence.

Any late changes are first implemented in English. Other languages may or may not be available.

2-9 Training

To read about infrared training, visit:

<https://infraredtraininginstitute.com/>

3. Safety Information

- Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- To prevent eye damage and personal injury, do not look into the laser. Do not point the laser directly at people or animals or indirectly off reflective surfaces.
- Do not disassemble or modify the thermal device.
- Do not point the imager (with or without the lens cover) at intensive energy sources, e.g. devices that emit laser radiation, or the sun. This can affect the accuracy of the camera, and cause damage to the detector.
- Do not use the imager in temperatures higher than 50 °C (122 °F) or lower than -15 °C (5 °F). High/low temperatures can cause damage to the device.
- Always charge the battery in the special temperature range. The temperature range to charge the battery is 0 °C to 40 °C (32 °F to 104 °F). Charging the battery at temperatures outside this range can cause the battery to become hot or to explode. It can also decrease the performance or the life cycle of the battery.
- Do not continue to charge the battery if it does not become charged in the specified charging time. If you continue to charge the battery, it can become hot and cause an explosion or ignition. Injury to persons can occur.
- Do not attach the batteries directly to a car's cigarette lighter socket. Using the incorrect equipment can cause the battery to become hot or cause an explosion.
- Only use the correct equipment to discharge the battery. Using the incorrect equipment can decrease the performance or the life cycle of the battery. Using the incorrect equipment can cause the battery to become hot or cause an explosion.
- Do not connect the positive terminal and the negative terminal of the battery to each other with a metal object (such as wire). Damage to the batteries can occur.
- The battery contains safety and protection devices which, if they become damaged, can cause the battery to become hot, or cause an explosion or an ignition.
- Do not put holes in the battery with objects. Damage to the battery may occur.
- Do not hit the battery with a hammer or apply strong impacts or electric shocks to it. Damage to the battery may occur.
- Do not put the battery in or near a fire, stove or other high-temperature locations. Damage or ignition of the battery may occur.
- Do not put the battery in direct sunlight or other high-temperature locations. Damage or ignition of the battery may occur.
- Do not solder directly onto the battery. Damage to the battery may occur.

- Do not get water or salt water on the battery or device or permit the device or battery to get wet. Damage to the battery may occur.
- Remove any water or moisture on the battery before you install it. Damage to the battery may occur.
- If there is a leak from the battery and the fluid gets into the eyes, do not rub the eyes. Flush well with water and immediately get medical care.
- Always dispose of battery in accordance with local, state and federal regulations.
- Do not use the battery if, when used, charged, or placed in storage, there is an unusual smell from the battery, the battery feels hot, changes color, changes shape, or is in an unusual condition. Speak with a sales office if one or more of these problems occurs.
- Clean the case with a damp cloth and a weak soap solution. Do not use abrasives, isopropyl alcohol, or solvents to clean the case or lens/screen.
- Be careful when cleaning the infrared lens. Do not clean the infrared lens too vigorously. This can damage the anti-reflective coating.
- Avoid condensation. Taking the imager from cold to hot will cause condensation in thermal imager. To protect the imager, power on the device and wait until it becomes warm enough for the condensation to evaporate.
- Keep device out of reach of children.
- After the eyepiece is used for long time, its contrast will be lowered, and the scene will be whitened. You can switch to the LCD display, and switch back to the eyepiece some time later.
- Storage: If you do not use the imager for a long period of time, put the device in a cool and dry environment. Batteries should be stored in an ambient temperature of -20 °C to 20 °C (-4 °F to 67.9 °F). Lithium batteries will discharge time and should be fully charged before storage. It is recommended to fully recharge the batteries every 3 months to prevent damage. Store the device in an ambient temperature of -40 °C to 70 °C (-40 °F to 158 °F).

THE ENCAPSULATION RATING IS ONLY APPLICABLE WHEN ALL THE OPENINGS ON THE CAMERA ARE SEALED WITH THEIR CORRECT COVERS, HATCHES, OR CAPS. THIS INCLUDES THE COMPARTMENTS FOR DATA STORAGE, BATTERIES, AND CONNECTORS.

4. Technical Specifications

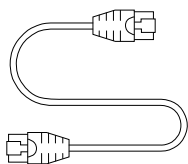
	I-Cam 380	I-Cam 640
Pixel Resolution	384 x 288	640 x 480
Accuracy	± 2°C (± 3.6 °F) or ± 2%	± 1°C (± 1.8 °F) or ± 1%
Temperature Range	Standard: -40 °C to 150 °C (-40 °F to 302 °F), 100 °C to 800 °C (212°F to 1472 °F) Hi-Temp: 700 °C to 2000 °C (1292 °F to 3632 °F)	
Operation Range	-20 °C to 50 °C (-4°F to 122 °F)	
Storage Range	-40 °C to 70°C (-40 °F to 158 °F)	
Detector Array	VOx	
Pixel Pitch	17 µm	
Focal Length	15 mm	25 mm
FOV	24.9° × 18.7°	24.6° × 18.5°
IFOV	1.13 mrad	0.67 mrad
Focus	Automatic/manual	
Measurement Distance	0.15 m (minimum)	0.3 m (minimum)
Spectral Band	7.5 µm to 14 µm	
Thermal Sensitivity (NETD)	< (45 mK) 0.045 °C at 30 °C (86 °F)	< (30 mK) 0.03 °C at 30 °C (86 °F)
Frame Rate	30 Hz (optional 9 Hz)	
Dynamic Range	14-bit	
Humidity	95% non-condensing	
Pixel Operability	> 99 %	
Shock/Vibration	25 G/2 G	
Dimensions (without lens)	206 mm x 135 mm x 145 mm (L x W x H ± 0.5 mm) (8.11" x 5.31" x 5.71" (L x W x H ± 0.02"))	
Power	DC 12V	
Battery	Li-ion, rechargeable/replaceable	
Operation Time	≥ 4 hours	
Charging Time	3 hours	
Power Management	adjustable	
Weight	1.35 kg (2.98 lbs)	
Interface	USB 2.0, Micro HDMI, Ethernet	
Video Storage	Internal	
Video Format	MP4 (without data) or IRGD (with data)	
Video Output	Micro HDMI	

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

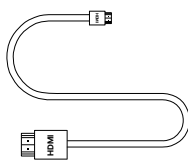
Image Modes	IR image, visible image, picture-in-picture, enhanced	
Image Format	JPG (with data)	
Image Polarity	8 options + custom	12 options + custom
Document Format	PDF	
Printing	Wi-Fi	
Brightness	Adjustable	
Digital Camera	8 MP	13 MP
Super Resolution	768 x 576	1280 x 960
Zoom	1 ~ 10X continuous	1 ~ 35X continuous
Emissivity Correction	0.1 to 1.0	
Memory	Internal: 64 GB SD card: up to 64 GB	
Screen	5" color LCD rotating touchscreen, 1280 x 720	
Viewfinder	1280 x 960 LCOS screen	
Voice Annotation	60 seconds/image	
IP Rating	IP54	
Laser	Class II 650 nm, < 1 mW, supports laser ranging	
Language	Multinational	
Mosaic	N/A	Yes
Automatic alarms		
Interval photography (duration and frequency)		
Voice and text annotation		
Speaker & Microphone		
Internal non-uniformity correction (NUC)		
1/4"-20 tripod support		
Wi-Fi and Bluetooth® support		

Specifications subject to change without further notice. Models and accessories subject to regional market considerations. License procedures may apply. Products described herein may be subject to US Export Regulations. Please refer to support@infraredcameras.com with any questions.

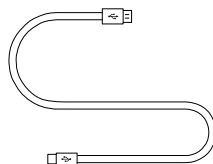
5. Package Includes



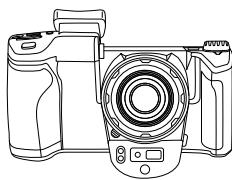
Ethernet Cable



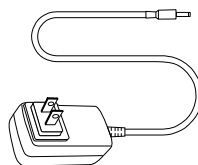
HDMI to Micro HDMI Cable



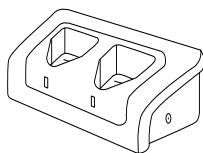
Type-C to USB Cable



I-Cam Device



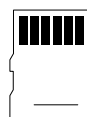
Power Adapter



Charging Base



Battery x2

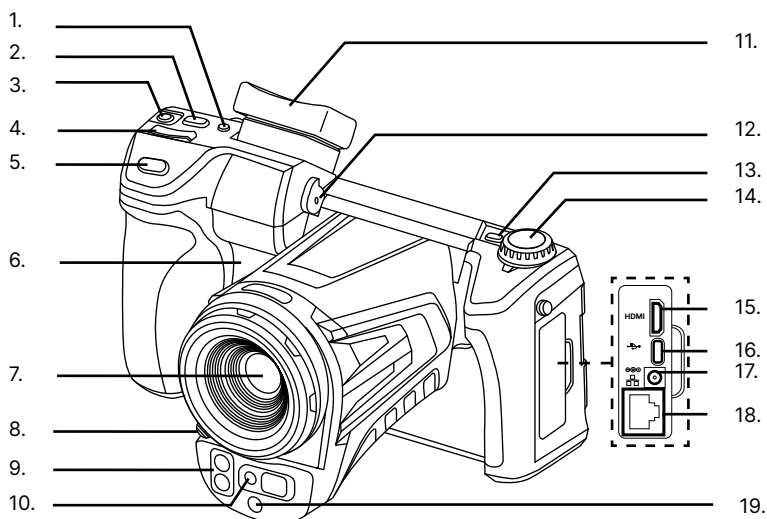


SD Card

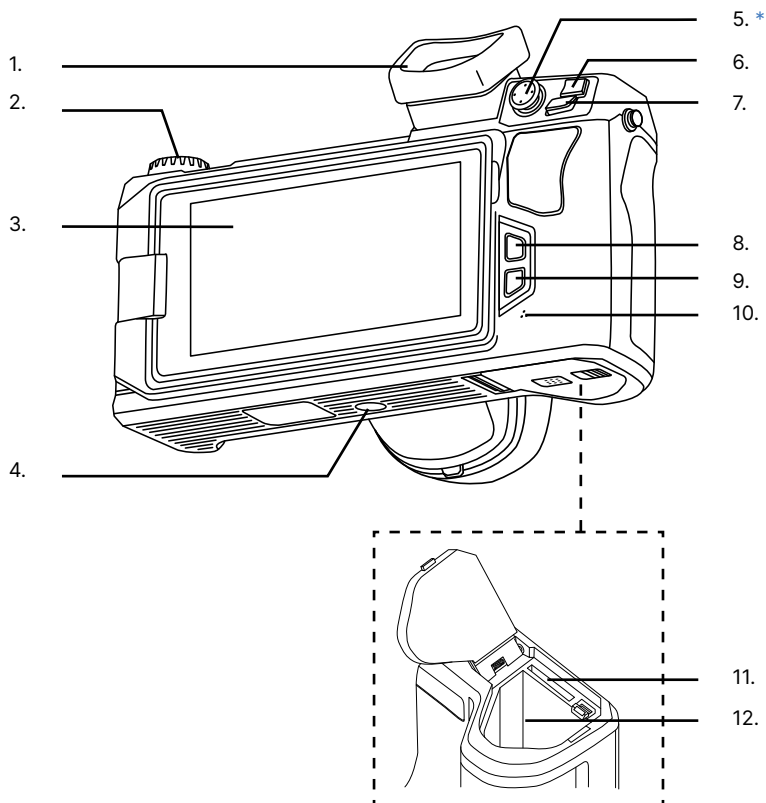
ENSURE ALL SYSTEM EQUIPMENT AND COMPONENT ITEMS ARE PRESENT BEFORE BEGINNING INSTALLATION

6. Structure

5-1 Appearance and Definitions of Interface



- | | |
|----------------------------------|-----------------------|
| 1. LCD/Viewfinder | 11. Viewfinder |
| 2. Non-Uniformity Correction (C) | 12. Diopter Regulator |
| 3. Laser Range | 13. Power |
| 4. Zoom | 14. Mode Dial |
| 5. Capture/Record | 15. Micro HDMI |
| 6. Speaker | 16. Type-C |
| 7. Germanium Lens | 17. AC Adapter |
| 8. Lens Change Button | 18. RJ-45 |
| 9. LED Flashlight | 19. Visible Camera |
| 10. Laser | |



- | | |
|---|------------------|
| 1. Viewfinder | 7. Back/Close |
| 2. Mode Dial | 8. Replay |
| 3. LCD Screen | 9. Level & Span |
| 4. 1/4"-20 Tripod Support | 10. Microphone |
| 5. Thumbstick (up, down, left, right, (T5 = click enter)) * | 11. SD Card Slot |
| 6. Menu | 12. Battery Bay |

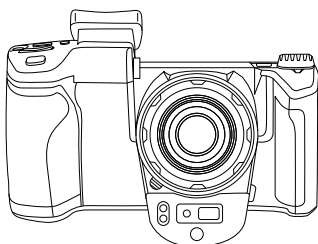
* **THE THUMBSTICK IS A FOUR-WAY DIRECTIONAL JOYSTICK WITH T5 CLICK FEATURE WHICH FUNCTIONS AS AN ENTER KEY. USERS HEAR A CLICK WHEN PRESSING AND DEPRESSING IT.**

7. Quick Start Instructions

7-1 Tripod Setup

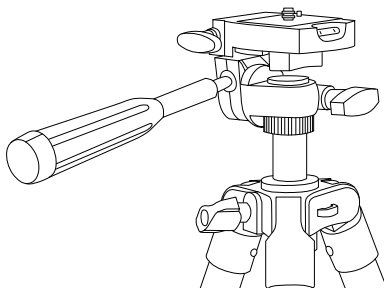
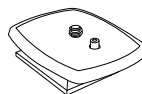
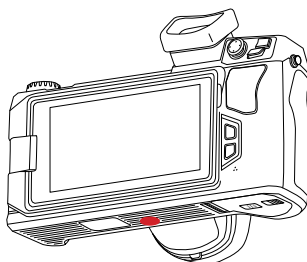
A.

The camera can be used as a handheld device.



or

Mount the fully charged device to a tripod using the 1/4"-20 mount located on the body.

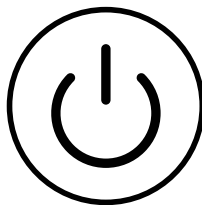


MAKE SURE TRIPODS DO NOT BLOCK THE DIRECT PATH OF PERSON(S) TO BE IMAGED TO ENSURE THE EQUIPMENT WILL NOT BE MOVED OR KNOCKED DOWN. USING A DIVIDING BARRIER WILL HELP KEEP TRIPODS SEPARATE FROM THE PATH.

POWER ON THE CAMERA BY PUSHING AND HOLDING THE POWER BUTTON FOR THREE SECONDS.

B.

Power on device.



PRESS AND HOLD THE POWER BUTTON FOR MORE THAN FIVE SECONDS TO SHUT DOWN THE CAMERA.

AFTER POWERING OFF, WAIT TEN SECONDS BEFORE POWERING THE DEVICE ON AGAIN.

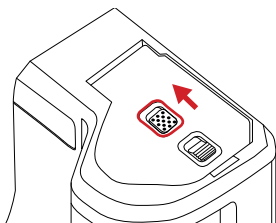
THE THERMAL IMAGER NEEDS SUFFICIENT WARM-UP TIME FOR THE MOST ACCURATE TEMPERATURE MEASUREMENTS AND BEST IMAGE QUALITY. THIS TIME CAN OFTEN VARY BY ENVIRONMENTAL CONDITIONS. IT IS BEST TO WAIT A MINIMUM OF 10 MINUTES FOR THE DEVICE TO COMPLETELY WARM-UP.

7-2 Battery Installation

MAKE SURE TO HOLD THE CAMERA FIRMLY IN BOTH HANDS WHEN REMOVING OR REPLACING THE BATTERY.

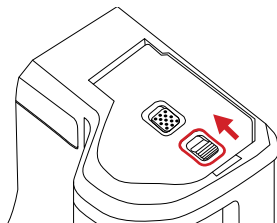
A.

Slide the battery bay latch lock.



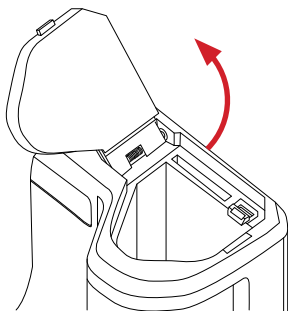
B.

Slide the battery bay cover latch.



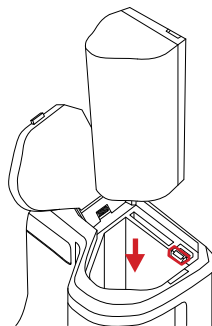
C.

Open the battery bay cover.



D.

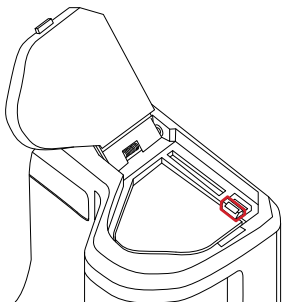
Ensure metal contacts are aligned; then, push the battery into the battery bay until battery is secure under battery buckle.



DO NOT FORCE THE BATTERY INTO THE BATTERY BAY. IF USER FEELS SIGNIFICANT RESISTANCE REMOVE THE BATTERY AND ENSURE METAL CONTACTS ARE ALIGNED BEFORE TRYING TO PLACE BATTERY INTO THE BATTERY BAY.

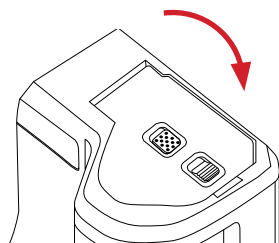
E.

To replace a battery held in the battery bay push the battery buckle. Battery will be ejected.



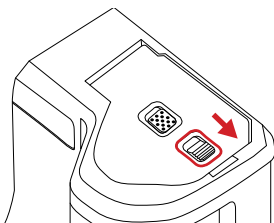
F.

Close the battery bay.



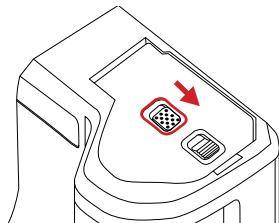
G.

Slide the battery bay latch to secure the battery bay cover.



H.

For extra security slide the battery bay latch lock.



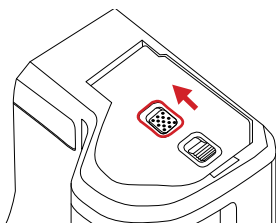
ENSURE BATTERY COVER IS PROPERLY CLOSED. IMPROPER CLOSURE OF BATTERY COVER MAY EXPOSE THE BATTERY AND INTERNAL ELECTRONICS TO ELEMENTAL DAMAGE.

7-3 Memory Card

MAKE SURE TO HOLD THE CAMERA FIRMLY IN BOTH HANDS WHEN REMOVING OR REPLACING THE MEMORY CARD.

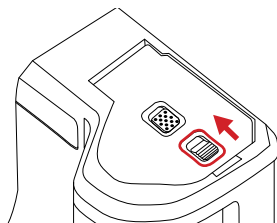
A.

Slide the battery bay latch lock.



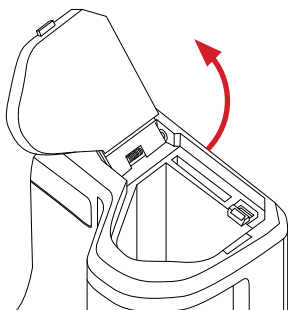
B.

Slide the battery bay cover latch.



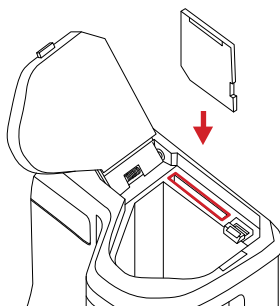
C.

Open the battery bay cover.



D.

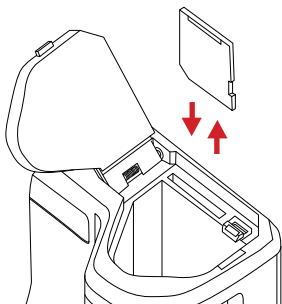
Insert the SD Card into the card bay until a clicking sound is heard.



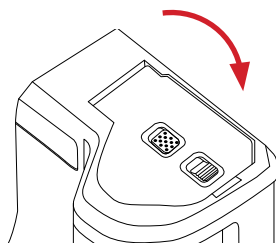
DO NOT FORCE SD CARD INTO THE SLOT. THE SIDE OF THE CARD WITH CONTACT PINS MUST BE INSERTED FIRST. IF THERE IS RESISTANCE FLIP THE CARD AROUND AND TRY AGAIN.

E.

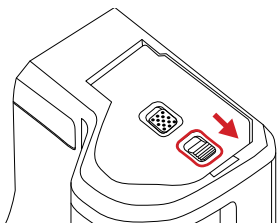
Replace a memory card by pressing downwards on the memory card until a clicking sound is heard; then, release. Memory card will be ejected.

**F.**

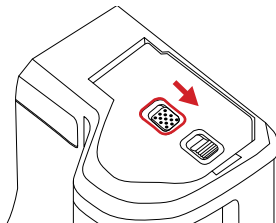
Close the battery bay.

**G.**

Slide the battery bay latch to secure the battery bay cover.

**H.**

For extra security slide the battery bay latch lock.



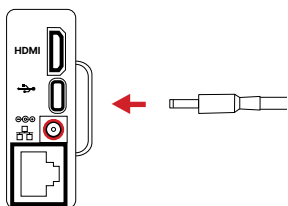
ENSURE BATTERY COVER IS PROPERLY CLOSED. IMPROPER CLOSURE OF BATTERY COVER MAY EXPOSE THE BATTERY AND INTERNAL ELECTRONICS TO ELEMENTAL DAMAGE.

7-4 Charging Instructions: Option 1

CHARGE THE BATTERY FOR A MINIMUM OF 3 HOURS BEFORE USING THE DEVICE FOR THE FIRST TIME.

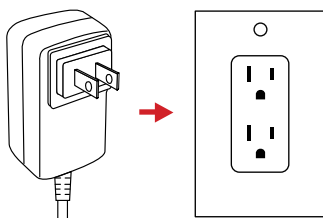
A.

While a battery is inside the device, plug the jack end of the power adapter into the device.



B.

Plug power cord into a 110/120V electrical outlet.



ICI DOES NOT RECOMMEND CHARGING THE DEVICE WHILE IT IS ON A TRIPOD. LAY DEVICE FACE DOWN ON A FLAT AND STABLE DESK OR TABLE WHILE CHARGING.

ENSURE THE IMAGER IS NEAR ROOM TEMPERATURE BEFORE CHARGING THE DEVICE. DO NOT CHARGE IN EXTREMELY HOT OR COLD AREAS. THE BATTERY CAPACITY MAY BE DECREASED IF CHARGED IN AN EXTREME TEMPERATURE ENVIRONMENT.

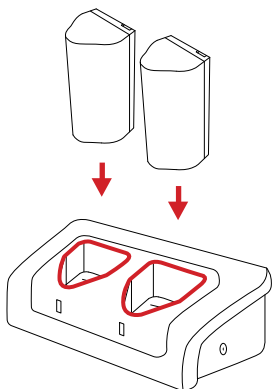
IF YOU DO NOT USE THE IMAGER FOR A LONG PERIOD OF TIME, PUT THE DEVICE IN A COOL AND DRY ENVIRONMENT. THE BATTERY WILL DISCHARGE OVER TIME; THEREFORE, THE IMAGER SHOULD BE CHARGED OCCASIONALLY TO PREVENT DAMAGE TO THE BATTERY OR THE DEVICE.

7-5 Charging Instructions: Option 2

REMOVE THE BATTERIES FROM THE DEVICE BEFORE CONTINUING WITH THIS METHOD OF CHARGING.

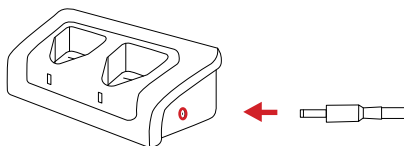
A.

Insert batteries into the battery charging base.



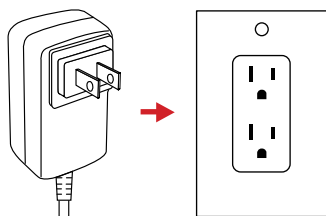
B.

Plug the jack end of the power adapter into the battery charging base.



C.

Plug power cord into a 110/120V electrical outlet.



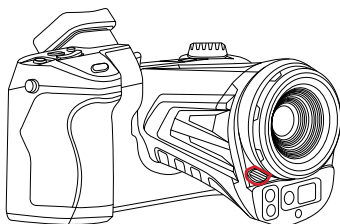
WHEN THE BATTERY IS NOT PLACED IN THE BATTERY CHARGING BASE THE INDICATOR LIGHT FLASHES. THE LIGHT TURNS RED WHEN THE BATTERY IS PLACED AND CHARGING. WHEN THE BATTERY IS FULLY CHARGED THE LIGHT TURNS GREEN.

7-6 Lens installation

MAKE SURE TO HOLD THE CAMERA FIRMLY IN BOTH HANDS WHEN CHANGING THE LENS.

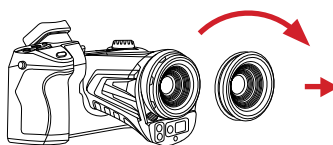
A.

Press the lens changing button.



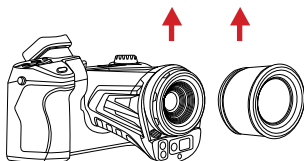
B.

Rotate the attached lens clockwise to remove.



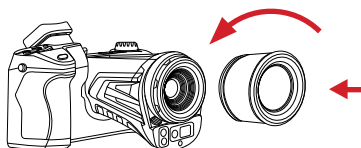
C.

Align the lens threads with the U-shaped notch upwards.



D.

Rotate the lens counter clockwise until a clicking sound is heard.



DO NOT FORCE LENS INTO THE SLOT AS THREADS MAY STRIP. IF USER FEELS SIGNIFICANT RESISTANCE REMOVE THE LENS AND ENSURE U-SHAPED NOTCH IS UPWARDS AND THREADS ARE ALIGNED; THEN, TURN THE LENS COUNTER CLOCKWISE.

PLACE THE LENS IN ITS LENS CONTAINER WHEN NOT IN USE TO AVOID DAMAGE TO THE LENS. AVOID DROPPING OR SMASHING THE LENS TO AVOID LENS DAMAGE.

8. Operation Instructions

8-1 How to Charge the Battery

Charge the battery for a minimum of 3 hours before using the imager for the first time.

The battery status is shown by the indicator in the upper left corner of the screen. When 20% charge is remaining, a warning is displayed on the screen. The instrument powers off within approximately 10 minutes.

8-1-1 Charging via Battery Charging Base

1. Plug the jack end of the power adapter into the battery charging base.
2. Align the positive and negative terminals of the battery and the battery charging base; then, insert batteries into the battery charging base.
3. Plug the power adapter cord of the battery charging base into a 110v/120V electrical outlet.

WHEN THE BATTERY IS NOT PLACED IN THE BATTERY CHARGING BASE THE INDICATOR LIGHT FLASHES. THE LIGHT TURNS RED WHEN THE BATTERY IS PLACED AND CHARGING. WHEN THE BATTERY IS FULLY CHARGED THE LIGHT TURNS GREEN.

8-1-2 Charging via Power Adapter

1. With the battery inside the device, plug the power adapter jack into the charge port on the side of the device.
2. Plug the power adapter cord into a 110v/120V electrical outlet.

ENSURE THE IMAGER IS NEAR ROOM TEMPERATURE BEFORE CHARGING THE DEVICE. DO NOT CHARGE IN EXTREMELY HOT OR COLD AREAS. THE BATTERY CAPACITY MAY BE DECREASED IF CHARGED IN AN EXTREME TEMPERATURE ENVIRONMENT.

8-2 Power On/Off the Device

To power the device on, push and hold the Power button for 3 seconds. It takes approximately 50 seconds for the head-up display to load and the camera to begin taking measurements.

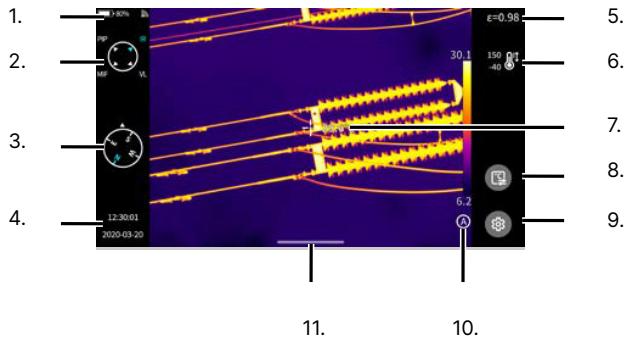
To power the device off, push and hold the Power button until a prompt appears. Press OK to turn off the device. Tap Cancel to leave device powered on.

AFTER POWERING OFF, WAIT TEN SECONDS BEFORE ATTEMPTING TO POWER THE DEVICE ON AGAIN.

THE THERMAL IMAGER NEEDS SUFFICIENT TIME TO WARM-UP FOR THE MOST ACCURATE TEMPERATURE MEASUREMENTS AND BEST IMAGE QUALITY. THIS TIME CAN OFTEN VARY BY ENVIRONMENTAL CONDITIONS. IT IS BEST TO WAIT A MINIMUM OF 10 MINUTES FOR THE DEVICE TO COMPLETELY WARM-UP.

8-3 User Interface

The device interface appearance:



- | | |
|---------------------------------|-----------------------|
| 1. Battery Life | 7. Measurement Point |
| 2. Image Mode | 8. Tools |
| 3. Compass (enable in Settings) | 9. Settings |
| 4. Date/Time | 10. Level & Span |
| 5. Emissivity | 11. Quick Access Menu |
| 6. Temperature Range | |

8-3-1 Open the main menu

Users can access the main menu either by tapping the settings button on the touchscreen or by pressing the Menu button on the back of the device.

8-3-2 Close the main menu

Close the main menu by pressing the Close button.

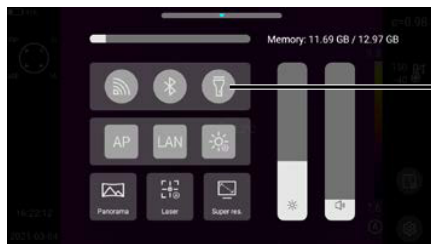
DO NOT LOOK INTO THE FLASHLIGHT OR LASER. LOOKING INTO THE FLASHLIGHT OR LASER MAY CAUSE EYE DAMAGE AND PERSONAL INJURY. DO NOT POINT THE FLASHLIGHT OR LASER DIRECTLY AT PEOPLE OR ANIMALS OR INDIRECTLY OFF REFLECTIVE SURFACES.

8-4 Flashlight and Laser

8-4-1 Power On/Off the Flashlight

Use the flashlight to assist visibility in dark locations.

1. Using the touchscreen, tap the Quick Access Menu bar located at the bottom of the screen. Quick Access Menu opens.
2. Tap the Flashlight button to power on the light. Feature highlights blue when enabled. Tap the Flashlight button again to power off the light.
3. Press the Back button to close the Quick Access Menu.

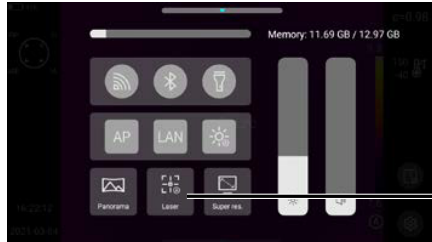


LEAVING THE FLASHLIGHT AND LASER ON DRAINS THE BATTERY AT AN INCREASED RATE. POWER OFF THE FLASHLIGHT AND LASER WHEN NOT IN DIRECT USE.

8-4-2 Power On/Off the Laser

Use the laser to assist in location awareness.

1. Using the touchscreen, tap the Quick Access Menu bar located at the bottom of the screen. Quick Access Menu opens.
2. Tap the Laser button to power on the laser. Feature highlights blue when enabled. Tap the Laser button again to power off the laser.
3. Press the Back button to close the Quick Access Menu.

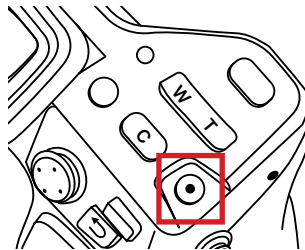


2.

8-4-3 Laser Range

Users can determine the distance to a target object by using the Laser Range function. This tool sends out a pulse of laser light and measures the round trip time to estimate the distance to the target object.

Press the Laser Range button to begin ranging. The distance is calculated internally; when measurement is complete, the result is shown on screen. The measurement disappears after some time.



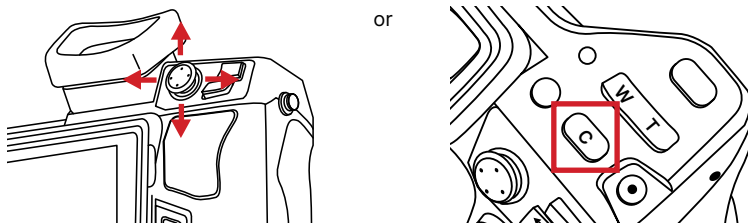
DO NOT LOOK INTO THE FLASHLIGHT OR LASER. LOOKING INTO THE FLASHLIGHT OR LASER MAY CAUSE EYE DAMAGE AND PERSONAL INJURY. DO NOT POINT THE FLASHLIGHT OR LASER DIRECTLY AT PEOPLE OR ANIMALS OR INDIRECTLY OFF REFLECTIVE SURFACES.

8-5 Manual Focus/Auto Focus

Press up or down on the Thumbstick to adjust the focus. When the target comes into focus, it shows a sharper image. When the target moves out of focus, the thermal image becomes blurry.

Users can also program the Custom Button (C button) to function as an auto focus. If programmed, aim at the target object, press the C button; then, wait until focusing is finished.

Correct focus is important in all imaging applications. Correct focus makes sure that the infrared energy is correctly directed onto the pixels of the detector. This leads to accurate data collection.

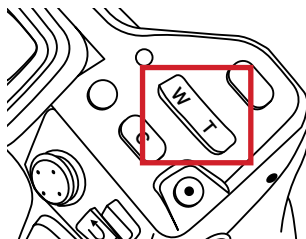


8-6 Non-uniformity Correction

Non-uniformity correction (NUC) is used to compensate for the non-uniformity of detector pixels or other optical interference. The infrared device features an automatic NUC operation. Press the C button to perform a manual NUC operation. When performing a correction operation, the user hears a click from the device and the image freezes temporarily. The image may clear of some noise grain after the device makes its adjustments.

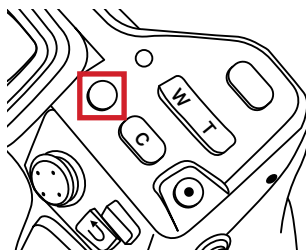
8-7 Digital Zoom

The imager offers digital zoom. Press the W (zoom out) and T (zoom in) buttons on the device to perform digital zoom operation. When zoomed in or zoomed out, the zoom factor displays in the upper middle portion of the screen with a magnifying glass icon.



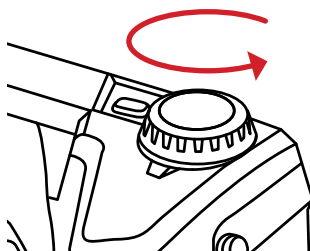
8-8 LCD/Viewfinder Toggle

The LCD screen is enabled by default to display the main interface after startup. Press the LCD/Viewfinder button to switch between the LCD screen and viewfinder. Press the LCD/Viewfinder button again to restore the LCD screen display and disable the viewfinder.



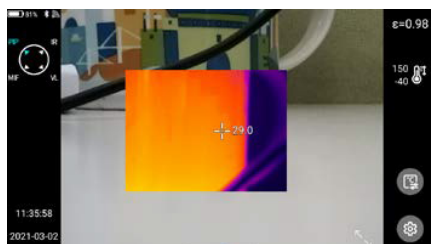
8-9 Image Mode

By rotating the mode dial at the upper left of the device, the image can be switched. The image mode indication icon pops up in the upper left corner of the main interface.



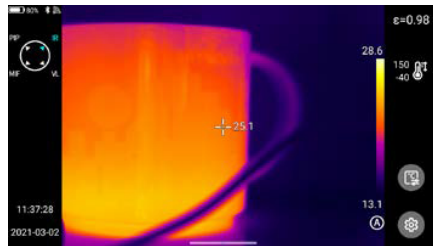
8-9-1 Picture-in-Picture

Displays an infrared image over a visible image.



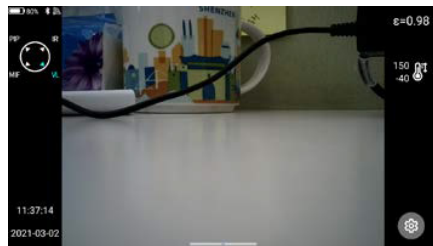
8-9-2 Infrared

Displays the thermal image only.



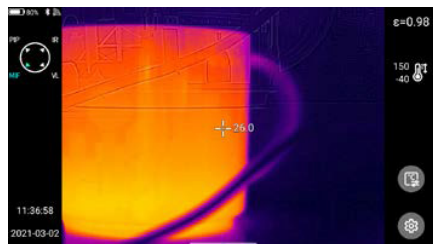
8-9-3 Visible

Displays the visible light image only.



8-9-4 Enhanced Mode (MIF)

Displays a digitally enhance image overlay over a thermal image. Use the Thumbstick to align the images before capturing an image.



8-10 Enable/Disable Super Resolution

Users may enable the Super Resolution function to enlarge images four times to get a higher resolution image.

1. Using the touchscreen, tap-and-drag upwards on the Quick Access Menu bar located at the bottom of the screen. Quick Access Menu opens.
2. Tap the Super Resolution button (abbreviated Super Res.) to enable higher resolution imaging. Feature highlights blue when enabled. Tap the Super Resolution button again to disable the feature.
3. Close the Quick Access Menu by pressing the Close button.

8-11 Capture an Image or Video

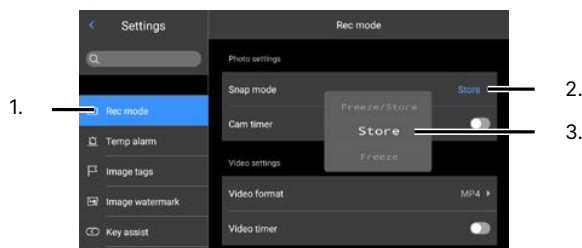
Save images as follows:

1. Find and aim the thermal device at the target.
2. Adjust the focus until the image is clear.
3. Press the Capture button to take an image. Long press the Capture button to record a video. Depending on user settings the media either auto saves or freezes without saving.

8-11-1 Auto Saving

Auto saving is enabled by default. Users can reset adjusted settings as follows:

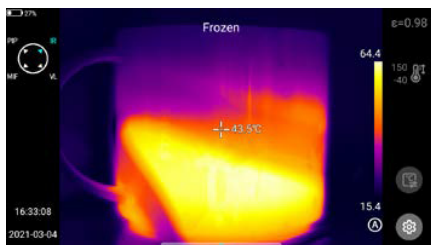
1. Press the Menu button to open the main menu. The Record Mode (abbreviated Rec Mode) tab should be open by default.
2. Using the touchscreen, tap Snap Mode. A rotary menu appears.
3. Press up or down on the Thumbstick to select Store.
4. Press the Back button repeatedly to exit the main menu.



8-11-2 Media Freezing

Freeze holds media on the screen without saving. This can be useful in situations where storing media is unnecessary. Users can enable the settings imaging freezing as follows:

1. Press the Menu button to open the main menu. The Record Mode (abbreviated Rec Mode) tab should be open by default.
2. Using the touchscreen, tap Snap Mode. A rotary menu appears.
3. Press up or down on the Thumbstick to select Freeze.
4. Press the Back button repeatedly to exit the main menu.



MEDIA FREEZING FREEZES AN IMAGE ON THE SCREEN WITHOUT SAVING THE MEDIA. TO SAVE MEDIA ENABLE AUTO SAVING OR CONFIRMED SAVING.

8-11-3 Confirmed Saving

Confirmed saving freezes an image on the screen without saving. Enable confirmed saving as follows:

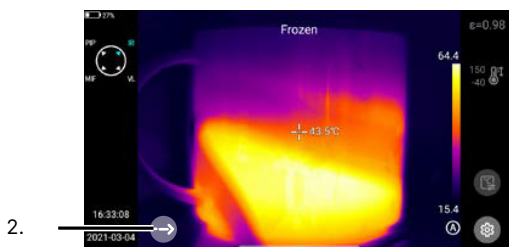
1. Press the Menu button to open the main menu. The Record Mode (abbreviated Rec Mode) tab should be open by default.
2. Using the touchscreen, tap Snap Mode. A rotary menu appears.
3. Press up or down on the Thumbstick to select Freeze/Store.
4. Press the Back button repeatedly to exit the main menu.

MEDIA CAPTURED IN CONFIRMED SAVE MODE MUST BE MANUALLY SAVED.

8-11-3-1 Manually Saving Media

Manually save an image as follows:

1. After enabling confirmed saving, capture an image. An indicator appears on the screen to let the user know capture is in progress.
2. Using the touchscreen, tap the arrow icon in the lower left corner. The Review Screen opens. Perform thermal analysis if preferred.
3. Press the Back button. A prompt appears.
4. Tap Confirmed to save the image. Press the Back button to return to the Review Screen and continue editing the image. Tapping Cancel on the touchscreen exits the Review Area and discard changes unsaved. Menu closes automatically when saving or discarding is complete.



8-12 Panoramic Imaging

Users may capture a series of images to stitch into one panoramic image. This function requires the ThermoTools analysis software.

8-12-1 Enable Panoramic Imaging

Capture a series of images for panoramic stitching as follows:

1. Using the touchscreen, tap-and-drag upwards on the Quick Access Menu bar located at the bottom of the screen. Quick Access Menu opens.
2. Tap the Panorama button. Feature highlights blue when enabled. Menu closes automatically.
3. Follow the prompts shown on the screen to capture up to 9 images.
4. When user is finished capturing images, tap the check mark located next to the Level & Span Bar to the middle right of the screen. Media is saved to the gallery and can be stitched together on a computer using the ThermoTools Analysis Software.

THE PANORAMA FEATURE REQUIRES THE THERMOTOOLS ANALYSIS SOFTWARE TO PERFORM PANORAMIC STITCHING.

8-12-2 Disable Panoramic Imaging

Turn off Panorama mode as follows:

1. Using the touchscreen, tap-and-drag upwards on the Quick Access Menu bar located at the bottom of the screen. Quick Access Menu opens.
2. Tap the Panorama button. Feature turns gray with disabled. Menu closes automatically.

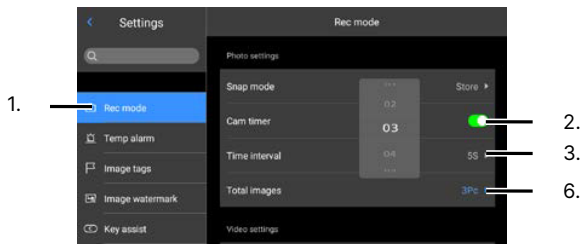
8-13 Interval Photography/Videography

8-13-1 Photography Settings

Interval photography allows for the auto saving of images at regular intervals. Images are taken at a user defined frequency and cannot be programmed to capture images when a temperature threshold is exceeded.

Interval photography is disabled by default. Enable the feature and change the frequency as well as number of images to be captured as follows:

1. Press the Menu button to open the main menu. The Record Mode (abbreviated Rec Mode) tab should be open by default.
2. Using the touchscreen, toggle the Camera Timer (abbreviated Cam Timer) setting to the On position by tapping the switch. The switch turns green when active and new settings appear. Disable the timer by tapping the switch again.
3. Tap Time Interval. A rotary menu appears.
4. Use the rotary dials to set minutes and seconds by pressing-and-holding the on screen dials one at a time; then, drag up or down on the touchscreen to set parameters.
5. Press the Back button to exit the rotary menu.
6. Tap Total Images. A rotary menu appears.
7. Press up or down on the Thumbstick to define the number of images to be captured.
8. Press the Back button to exit the rotary menu.
9. Press the Back button to exit the main menu.

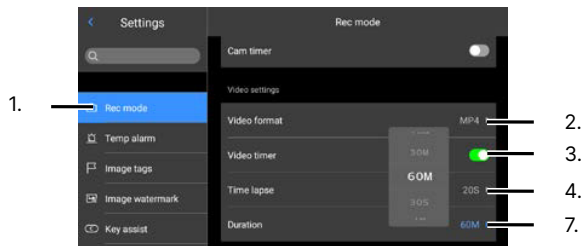


8-13-2 Videography Settings

Interval videography allows for the auto saving of videos at regular time lapse intervals. Videos are only taken at a user defined frequency and cannot be programmed to be captured when a temperature threshold is exceeded.

Interval videography is disabled by default. Change the time lapse between captures and duration of videos as follows:

1. Press the Menu button to open the main menu. The Record Mode (abbreviated Rec Mode) tab should be open by default.
2. The default video format is MP4. Change if required.
3. Using the touchscreen, toggle the Video Timer setting to the On position by tapping the switch. The switch turns green when active and new settings appear. Disable the timer by tapping the switch again.
4. Tap Time Lapse. A rotary menu appears.
5. Press up or down on the Thumbstick to define the amount of time to lapse between video captures.
6. Press the Back button to exit the rotary menu.
7. Tap Duration. A rotary menu appears.
8. Press up or down on the Thumbstick to define the length of the videos to be captured.
9. Press the Back button to exit the rotary menu.
10. Press the Back button to exit the main menu.



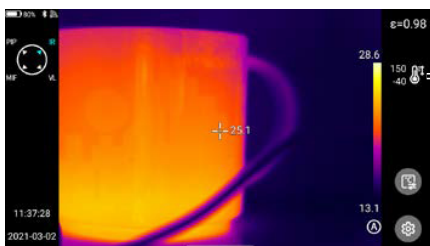
MEDIA IS SAVED INTERNALLY BY DEFAULT. THE DEVICE CAPTURES MEDIA ACCORDING TO THE SET TIME INTERVALS. WHEN THE DEFINED NUMBER OF PICTURES OR VIDEO LENGTH IS REACHED, THE CAMERA STOPS CAPTURING MEDIA AND THE FUNCTION IS AUTOMATICALLY DISABLED. USERS NEED TO ENABLE THE FEATURE AGAIN IN ORDER TO CAPTURE MORE IMAGES OR VIDEOS USING THIS METHOD.

8-14 Real-time Thermal Analysis

8-14-1 Temperature Range

The default temperature scale of the device is -40 °C to 150 °C (-40 °F to 302 °F). Other temperature calibrations may also be available. Change the temperature scale as follows:

1. Using the touchscreen, tap the Temperature Scale icon. A rotary menu appears.
2. Press up or down on the Thumbstick to select a temperature scale. Selecting Auto causes the device to automatically adjust to the temperatures detected in the scene.
3. Press the Back button to exit the rotary menu.



SELECT THE APPROPRIATE TEMPERATURE RANGE AND SET EMISSIVITY BEFORE CAPTURING MEDIA OR PERFORMING THERMAL ANALYSIS.

8-14-2 Emissivity

To more accurately measure materials with a low emissivity, an emissivity correction is necessary. The emissivity displays on the LCD screen in the upper right corner as $E=x.xx$.

Change the emissivity as follows:

1. Using the touchscreen, tap the emissivity value. Emissivity Menu appears.
2. Choose an option:
 - Press up or down on the Thumbstick to select a programmed emissivity value from the Material list, or
 - Tap Custom; then, press down on the Thumbstick button to increase the emissivity value; press up on the Thumbstick button to decrease the emissivity value. A list of common emissivity values appears on the next page.
3. Press the Back button to exit the Emissivity Menu.

All objects radiate infrared energy. The amount of energy radiated varies based on the actual surface temperature and the surface emissivity of the object. The Thermal imager senses the infrared energy from the surface of the object and uses this data to calculate an estimated temperature value.

Many common objects and materials such as painted metal, wood, water, skin, and cloth are particularly good at radiating energy and it is easy to get relatively accurate measurements. For surfaces that are good at radiating energy (high emissivity), the emissivity factor is ≥ 0.90 . This simplification does not work on shiny surfaces or unpainted metals as they have an emissivity of < 0.6 . These materials are not good at radiating energy and are classified as low emissivity.

The following table gives typical emissivity of important materials:

Material	Emissivity
Water	0.36
Stainless steel	0.14
Aluminum plate	0.09
Asphalt	0.96
Concrete	0.97
Cast iron	0.81
Rubber	0.95
Wood	0.85
Brick	0.75
Tape	0.96
Brass plate	0.06
Human skin	0.98
PVC plastic	0.93
Polycarbonate	0.80
Oxidized copper	0.78
Rust	0.80
Paint	0.90
Soil	0.93

SURFACES WITH AN EMISSIVITY OF < 0.60 MAKE RELIABLE AND CONSISTENT MEASUREMENTS PROBLEMATIC. THE LOWER THE EMISSIVITY, THE GREATER POTENTIAL FOR ERROR WITHIN THE DEVICE'S CALCULATIONS. ERRORS MAY STILL OCCUR EVEN WHEN ADJUSTMENTS ARE PERFORMED PROPERLY.

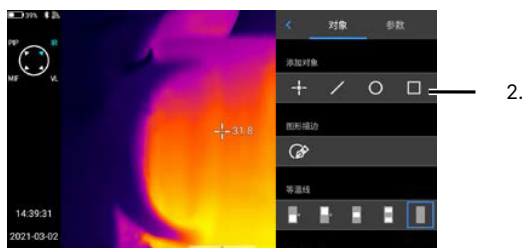
8-14-3 Analysis Objects

Users can have a total of 20 temperature analysis objects on screen at any given time. Radiometric temperature information is displayed in the upper left corner of the screen

8-14-3-1 Create Analysis Objects

Users can create various temperature measurement analysis objects such as points, lines, circles, and rectangles. Add an analysis object as follows:

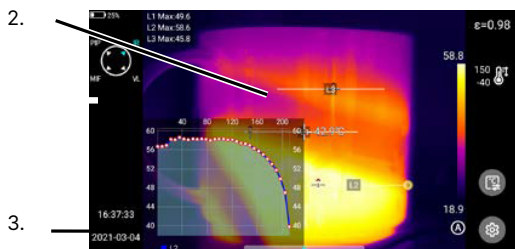
1. Using the touchscreen, tap the Tools icon. A side menu appears.
2. Tap on the preferred shape. Menu closes automatically and the analysis object appears on screen.



8-14-3-2 Linear Analysis Objects

Linear analysis objects are special and appear on screen with a chart that graphs temperature points along the shape. Create a linear analysis object as follows:

1. Using the touchscreen, tap the Tools icon. A side menu appears.
2. Tap on the line shape. Menu closes automatically and the analysis object appears on screen with a graph chart.

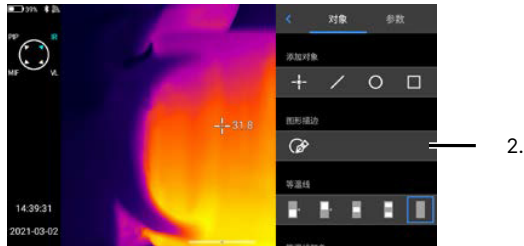


TAP THE GRAPH TO CLOSE THE GRAPH.

8-14-3-3 Free Hand Analysis Objects

Users can draw analysis object by hand as follows:

1. Using the touchscreen, tap the Tools icon. A side menu appears.
2. Tap the live drawing icon.
3. Draw on the touchscreen by following the on screen prompts.
4. When user is finished drawing, tap the check mark located to the right to begin gathering temperature data. Tap the X in the upper right corner to discard drawing without gathering temperature data.



8-14-3-4 Temperature Differential Analysis (ΔT)

Determine the difference in temperature between two points using the temperature differential analysis function know as Delta T as follows:

1. Create at least two analysis objects.
2. Using the touchscreen, tap the Tools icon. A side menu appears.
3. Press down on the Thumbstick to scroll through the menu until the Δ icon is visible.
4. Tap on the Δ icon to enable the temperature differential analysis function. Menu closes automatically. New analysis objects cannot be created while the function is enabled. Skip to Step 6 if new analysis objects are required.
5. Select two analysis objects following the on screen prompts. Radiometric information is displayed in the upper left corner.
6. When analysis is finished, tap the Tools icon. A side menu appears.
7. Press down on the Thumbstick to scroll through the menu until the Δ icon is visible.
8. Tap on the Δ icon to disable the temperature differential analysis function. Menu closes automatically. New analysis objects can now be created.

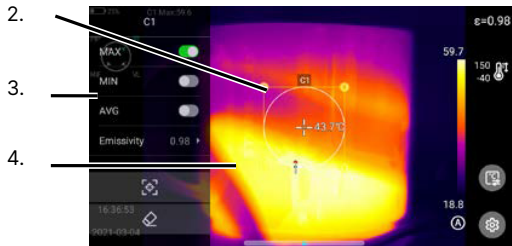
NEW ANALYSIS OBJECTS CANNOT BE CREATED WHILE THE TEMPERATURE DIFFERENTIAL ANALYSIS FUNCTION IS ENABLED. DISABLE THE DELTA T FUNCTION TO CONTINUE GATHERING TEMPERATURE DATA.

8-14-3-5 Adjust Analysis Object Settings

Users can adjust the local settings of an analysis object which includes its ability to detect the maximum, minimum, and average temperature within or along its shape. Users can also define the emissivity of analysis object if it varies from the global emissivity (see **Section 8-14-2 Emissivity** and **Section 8-19-3 Global Thermography Preference Settings**).

Adjust an analysis objects settings as follows:

1. Create an analysis object or tap an existing temperature analysis object to select it.
2. Using the touchscreen, press-and-hold the temperature analysis shape until a side menu appears.
3. Adjust settings as preferred. Tap the center icon to align the temperature analysis object to the center of the screen.
4. Tap outside the menu to close the side menu.



8-14-3-6 Move an Analysis Object

Move an analysis object as follows:

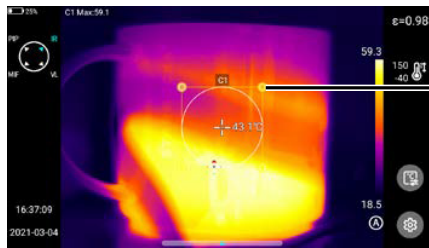
1. Create an analysis object or tap an existing temperature analysis object to select it.
2. Using the touchscreen, press-and-hold the temperature analysis shape; then, drag the object to the new location.



8-14-3-7 Resize an Analysis Object

Resize an analysis object as follows:

1. Create an analysis object or tap an existing temperature analysis object to select it.
2. Using the touchscreen, press-and-hold a yellow node at the edge of a temperature analysis shape; then, drag to resize.



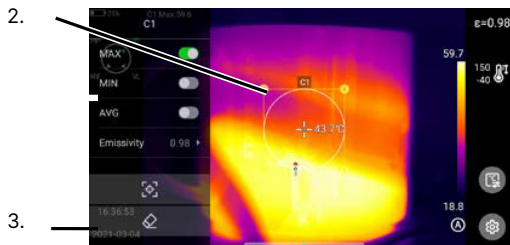
2.

MOVE ANY NODE TO CHANGE THE AREA OF THE ANALYSIS OBJECT.

8-14-3-8 Delete an Analysis Object

Delete an existing analysis object as follows:

1. Tap an analysis object to select it.
2. Using the touchscreen, press-and-hold the temperature analysis shape until a side menu appears.
3. Tap the eraser icon to delete the analysis object. Menu closes automatically.



2.

3.

8-14-3-9 Delete ALL Analysis Objects

Delete all existing analysis objects as follows:


1. Using the touchscreen, tap the Tools icon. A side menu appears.
2. Tap the trash can icon. A prompt appears.
3. Tap Confirmed to delete all existing analysis objects. Tap Cancel to exit without discarding analysis objects. Menu may close automatically.
4. Press the Back button to exit menu.

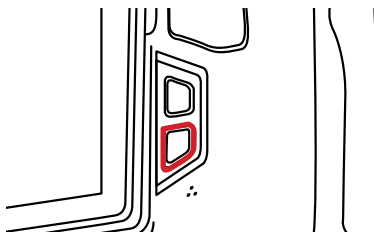
9-14-4 Level & Span

To the right of the imaging interface is the Level & Span bar which plots the surface temperature information detected by the system. The maximum temperature is displayed on the top and the minimum temperature on the bottom. These numbers change depending on the physics of the scene. Preferably, any temperature detected by the thermal device falls between the maximum and minimum temperature detected. If a number falls outside this range the image may “wash out”, i.e. the extraneous energy in the viewing environment may reduce the perceived contrast of the image. Adjust the gain control numbers to improve contrast.

8-14-4-1 Auto Gain Control (AGC)

The Auto Gain Control (AGC) function is enabled by default and automatically assists users in fine-tuning image contrast. If the user has manually adjusted the gain controls a reset can be performed as follows:


1. Press the Level & Span button on the back of the device until the  icon appears below the Level & Span bar. Contrast automatically adjusts.



CYCLE THROUGH THE AVAILABLE GAIN CONTROL OPTIONS BY PRESSING THE LEVEL & SPAN BUTTON ON THE BACK OF THE DEVICE.


8-14-4-2 Manual Level & Span Adjustment

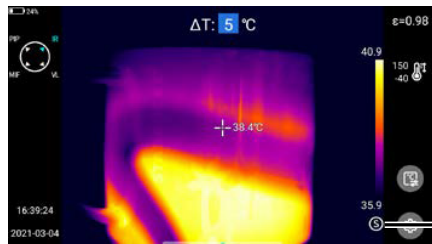
The user has control of contrast gain settings and can adjust the Level & Span as follows:

1. Press the Level & Span button on the back of the device until the  icon appears below the Level & Span bar.
2. Tap the lock next to the maximum temperature. A rotary menu appears.
3. Press up or down on the Thumbstick to select a temperature.
4. Press the Back button to save and exit the rotary menu.
5. Tap the lock next to the minimum temperature. A rotary menu appears.
6. Press up or down on the Thumbstick to select a temperature.
7. Press the Back button to save and exit the rotary menu.

8-14-4-3 Semi-Auto Gain Control (S-AGC)

The Semi-Auto Gain Control (S-AGC) function assists users in fine-tuning image contrast based on a temperature differential (ΔT). Adjust the gain controls as follows:

1. Press the Level & Span button on the back of the device until the  icon appears below the Level & Span bar. A ΔT numerical value appears at the top of the screen.
2. Adjust the ΔT numerical value using the Thumbstick. Press up to increase the maximum temperature and decrease the minimum temperature simultaneously. Press down to decrease the maximum temperature and increase the minimum temperature simultaneously. During the adjustment process, the image contrast changes simultaneously.



1.

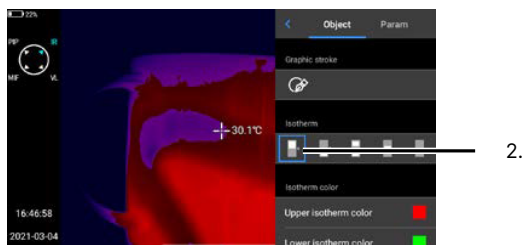
9-14-5 Isotherms

An Isotherm is a definable, high-contrast overlay that allows users to locate regions exhibiting similar temperatures or highlight and define hot/cold regions of monochromatic images. Users can only define isotherm.

8-14-5-1 Hot Isotherm

A hot isotherm blocks out hottest temperatures detected in a scene. Block high temperatures as follows:

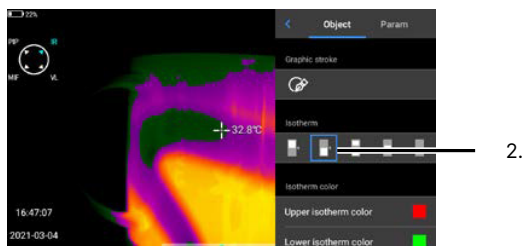
1. Using the touchscreen, tap the Tools icon. A side menu appears.
2. Tap the isotherm icon. Menu closes automatically as isotherm is created.



8-14-5-2 Cold Isotherm

A cold isotherm blocks out coldest temperatures detected. Block low temperatures as follows:

1. Using the touchscreen, tap the Tools icon. A side menu appears.
2. Tap the isotherm icon. Menu closes automatically as isotherm is created.

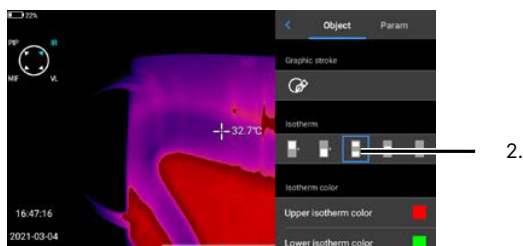


ISOTHERMS ARE SHOWN AS A BLOCK OF WHITE COLOR ON THE LEVEL & SPAN ICON LOCATED INSIDE THE TOOLS MENU. DISABLE AN ISOTHERM BY SELECTING THE GRAY PALETTE BAR.

8-14-5-3 Mid-Field Isotherm

A mid-field isotherm blocks out the hottest and coldest temperatures detected but leaves the middle temperatures unblocked. Block temperatures as follows:

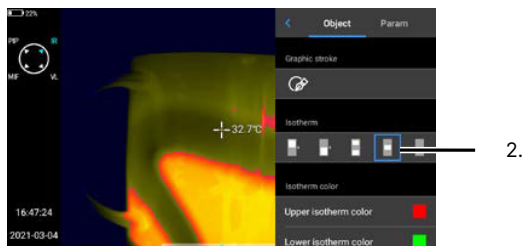
1. Using the touchscreen, tap the Tools icon. A side menu appears.
2. Tap the isotherm icon. Menu closes automatically as isotherm is created.



8-14-5-4 Extra-Field Isotherm

An extra-field isotherm blocks out the middle temperatures detected but leaves the hottest and coldest temperatures unblocked. Block temperatures as follows:

1. Using the touchscreen, tap the Tools icon. A side menu appears.
2. Tap the isotherm icon. Menu closes automatically as isotherm is created.

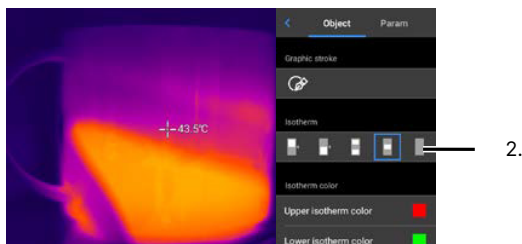


ISOTHERMS ARE SHOWN AS A BLOCK OF WHITE COLOR ON THE LEVEL & SPAN ICON LOCATED INSIDE THE TOOLS MENU. DISABLE AN ISOTHERM BY SELECTING THE GRAY PALETTE BAR.

8-14-5-5 Disable an Isotherm

An extra-field isotherm blocks out the middle temperatures detected but leaves the hottest and coldest temperatures unblocked. Block temperatures as follows:

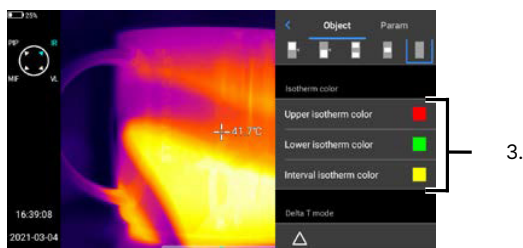
1. Using the touchscreen, tap the Tools icon. A side menu appears.
2. Tap the palette icon. Menu closes automatically as isotherm is disabled.



8-14-5-6 Isotherm Settings

Adjust the colors that make up the isotherm color blocks as follows:

1. Using the touchscreen, tap the Tools icon. A side menu appears.
2. Press down on the Thumbstick to scroll through the menu until the isotherm color options are visible.
3. Tap the isotherm color block to change. A rotary menu appears.
4. Press up or down on the Thumbstick to select a color.
5. Press the Back button to save and exit the rotary menu.
6. Press the Back button to exit the Tools Menu.



8-14-6 Temperature Alarms

8-14-6-1 Enable an Alarm

By default the temperature alarms are disabled. The user may enable either a high or low temperature alarm but not both simultaneously.

Enable an alarm as follows:

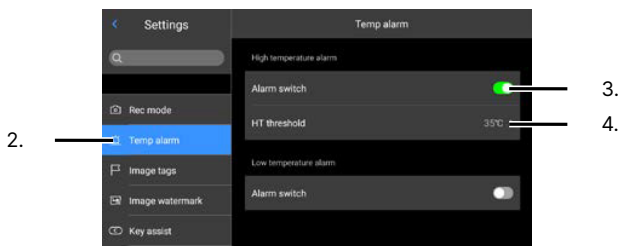
1. Press the Menu button to open the main menu.
2. Using the touchscreen, tap the Temperature Alarm (abbreviated Temp Alarm) tab.
3. Using the touchscreen, toggle the preferred temperature alarm setting to the On position by tapping the switch. The switch turns green when active and threshold values are displayed. Disable the alarm by tapping the switch again.
4. Press the Back button to exit the main menu.

8-14-6-2 Threshold Settings

Adjust the alarm threshold as follows:

Enable an alarm as follows:

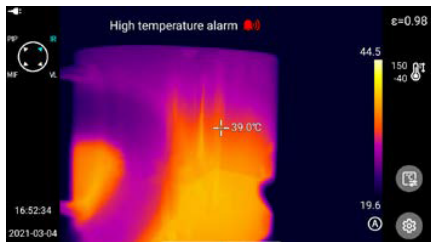
1. Press the Menu button to open the main menu.
2. Using the touchscreen, tap the Temperature Alarm (abbreviated Temp Alarm) tab.
3. Using the touchscreen, toggle the preferred temperature alarm setting to the On position by tapping the switch. The switch turns green when active and threshold values are displayed. Disable the alarm by tapping the switch again.
4. Tap the threshold value. A rotary menu appears.
5. Press up or down on the Thumbstick to select a temperature.
6. Press the Back button to save and exit the rotary menu.
7. Press the Back button to exit the main menu.



8-14-6-3 Audible Alarm

An audible alarm sounds automatically when thresholds are either met or exceeded. Mute the audible alarm by tapping on the bell icon. Unmute the alarm by tapping the bell icon again.

The default high temperature alarm is 35 °C (95 °F). This means an audible alarm triggers at temperatures above 35 °C (95 °F). The default low temperature alarm is 32 °C (89.6 °F). This means an audible alarm triggers at temperatures below 32 °C (89.6 °F). Users can adjust the threshold values to change when an alarm sounds.



8-14-6-4 Visual Alarm

A visual alarm in the form of a bell shows automatically on screen when thresholds are either met or exceeded.

The default high temperature alarm is 35 °C (95 °F). This means a visible alarm triggers at temperatures above 35 °C (95 °F). The default low temperature alarm is 32 °C (89.6 °F). This means a visible alarm triggers at temperatures below 32 °C (89.6 °F). Users can adjust the threshold values to change when an alarm sounds.

8-14-7 Palette

8-14-7-1 Programmed Options

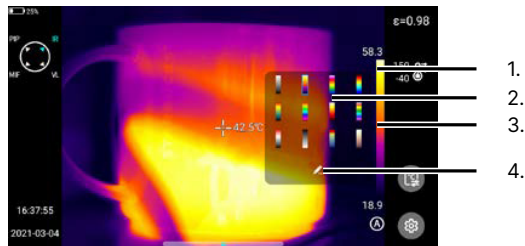
Change the polarity (color palette) to enhance temperature differences on the thermal camera as follows:

1. Using the touchscreen, tap the Level & Span bar. Palette Gallery appears.
2. Tap preferred color bar.
3. Press the Back button to exit palette gallery and return to imaging interface.

8-14-7-2 Custom Palette

Users may define a custom color band as follows:

1. Using the touchscreen, tap the Level & Span bar. Palette Gallery appears.
2. Tap an existing color palette to use as a base. Menu closes.
3. Tap the Level & Span bar again to reopen the Palette Gallery.
4. Tap the pencil icon to open the Custom Palette Window.
5. Press-and-hold on the color sliders; then, drag to change the color scheme. Tap the undo icon to undo changes. Tap redo to replace changes.
6. Tap Done to save palette. Tap Cancel to discard changes. Custom Palette Area closes automatically.

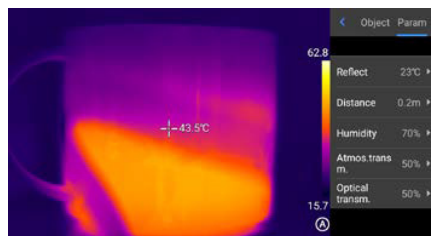


8-15 Image Processing

8-15-1 Analysis Area

When images and videos are captured they are stored internally. Media can be viewed for post-processing as follows:

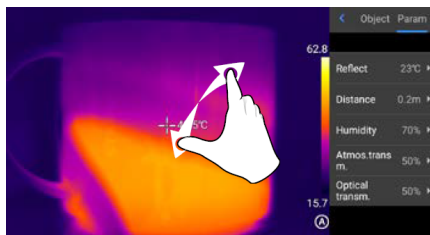
1. Press the Review button to open the image gallery.
2. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
3. Tap on media to open it in the Review Area.
4. Tap Edit to open the Analysis Area. Several tabs are available for processing.
5. Press the Back button repeatedly to exit processing.



8-15-2 Image Zooming

Once media is opened in the Analysis Area, users can zoom in and out to obtain a closer look at capture images.

To Zoom in, touch the screen with two fingers; then, splay fingers in opposite directions. The image zooms in up to 10 times.



Close splayed fingers to zoom out.



When the infrared image is enlarged, the infrared image can be scrolled by swiping a single finger in any area of the screen.



IMAGE ZOOMING IS NOT AVAILABLE OUTSIDE OF THE ANALYSIS AREA. FOR INSTRUCTIONS ON DIGITAL ZOOMING DURING IMAGE CAPTURE SEE SECTION 8-7 DIGITAL ZOOM.

8-15-3 Post-Capture Analysis

Users that did not create analysis objects, isotherms, or gather temperature differential (ΔT) information during the initial media capture process can do so during image processing.

Access the analysis tools as follows:

1. Press the Review button to open the image gallery.
2. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
3. Tap on media to open it in the Review Area.
4. Tap Edit to open the Analysis Area. The Object tab should be open by default. Use this section to create analysis objects, isotherms, and gather temperature differential (ΔT) information. Tap the trash can icon to delete any preexisting analysis objects. Tap Param to change thermal parameters.
5. Press the Back button repeatedly to exit processing.

POST-CAPTURE ANALYSIS WORKS THE SAME WAY AS REAL-TIME ANALYSIS. ACCESS TOOLS THROUGH THE ANALYSIS AREA.

8-15-4 Thermography Settings

The thermography settings are also available in the Tools Menu.

8-15-4-1 Reflected Temperature

Users can compensate for sources of energy reflected off objects being measured to eliminate the influence of environmental temperatures. Often, the reflected temperature is equivalent to the ambient temperature.

Adjust the reflected temperature as follows:

1. Press the Review button to open the image gallery.
2. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
3. Tap on media to open it in the Review Area.
4. Tap Edit to open the Analysis Area.
5. Tap Parameter (abbreviated Param) tab.
6. Tap Reflect. A rotary menu appears.
7. Press up or down on the Thumbstick to select a temperature.
8. Press the Back button to save and exit the rotary menu.
9. Press the Back button repeatedly to exit processing.

8-15-4-2 Target Distance

Adjusting the distance can assist the user obtaining more accurate temperature measurements. Set the distance as follows:

1. Press the Review button to open the image gallery.
2. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
3. Tap on media to open it in the Review Area.
4. Tap Edit to open the Analysis Area.
5. Tap Parameter (abbreviated Param) tab.
6. Tap Distance. A rotary menu appears.
7. Press up or down on the Thumbstick to select a distance.
8. Press the Back button to save and exit the rotary menu.
9. Press the Back button repeatedly to exit processing.

CHANGE UNIT TYPE IN SETTINGS.

8-15-4-3 Humidity

Humidity remains in the atmosphere even on bright days. Water of all three states can be found naturally in the atmosphere. Water in any state is an obstacle to accurate temperature measurements. When the wave passes through the water particles, a part of its energy is absorbed and a part is scattered. Therefore the electromagnetic wave is attenuated.

Correct for atmospheric attenuation by defining humidity as follows:

1. Press the Review button to open the image gallery.
2. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
3. Tap on media to open it in the Review Area.
4. Tap Edit to open the Analysis Area.
5. Tap Parameter (abbreviated Param) tab.
6. Tap Humidity. A rotary menu appears.
7. Press up or down on the Thumbstick to select a humidity percentage.
8. Press the Back button to save and exit the rotary menu.
9. Press the Back button repeatedly to exit processing.

8-15-4-4 Atmospheric Transmission

The imager has atmospheric transmission compensation to correct environmental sources of energy. Temperature readings are especially sensitive when the emissivity of the object is low or the difference between the object temperature and the ambient temperature is large.

Set the atmospheric transmission as follows:

1. Press the Review button to open the image gallery.
2. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
3. Tap on media to open it in the Review Area.
4. Tap Edit to open the Analysis Area.
5. Tap Parameter (abbreviated Param) tab.
6. Tap Atmospheric Transmittance (abbreviated Atmos Transm). A rotary menu appears.
7. Press up or down on the Thumbstick to select a transmission percentage.
8. Press the Back button to save and exit the rotary menu.
9. Press the Back button repeatedly to exit processing.

8-15-4-5 Optical Transmission

The accuracy of temperature readings is dependent on the physics of the scene. Errors in temperature measurements are mainly caused by two things: (1) the variation of the emissivity value, (2) the temperature range.

Ensure all physics values are entered into the camera's settings; then, compensate for transmission as follows:

1. Press the Review button to open the image gallery.
2. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
3. Tap on media to open it in the Review Area.
4. Tap Edit to open the Analysis Area.
5. Tap Parameter (abbreviated Param) tab.
6. Tap Optical Transmission (abbreviated Optical Transm). A rotary menu appears.
7. Press up or down on the Thumbstick to select a transmission percentage.
8. Press the Back button to save and exit the rotary menu.
9. Press the Back button repeatedly to exit processing.

8-16 Annotations

8-16-1 Voice Annotations

Voice annotations can be up to 60 seconds in length. Add annotations to an image as follows:

1. Capture an image.
2. Press the Review button to open the image gallery.
3. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
4. Tap on media to open it in the Review Area.
5. Tap the flag icon. A drop down menu appears.
6. Tap the microphone icon to open the Voice Annotations Area.
7. Tap the microphone icon to begin recording. Speak clearly, directly, and loudly into the microphone located at the lower right corner of the device.
8. Tap the stop icon to stop recording. Saving occurs automatically. Tap the trash can icon and tap Delete to erase the recording.
9. Press the Back button repeatedly to exit the gallery.

VOICE ANNOTATIONS CANNOT BE EDITED. DELETE OLD VOICE RECORDINGS BEFORE RECORDING NEW VOICE ANNOTATIONS.

8-16-2 Sketch-on-Image

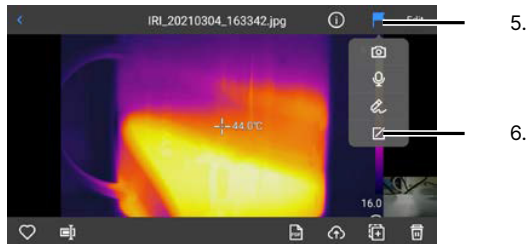
Users can add sketched notes directly to images as follows:

1. Capture an image.
2. Press the Review button to open the image gallery.
3. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
4. Tap on media to open it in the Review Area.
5. Tap the flag icon. A drop down menu appears.
6. Tap the pencil icon to open the Graffiti Area.
7. Tap on a color to define pen color.
8. Write on the screen using any finger. Tap the undo icon to undo notes. Tap redo to replace notes. Tap the eraser to get delete specific notes. Tap the trash can icon to erase all notes.
9. Tap Done to save notes and exit the Graffiti Area.
10. Press the Back button repeatedly to exit the gallery.

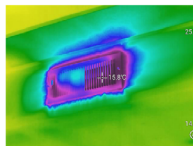
8-16-3 Typed Notes

Users can add typed notes to images as follows:

1. Capture an image.
2. Press the Review button to open the image gallery.
3. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
4. Tap on media to open it in the Review Area.
5. Tap the flag icon. A drop down menu appears.
6. Tap the text icon to open the Text Tag Area. Keyboard appears.
7. Type notes using the on screen keyboard.
8. When finished typing notes, tap anywhere outside the keyboard to close the keyboard.
9. Tap Done to save notes and exit the Text Tag Area.
10. Press the Back button repeatedly to exit the gallery.



TYPED NOTES DO NOT APPEAR IN THE GALLERY BUT CAN BE SEEN IN THE COMMENTS SECTION OF A GENERATED REPORT AS SEEN BELOW.



IRI_20210930_193105

Air conditioning unit on the east wall of the Graphic Design room. Temperatures average ~20 degrees Celsius. The warmth on the unit is a reflection of radiation from the overhead lighting fixture. Note the air which leaks around the edges of the vent. RECOMMENDED ACTIONS: place seal along inner edges of vent to force all air to be routed in a forward direction.

8-17 Reports

8-17-1 Create a Report

The device has a built-in report generation feature which creates high quality PDF documents. Create a report as follows:

1. Press the Review button to open the image gallery.
2. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery.
3. Choose an option:
 - Single image report: tap on image to open it in the Review Area, or
 - Multi-image report: tap Select; then, tap the images to include in report.
4. Tap on the PDF icon in the lower right corner. Report editor opens.
5. Tap on the Header field. Keyboard automatically opens.
6. Use the keyboard by tapping the touchscreen to input preferred text.
7. Press down twice on the Thumbstick to enter the Comments field.
8. Use the keyboard by tapping the touchscreen to input preferred text.
9. Press down once on the Thumbstick to enter the Footer field.
10. Use the keyboard by tapping the touchscreen to input preferred text.
11. Press the Back button to close the keyboard.
12. If creating a multi-page report, scroll to the next page by swiping a finger to the left or right across the screen. Repeat Step 5 - Step 12 until finished.
13. Press the Generate button. A thumbnail of the report is shown on screen. Users can zoom in, zoom out, and swipe the document using the touchscreen. Document is saved automatically to the internal storage and can be recovered using a computer.
14. Press the Back button repeatedly to exit generator.

REPORTS ARE SAVED TO THE INTERNAL STORAGE AT THE FOLLOWING PATH:

...\CAMERA\Internal storage\DCIM\GCamera\Pdf

VIDEOS CANNOT BE USED FOR REPORT GENERATION.

8-17-2 Print a Report

Access and print a report as follows:

1. Plug the Type-C end of the Type-C to USB cable into the device.
2. Plug the USB end of the Type-C to USB cable into an available USB computer port.
3. Power on the device.
4. Navigate to: ...\\CAMERA\\Internal storage\\DCIM\\GCamera\\Pdf
5. Open the report in the preferred PDF file reader.
6. Follow file reader's instructions for printing files.

8-17-3 Report Settings

8-17-3-1 Report Logo

Choose a logo to automatically add to reports as follows:

1. Plug the Type-C end of the Type-C to USB cable into the device.
2. Plug the USB end of the Type-C to USB cable into an available USB computer port.
3. Power on the device.
4. Save image into the following directory ...\\CAMERA\\Internal storage\\DCIM\\GCamera\\externalPdf\\pdfExternalLogoPic
5. On the device, press the Menu button to open the main menu.
6. Press down on the Thumbstick until the Report Parameters (abbreviated Report Param) tab opens.
7. Using the touchscreen, tap Report Logo sub-tab.
8. Tap the preferred image logo.
9. Tap < Report Param to save and exit the sub-tab.
10. Press the Back button to exit the main menu.

CONNECT THE DEVICE TO A COMPUTER AND UPLOAD LOGOS FOR REPORT INCLUSION TO THE FOLLOWING PATH:

...\\CAMERA\\Internal storage\\DCIM\\GCamera\\externalPdf\\pdfExternalLogoPic

8-17-3-2 Headers

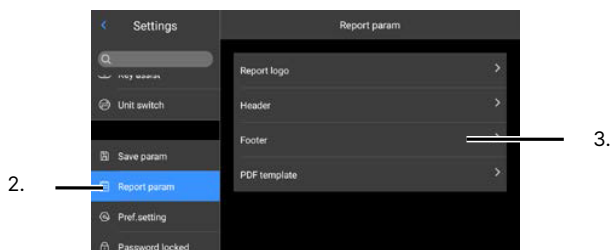
Users can predefine a 15 character header for generated reports. Define a header as follows.

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Report Parameters (abbreviated Report Param) tab opens.
3. Using the touchscreen, tap Header sub-tab.
4. Tap the input box next to Header to open the keyboard.
5. Use the keyboard by tapping the touchscreen to input preferred text.
6. Press the Back button to close the keyboard.
7. Tap Done to save and exit header sub-tab. Tap Cancel to cancel assignment.
8. Press the Back button to exit the main menu.

8-17-3-3 Footers

Users can predefine a 15 character footer for generated reports. Define a footer as follows.

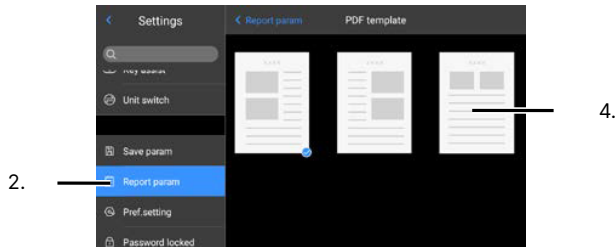
1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Report Parameters (abbreviated Report Param) tab opens.
3. Using the touchscreen, tap Footer sub-tab.
4. Tap the input box next to Footer to open the keyboard.
5. Use the keyboard by tapping the touchscreen to input preferred text.
6. Press the Back button to close the keyboard.
7. Tap Done to save and exit footer sub-tab. Tap Cancel to cancel assignment.
8. Press the Back button to exit the main menu.



8-17-3-4 PDF Template

The device features 3 different PDF templates for arranging information and images within a report. Choose a template as follows.

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Report Parameters (abbreviated Report Param) tab opens.
3. Using the touchscreen, tap PDF Template sub-tab.
4. Tap the preferred layout.
5. Tap < Report Param to save and exit the sub-tab.
6. Press the Back button to exit the main menu.



8-18 Media Management

8-18-1 Review Media

When images and videos are captured they are stored internally. Media can be viewed at any time as follows:

1. Press the Review button to open the image gallery.
2. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
3. Tap on media to open it in the Review Area. Tap on the visible light picture in the lower right corner to expand; tap anywhere to minimize the visible image. Tap the play icon to open videos within the Video Player. Tap the play icon to play videos. Press-and-hold on the screen; then, drag left or right to scroll through the timeline.
4. Press the Back button repeatedly to exit the gallery.

VIEW INTERNAL FILES ON A COMPUTER BY CONNECTING THE USB CABLE AND NAVIGATING TO:

...\\CAMERA\\ INTERNAL STORAGE DEVICE \\DCIM\\GCAMERA\\SOURCEIMAGE

8-18-2 Review Media on SD Card

Images and videos that have been transferred to the removable SD Card can be viewed on the device as follows:

1. Press the Review button to open the image gallery.
2. Using the touchscreen, tap the Internal Storage header.
3. Tap SD Card. Media stored on SD Card is displayed.
4. Press the Back button repeatedly to exit the gallery.



8-18-3 Delete Media

Media can be deleted at any time. Be sure images and videos should be erased before continuing as deleted media cannot be recovered. Delete media as follows:

1. Press the Review button to open the image gallery.
2. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
3. Tap on media to open it in the Review Area.
4. Press the trash can icon in the bottom right corner. A prompt appears.
5. Using the touchscreen, press Delete to erase the media. Tap Cancel to cancel deletion.
6. Press the Back button repeatedly to exit the gallery.



8-18-4 Favorite Media

Users can favor tag images and videos. This can be useful for report building as tagged images can be quickly located and added to the report generator. Favorite media as follows:

1. Press the Review button to open the image gallery.
2. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
3. Tap on an image or video to open it in the Review Area.
4. Tap the heart icon in the bottom left corner. Feature highlights blue when tagged and a heart appears in the bottom left corner of the media thumbnail in the gallery. Tap the heart icon again to disable tag.
5. Press the Back button repeatedly to exit the gallery.



8-18-5 Renaming Media

Media is named using a default name starting with a predefined prefix: IRI for infrared images, PIR for panoramic images, and IRI_V for videos. Users can redefine text appearing after the prefix as follows:

1. Press the Review button to open the image gallery.
2. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
3. Tap on an image or video to open it in the Review Area.
4. Tap the cursor icon in the lower left corner. Media opens in Text Window.
5. Open the keyboard by tapping the keyboard icon in the lower right corner. Use the keyboard by tapping the touchscreen to input preferred name.
6. Tap Done on the keyboard.
7. Tap Done to save changes. Tap Cancel to cancel changes. Text Window closes automatically.
8. Press the Back button repeatedly to exit the gallery.

8-18-6 Media Information

Media information can be viewed as follows:

1. Press the Review button to open the image gallery.
2. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
3. Tap on an image or video to open it in the Review Area.
4. Tap the information icon. Information is displayed on screen. Tap anywhere to close the information window.
5. Press the Back button repeatedly to exit the gallery.



8-18-7 Export Media

When images and videos are captured they are stored internally and can be transferred to a removable SD Card as follows:

1. Press the Review button to open the image gallery.
2. Press-and-hold on the screen; then, drag up or down to scroll through the image gallery. Locate a video by tapping the Videos icon at the bottom of the screen.
3. Tap on an image or video to open it in the Review Area.
4. Tap the transfer icon in the lower right corner. A prompt appears.
5. Tap Confirmed to transfer media. Tap Cancel to cancel transfer.
6. Press the Back button repeatedly to exit the gallery.



8-19 Settings

8-19-1 Heads-up Display Settings

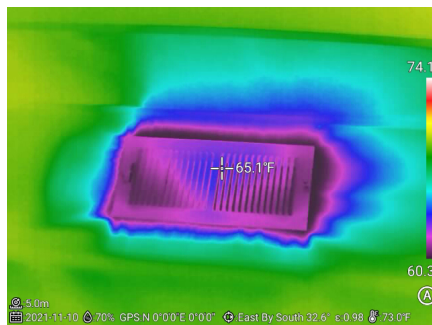
Users can automatically track temperature data on screen as well as add or remove items from the heads-up display as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Image Tags tab opens.
3. Using the touchscreen, toggle the preferred heads-up display settings to the On position by tapping the switch. The switch turns green when active. Disable the heads-up display settings by tapping the switch again. The switch turns gray when disabled.
4. Users can automatically track temperature data on screen by tapping the Temperature (abbreviated Temp) sub-tab and selecting an option. The selected option has a blue check mark next to it. Press < Image Tags button using the touchscreen to save and exit the Temperature menu and return to the Image Tags menu.
5. Press the Back button to exit the main menu.

8-19-2 Image Watermarks

Company logo, date, humidity, GPS and other information can be added as a watermark to the bottom of images as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Image Watermark tab opens.
3. Using the touchscreen, toggle the preferred watermark settings to the On position by tapping the switch. The switch turns green when active. Disable the watermark settings by tapping the switch again. The switch turns gray when disabled.
4. Press the Back button to save and exit the main menu.



8-19-3 Global Thermography Preference Settings

The device has predefined set of global thermography parameters for image polarity (color palette), emissivity, reflected ambient temperature, humidity, atmospheric temperature, and optical transmission. These global settings are useful for inspections in controlled environments where atmospheric variable remain stable.

Users cannot change the global thermography parameters; however, they can change the thermography parameters for individual images during or after capture (see **Section 8-15-4 Thermography Settings**).

8-19-3-1 Create New Preference Settings

Users can create new global thermography settings as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Preference Settings (abbreviated Pref Setting) tab opens.
3. Using the touchscreen, tap New Preference sub-tab.
4. Tap the input box next to Name. Keyboard appears.
5. Use the keyboard by tapping the touchscreen to input preferred text.
6. Tap Done. Keyboard closes and name is saved automatically.
7. Define remaining parameters as follows:
 - Tap on a parameter. A rotary menu appears.
 - Press up or down on the Thumbstick to define the parameter.
 - Press the Back button to save and exit the rotary menu.
8. Repeat Step 6 for each parameter.
9. Tap Done after defining the global preferences. The sub-tab closes. Settings are saved automatically under a new heading titled My Preferences. Tap Cancel to cancel preferences creation.
10. Tap the preferred preferences to enable the settings. Settings are enabled when the check mark turns blue. To reset the device to the original global preferences, toggle the Default Preferences (abbreviated Default Pref) setting to the On position by tapping the switch or perform a factory reset.
11. Press the Back button to save and exit the main menu.

GLOBAL PREFERENCES ARE USEFUL IN CONTROLLED ENVIRONMENTS WHERE ATMOSPHERIC VARIABLES ARE EXPECTED TO REMAIN STABLE. USERS CAN DEFINE EXCEPTIONS EITHER BEFORE IMAGES ARE CAPTURED BY VISITING THE TOOLS MENU OR AFTER IMAGES ARE CAPTURED BY VISITING THE EDIT SECTION OF REVIEW AREA.

8-19-3-2 Edit Preference Settings

The default global preference parameters cannot be changed; however, users can change the thermography parameters for individual images during or after capture (see **Section 8-15-4 Thermography Settings**).

User created global thermography settings listed under the My Preferences header can be edited as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Preference Settings (abbreviated Pref Setting) tab opens.
3. Using the touchscreen, tap the edit icon of the preferences to be changed.
4. Change the parameters as follows:
 - Tap on a parameter. A rotary menu appears.
 - Press up or down on the Thumbstick to define the parameter.
 - Press the Back button to save and exit the rotary menu.
5. Repeat Step 6 for each parameter.
6. Tap Done after editing the global preferences. The sub-tab closes. Settings are saved automatically. Tap Cancel to cancel editing process.
7. Tap the preferred preferences to enable the settings. Settings are enabled when the check mark turns blue. To reset the device to the original global preferences, toggle the Default Preferences (abbreviated Default Pref) setting to the On position by tapping the switch or perform a factory reset.
8. Press the Back button to save and exit the main menu.

8-19-3-3 Delete Preference Settings

The default global preference parameters cannot be deleted. User created global thermography settings listed under the My Preferences header can be deleted as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Preference Settings (abbreviated Pref Setting) tab opens.
3. Using the touchscreen, tap the trash can icon of the preferences to be deleted.
4. Tap Delete to confirm deletion. Tap Cancel to cancel deletion.
5. Press the Back button to save and exit the main menu.

8-19-3-4 Restore Default Preference Settings

Users can restore the default global preference parameters as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Preference Settings (abbreviated Pref Setting) tab opens.
3. Using the touchscreen, toggle the Default Preferences (abbreviated Default Pref) to the On position by tapping the switch. The switch turns green when active.
4. Press the Back button to save and exit the main menu.

IT IS POSSIBLE TO RESTORE THE DEFAULT GLOBAL PREFERENCE SETTINGS BY PERFORMING A FACTORY RESET.

WHEN PASSWORD PROTECTION IS ENABLED USERS MUST ENTER THE PASSCODE TO POWER ON THE DEVICE. USERS SHOULD FOLLOW THEIR COMPANY'S SAFETY AND SECURITY PROTOCOLS WHEN ASSIGNING PASSWORDS TO EQUIPMENT.

8-19-4 Password Protection Settings

8-19-4-1 Enable Password Protection

The device can be assigned a 6 digit passcode to protect it from unauthorized use. The passcode needs to be entered on device start up.

Assign a passcode as follows

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Password Locked tab opens.
3. Using the touchscreen, tap Turn on Password (abbreviated Turn on PW) sub-tab.
4. Tap Set Password. Keyboard appears.
5. Use the keyboard by tapping the touchscreen to input preferred passcode. Tap Cancel to cancel enabling password.
6. Re-enter the passcode. Passcode is saved and enabled automatically. Settings screen closes to the main menu.
7. Press the Back button to save and exit the main menu.

8-19-4-2 Disable Password Protection

Disable the password protection as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Password Locked tab opens.
3. Using the touchscreen, tap Turn off Password (abbreviated Turn off PW) sub-tab.
4. Tap Enter Your Password. Keyboard appears.
5. Use the keyboard by tapping the touchscreen to input assigned passcode. Tap Cancel to cancel disabling password.
6. Passcode is accepted and protection is disabled automatically. Tab closes to the main menu. Try again if passcode is incorrect.
7. Press the Back button to save and exit the main menu.

THE PASSCODE CAN BE RESET AUTOMATICALLY BY DISABLING THE PASSWORD PROTECTION. AFTERWARDS, A NEW PASSCODE CAN BE ENTERED TO RE-ENABLE PASSWORD PROTECTION.

8-19-4-3 Change the Password

Users can change the assigned passcode as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Password Locked tab opens.
3. Using the touchscreen, tap Change Password sub-tab. Tap Enter Old Password. Keyboard appears.
4. Use the keyboard by tapping the touchscreen to input current passcode.
5. Enter the new passcode. Tap Cancel to cancel password change.
6. Re-enter the new passcode. Passcode is automatically saved and enabled. Password sub-tab closes to the main menu.
7. Press the Back button to save and exit the main menu.

USERS CAN ALSO CHANGE THE PASSCODE BY FIRST DISABLING THE PASSWORD PROTECTION; THEN, RE-ENABLING THE PASSWORD PROTECTION AS A PASSCODE MUST BE ASSIGNED BEFORE PROTECTION CAN BE ENABLED.

8-19-5 C button Settings

The C button performs a non-uniformity correction (NUC) by default. However, users can program the C button to perform a different function: perform a non-uniformity correction (NUC), change color palette (replace ribbon), shortcut to the Object Parameters Menu, auto focus, or turn on the LED light.

Change the C button function as follows:

1. Press the Menu button to open the main menu.
2. Press down Thumbstick until the Key Assist tab opens.
3. Select a function by tapping preferred option. The selected option has a blue check mark next to it.
4. Press the Back button to save and exit the main menu.

CHANGING THE C BUTTON FUNCTION ALTERS HOW THE BUTTON PERFORMS. USERS CAN PROGRAM THE BUTTON TO PERFORM A NON-UNIFORMITY CORRECTION (NUC), CHANGE THE COLOR PALETTE (REPLACE RIBBON), BECOME A SHORTCUT TO THE OBJECT PARAMETERS MENU, AUTO FOCUS, OR TURN ON THE LED LIGHT.

8-19-6 Temperature Units

By default the imager is set to measure temperatures in Celsius (°C). Change the temperature scale unit as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Unit Switch tab opens.
3. Using the touchscreen, tap Temperature Unit (abbreviated Temp Unit). A rotary menu appears.
4. Press up or down on the Thumbstick to define temperature unit: Celsius, Fahrenheit, or Kelvin.
5. Press the Back button to save and exit the rotary menu.
6. Press the Back button to save and exit the main menu.

ENSURE THE PROPER TEMPERATURE UNIT IS SELECTED FOR YOUR APPLICATION. CELSIUS, FAHRENHEIT, AND KELVIN UNITS ARE AVAILABLE.

8-19-7 Distance Units

By default the imager is set to measure temperatures in meters. Change the distance unit as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Unit Switch tab opens.
3. Using the touchscreen, tap Distance Unit. A rotary menu appears.
4. Press up or down on the Thumbstick to define distance unit: meter, inch, or yards (code).
5. Press the Back button to save and exit the rotary menu.
6. Press the Back button to save and exit the main menu.

ENSURE THE PROPER DISTANCE UNIT IS SELECTED FOR YOUR APPLICATION. METERS, INCHES, AND YARD (CODE) UNITS ARE AVAILABLE.

MEASUREMENT IN YARDS IS AVAILABLE BY SELECTING THE CODE OPTION FROM THE DISTANCE UNIT MENU.

8-19-8 General Save Settings

8-19-8-1 Visible Camera Settings

The default resolution for visible images is 1024 × 768. Users can achieve up to 13 MP as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Save Parameters (abbreviated Save Param) tab opens.
3. Using the touchscreen, tap Visible Light Resolution. A rotary menu appears.
4. Press up or down on the Thumbstick to define camera resolution: 1024 x 768, 5 MP or 13 MP.
5. Press the Back button to save and exit the rotary menu.
6. Press the Back button to save and exit the main menu.

HIGHER MEGAPIXEL IMAGES TAKE UP MORE SPACE. OPT FOR A LOWER RESOLUTION IMAGE IF CAPTURING A LARGE NUMBER OF IMAGES.

8-19-8-2 Laser Ranging

As an alternative to the laser ranging button, users can change the save settings to automatically detect the distance from the target when the capture button is pressed. When the capture button is pressed the device begins measuring the distance to the target. When finished, the distance detected by the laser ranging tool appears as a watermark in lower left corner of saved images.

Enable laser ranging on capture as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Save Parameters (abbreviated Save Param) tab opens.
3. Using the touchscreen, toggle the Laser Ranging setting to the On position by tapping the switch. The switch turns green when active. Disable Laser Ranging on capture setting by tapping the switch again. The switch turns gray when disabled.
4. Press the Back button to save and exit the main menu.

IT TAKES SEVERAL SECONDS FOR THE DEVICE TO PERFORM A LASER RANGE AND SAVE AN IMAGE. WAIT UNTIL THE DEVICE IS FINISHED BEFORE ATTEMPTING TO TAKE ANOTHER PHOTO.

8-19-9 Power Management Settings

Power management is disable by default.

8-19-9-1 Sleep (Hibernation) Mode

Sleep mode is disabled by default. When enabled the camera sleeps after an assigned amount of time of inactivity to save battery power. Adjust the sleep mode timing as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Hibernation tab opens.
3. Using the touchscreen, tap Automatic Hibernation (abbreviated Auto Hiber).
4. Select a time limit by tapping preferred option: 1 minute, 5 minutes, 15 minutes, or Never. Selecting Never disables hibernation mode. The selected option has a blue check mark next to it.
5. Press the < Hibernation button to save and exit the sub-tab.
6. Press the Back button to save and exit the main menu.

DISABLING SLEEP MODE DRAINS THE BATTERY AT AN INCREASED RATE. SET THE SLEEP MODE TIME TO SAVE POWER.

8-19-9-2 Automatic Shutoff

Automatic shutoff is disabled by default but can be enabled as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Hibernation tab opens.
3. Using the touchscreen, tap Automatic Shutoff (abbreviated Auto Off) sub-tab.
4. Select a time limit by tapping preferred option: 5 minutes, 15 minutes, 30 minutes, 60 minutes, or Never. Selecting Never disables automatic shutoff mode. The selected option has a blue check mark next to it.
5. Press the < Hibernation button to save and exit the sub-tab.
6. Press the Back button to save and exit the main menu.

DISABLING AUTOMATIC SHUTOFF DRAINS THE BATTERY AT AN INCREASED RATE. SET THE AUTOMATIC SHUTOFF TIME TO SAVE POWER.

8-19-10 Connection Services

8-19-10-1 Wi-Fi Settings

Connect to wireless Internet as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the W-Fi tab opens.
3. Using the touchscreen, toggle Wi-Fi to the On position by tapping the switch. The switch turns green when active. Available Wi-Fi networks populate. Disable Wi-Fi by tapping the switch again.
4. Tap a network to connect. Networks without passwords connect automatically. For networks requiring passwords: first, tap the input box next to Password; keyboard appears. Then, use the keyboard by tapping the touchscreen to input current password. Finally, tap Join to connect to the network. Tap Cancel to cancel network connection.
5. Press the Back button exit the main menu.

IN ORDER TO ENSURE A RELIABLE WI-FI CONNECTION AND STABLE DATA TRANSMISSION, ENSURE THAT THE CONNECTION DISTANCE IS WITHIN 10 METERS (33 FEET) AND THERE ARE NO OBSTACLES, SUCH AS PARTITIONS, ETC., BETWEEN THE DEVICE AND THE TRANSMITTER.

DON'T CONNECT THE DEVICE TO INSECURE OR PUBLIC NETWORKS.

PERSONAL HOTSPOT REQUIRES THE USE OF THE THERMOGRAPH MOBILE APPLICATION WHICH IS CURRENTLY UNDER CONSTRUCTION. SOME FEATURES MAY NOT FUNCTION PROPERLY.

8-19-10-2 Personal Hotspot

8-19-10-2-1 Connect to Hotspot

This device supports external 4G mobile networks. Connect to a personal hotspot as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Internet Connection tab opens.
3. Using the touchscreen, toggle Personal Hotpost to the On position by tapping the switch. The switch turns green when active. Disable Personal Hotspot by tapping the switch again.

8-19-10-2-2 Change the HotSpot Name

Change the hotspot name as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Internet Connection tab opens.
3. Using the touchscreen, tap Local Name sub-tab.
4. Tap input box next to name. Keyboard appears.
5. Use the keyboard by tapping the touchscreen to input the new name.
6. Tap Done to save and exit the sub-tab. Tap Cancel to cancel changes.
7. Press the Back button exit the main menu.

8-19-10-2-3 Change the Hotspot Password

Change the hotspot password as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Internet Connection tab opens.
3. Using the touchscreen, tap Wi-Fi Password sub-tab.
4. Tap input box next to name. Keyboard appears.
5. Use the keyboard by tapping the touchscreen to input the new password.
6. Tap Done to save and exit the sub-tab. Tap Cancel to cancel changes.
7. Press the Back button exit the main menu.

8-19-10-3 Local IP Information

8-19-10-3-1 Change the IP Address

Change the IP information as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Internet Connection tab opens.
3. Using the touchscreen, tap Local IP sub-tab.
4. Change information as follows:
 - Tap on an input box. Keyboard appears.
 - Use the keyboard by tapping the touchscreen to input the requested information.
 - Press Done to close keyboard.
5. Repeat Step 4 for each input box.
6. Tap Done to save and exit the sub-tab. Tap Cancel to cancel changes.
7. Press the Back button exit the main menu.

8-19-10-3-2 Set the PC IP Address

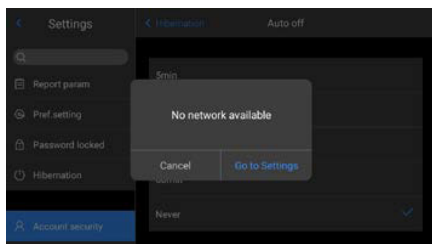
Set the local connection IP address of desktop computer as follows:

1. Click on Windows icon.
2. Click on Settings.
3. Click on Network and Internet.
4. Click on Ethernet.
5. Click on Change Adapter Settings.
6. Right click on Ethernet and choose properties.
7. Double click on Internet Protocol Version 4 (TCP/IPv4) Properties.
8. The IP address should read 172.16.14.230. If it does not, click in the box and fill in the correct number.
9. The Subnet Mask should read 202.103.24.68. If it does not, click in the box and fill in the correct number.
10. Click OK.

CLOUD SERVICES IS CURRENTLY UNDER DEVELOPMENT. SOME FEATURES MAY NOT FUNCTION PROPERLY. WHEN AVAILABLE CLOUD SERVICES DO NOT WORK WITHOUT A NETWORK CONNECTION. CONNECT TO WI-FI OR PERSONAL HOTSPOT BEFORE CONNECTING TO CLOUD SERVICES.

8-19-10-4 Cloud Services

Coming Soon.



8-19-10-5 Bluetooth Settings

Connect to Bluetooth as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the Bluetooth tab opens.
3. Using the touchscreen, toggle Bluetooth to the On position by tapping the switch. The switch turns green when active. Available Bluetooth devices populate. Disable Bluetooth by tapping the switch again.
4. Tap a Bluetooth device to pair.
5. Tap Matching to complete pairing. Tap Cancel to cancel pairing.
6. Press the Back button exit the main menu.

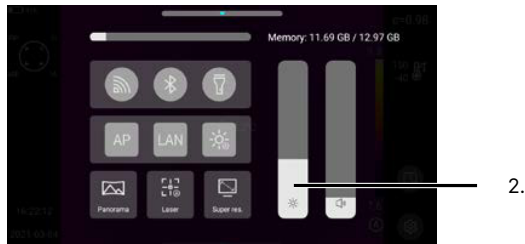
AFTER A DEVICE IS SUCCESSFULLY PAIRED, THE DEVICE TRIES TO RECONNECT TO THE PAIRED DEVICE EVERY TIME IT IS POWERED ON.

TAP ON THE QUICK ACCESS MENU BAR LOCATED AT THE BOTTOM OF THE MAIN INTERFACE SCREEN TO OPEN THE QUICK ACCESS MENU.

8-19-11 Display Brightness Settings

Users can change the brightness settings as follows:

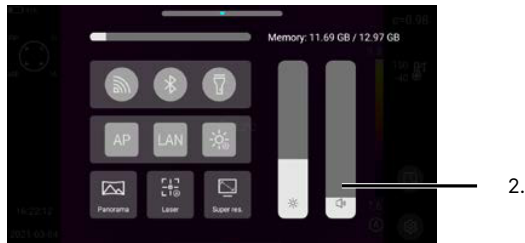
1. Using the touchscreen, tap the Quick Access Menu bar located at the bottom of the screen. Quick Access Menu opens.
2. Press-and-hold the brightness bar; then, drag up or down on the touchscreen to change the brightness level. Release to set brightness level.
3. Press the Back button to close the Quick Access Menu.



8-19-12 Volume Settings

Users can change the volume settings as follows:

1. Using the touchscreen, tap the Quick Access Menu bar located at the bottom of the screen. Quick Access Menu opens.
2. Press-and-hold the volume bar; then, drag up or down on the touchscreen to change the volume level. Release to set volume level.
3. Press the Back button to close the Quick Access Menu.



8-19-13 Date and Time Settings

8-19-13-1 24 Hour Time

24 Hour Time, i.e. military time, is enabled by default. Convert to standard time as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the General tab opens.
3. Using the touchscreen, tap Time/Date sub-tab.
4. Toggle 24 Hour System to the Off position by tapping the switch. The switch turns gray when disabled. Enable the 24 Hour system by tapping the switch again. The switch turns green when active. Saving and conversion occurs automatically.
5. Press the Back button exit the main menu.

8-19-13-2 Time Zones

Select a time zone as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the General tab opens.
3. Using the touchscreen, tap Time/Date sub-tab.
4. Tap Time Zone sub-tab.
5. Press-and-hold the on the screen; then, drag up or down on the touchscreen to scroll through the time zone list.
6. Tap the relevant time zone.
7. Tap < Time/Date. Saving and conversion occurs automatically.
8. Press the Back button exit the main menu.

8-19-13-3 Manually Set Date/Time

Manually set date and time as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the General tab opens.
3. Using the touchscreen, tap Time/Date sub-tab.
4. Use the rotary dials to set year, month/day, hour, and minutes by pressing-and-holding the on screen dials one at a time; then, drag up or down on the touchscreen to set parameters.
5. Press the Back button to save and exit the main menu.

8-19-14 Language Settings

English is the default language of the device. Change the device language as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the General tab opens.
3. Press right on the Thumbstick to access sub-tabs.
4. Press down on the Thumbstick until Language tab is highlighted.
5. Using the touchscreen, tap Language sub-tab.
6. Press down on the Thumbstick to scroll through the language list.
7. Using the touchscreen, tap the preferred language. The selected option has a blue check mark next to it.
8. Tap Done to save and exit language list. Tap the Back button to cancel language selection.
9. Press the Back button exit the main menu.

8-19-15 Storage Information

Storage information can be viewed from the Quick Access Menu or the Main Menu. View information through the Main Menu as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the General tab opens.
3. Using the touchscreen, tap Storage sub-tab. Information is displayed.
4. Press the Back button exit the main menu.

THE DEVICE HAS BUILT-IN STORAGE. REMAINING MEMORY CAN BE SEEN QUICKLY BY OPENING THE QUICK ACCESS MENU. TAP ON THE QUICK ACCESS MENU BAR LOCATED AT THE BOTTOM OF THE MAIN INTERFACE SCREEN TO OPEN THE QUICK ACCESS MENU.

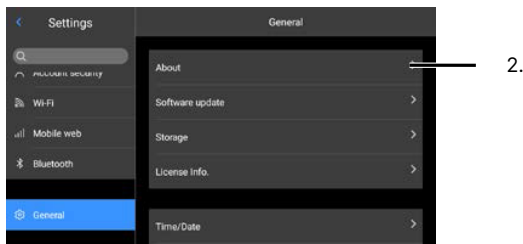


2.

8-19-16 Device Information

Access information about the device as follows:

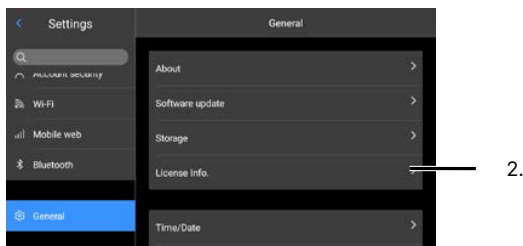
1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the General tab opens.
3. Using the touchscreen, tap About sub-tab. Information is displayed.
4. Press the Back button exit the main menu.



8-19-17 License Information

Access license information as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the General tab opens.
3. Using the touchscreen, tap License Information (abbreviated License Info.) sub-tab. Information is displayed.
4. Press the Back button exit the main menu.



8-19-18 Synchronous Data

Enable SD card to synchronize with local data as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the General tab opens.
3. Press right on the Thumbstick to access sub-tabs.
4. Press down on the Thumbstick until Data Synchronization tab is highlighted.
5. Using the touchscreen, tap Data Synchronization sub-tab.
6. Tap Confirmed to perform synchronization the SD Card. Tap Cancel to cancel synchronization.
7. Press the Back button exit the main menu.

SYNCHRONIZING THE SD CARD TO THE INTERNAL STORAGE ERASES ANY AND ALL IMAGES SAVED TO THE MEMORY CARD AS WELL AS THE INTERNAL STORAGE. SYNCHRONIZATION CANNOT BE UNDONE. BE SURE TO BACK UP AS NEEDED BEFORE FORMATTING.

8-19-19 Format the SD Card

Users can format the MircoSD card as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the General tab opens.
3. Press right on the Thumbstick to access sub-tabs.
4. Press down on the Thumbstick until Format SD Card tab is highlighted.
5. Using the touchscreen, tap Format SD Card sub-tab.
6. Tap Confirmed to format the SD Card. Tap Cancel to cancel formatting.
7. Press the Back button exit the main menu.

FORMATTING THE SD CARD ERASES ANY AND ALL IMAGES SAVED TO THE MEMORY CARD. FORMATTING THE SD CARD DOES NOT ERASE IMAGES SAVED TO THE INTERNAL STORAGE. BE SURE TO BACK UP AS NEEDED BEFORE FORMATTING.

8-19-20 Factory Reset the Device

Users can perform a factory reset of the device as follows:

1. Press the Menu button to open the main menu.
2. Press down on the Thumbstick until the General tab opens.
3. Press right on the Thumbstick to access sub-tabs.
4. Press down on the Thumbstick until Restore tab is highlighted.
5. Using the touchscreen, tap Restore sub-tab.
6. Tap Confirmed to perform a factory reset. Tap Cancel to cancel operation.
7. Press the Back button exit the main menu.

PERFORMING A FACTORY RESET ERASES CUSTOMIZED USER CONFIGURATIONS STORED ON THE DEVICE AND RESTORES THE ORIGINAL DEFAULT SETTINGS PROGRAMMED BY THE MANUFACTURER. THE PROCESS CANNOT BE UNDONE. PERFORMING A FACTORY RESET DOES NOT ERASE IMAGES STORED TO THE INTERNAL STORAGE OF THE DEVICE. PERFORMING A FACTORY RESET DOES NOT ERASE IMAGES STORED TO THE REMOVABLE SD CARD.

8-19-21 Device Software Upgrade

The device may periodically need a software upgrade or patch. Users can update to the latest software version as follows:

1. Contact customer service to receive the latest software upgrade or patch.
2. Put the latest version of APK upgrade package file in the path: ...\\IrCamera\\memory device\\GCamera\\update.
3. Press the Menu button to open the main menu.
4. Press down on the Thumbstick until the General tab opens.
5. Using the touchscreen, tap Software Upgrade sub-tab.
6. Tap Application Upgrade.
7. Tap Install to perform the upgrade. Tap Cancel to cancel operation.
8. Press the Back button exit the main menu.

THE UPGRADE PROCESS TAKES ABOUT 15 MINUTES. ENSURE THE DEVICE IS CHARGED BEFORE UPGRADING. IF THE DEVICE LOSES POWER DURING THE UPGRADE, THE UPGRADE WILL FAIL AND THE DEVICE MIGHT BE UNUSABLE.

9. ThermoTools Software

ICI's ThermoTools Software enables users to stitch together mosaics and perform thermal analysis on a desktop computer.

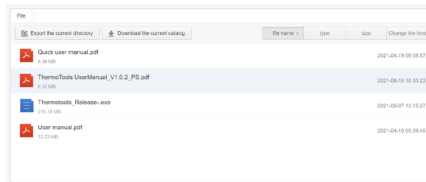
9-1 Recommended System Requirements

- Operating system: Window 7 or above
- Microsoft Visual C++ 2010 or above
- DirectX 11 or above
- Processor: i3 or above
- RAM: 8 GB or above
- Graphics Card: 2G or higher, support OpenGL
- Hard Disk: 40 GB or higher with memory disk 2 G or above

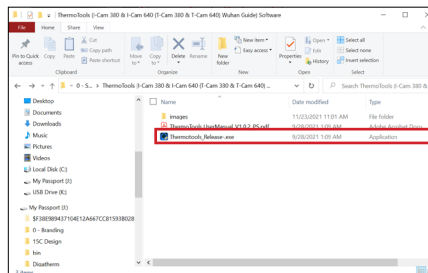
9-2 Software Installation

ICI's ThermoTools software is provided as a download. Customer service can be contacted for a downloadable copy.

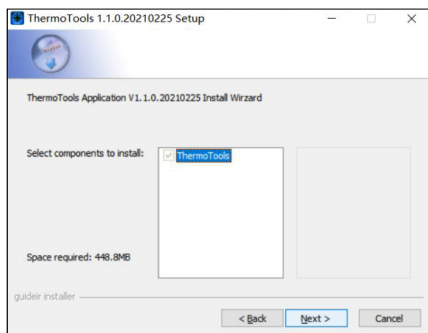
1. Visit: <https://drive.263.net/link/a1xy930lqXazUSW/>



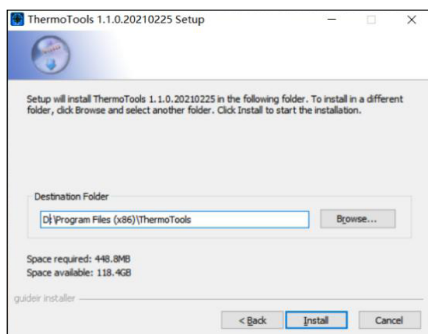
2. Click Thermotools_Release-.exe.
3. Click Download and follow your browser's instructions for saving files.
4. Open the file save location.
5. Double-click the Thermotools_Release-.exe file.



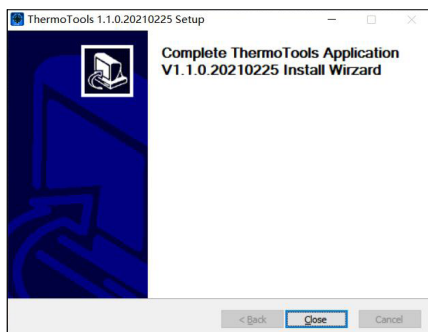
6. Grant system permission. Click Yes if you agree to continue software installation. Click No to abort installation.
7. Click Next.
8. Click I Agree to agree to terms of license agreement.
9. Choose components. Click Next.



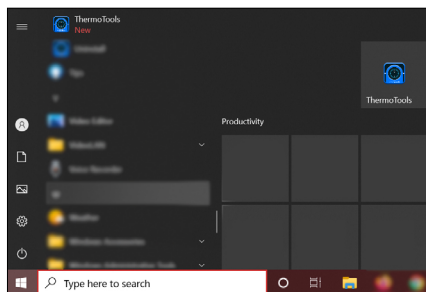
10. Optionally change installation location by clicking Browse. Click Install.



11. Click Close.

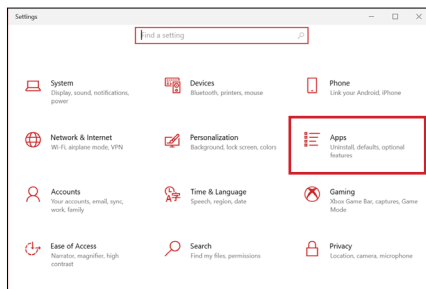


12. Launch ThermoTools from the start menu.

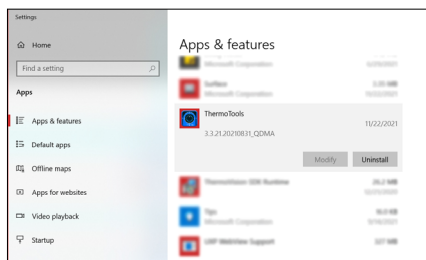


9-3 Uninstall the Software

1. Open Settings (gear icon) from the start menu.
2. Click Apps.



3. Find ThermoTools in the list and click it.



4. Click Uninstall.
5. Click Uninstall to confirm you want to uninstall.
6. Grant system permission. Click Yes if you agree to uninstall the software. Click No to cancel process.
7. Click OK.

10 Cleaning and Maintenance

10-1 Cleaning the Germanium Lens

Do not use corrosive chemicals on the optical glass components. The germanium window surface is coated with anti-reflection coating. Dust, grease, and fingerprints produce harmful substances and lead to a decline in performance, or cause scratches. If dirt is found, please use the following methods:

1. Use a blown balloon or a soft brush to clean the lens surface to avoid dust particles scratching the anti-reflection film on lens surface during the wiping process.
2. Use a soft cotton or microfiber cloth or lens wiping paper and dip in distilled water. Gently wipe the lens surface from the middle to the edge, paying attention to not crack the lens, or use too much liquid. If the lens is still not clean, replace the cloth and repeat the wiping process.

10-2 Disinfecting the Camera Surface

Do not use corrosive cleaning solutions on the optical glass components. It is recommended to disinfect the camera surface regularly with a non-corrosive sanitizing product. Follow the directions provided by the manufacturer of the cleaning solution. Adhere to the sanitation protocols and cleaning schedule set forth by the employer.

10-3 Device Calibration

It is recommended to have the device(s) re-calibrated annually. Contact customer service to schedule maintenance.

10-4 Storage

When the equipment is not in use, the device should be placed in a dust-free and moisture-free environment with a stable temperature and humidity.

DO NOT USE CORROSIVE CLEANING SOLUTIONS ON THE OPTICAL GLASS COMPONENTS. DISINFECT THE CAMERA SURFACE REGULARLY WITH A NON-CORROSIVE SANITIZING PRODUCT.

CALIBRATE YOUR DEVICES ANNUALLY. CONTACT CUSTOMER SERVICE TO SCHEDULE MAINTENANCE.

11 Troubleshooting

If the user encounters any problems while using the imager, refer to the following options. If the problem persists, disconnect the power and contact the customer support department.

11-1 Thermal imager does not power on

- Ensure battery is installed
- Replace old battery
- Charge battery

11-2 Thermal imager shuts off unexpectedly

- Replace old battery
- Charge battery

11-3 No thermal image

- Open the lens cap
- If lens is foggy, use professional equipment to clean the lens

11-4 Unclear or dark visible images

- Turn on lights in imaging area
- Turn on device light
- If lens is foggy, use professional equipment to clean the lens

11-5 Camera out of focus

- Adjust Lens Focus Adjuster

11-6 Temperature data is missing or has strange readings

- Add a measurement spot, area, line, or tracker.
- If the target's temperature is lower or higher than the limits of the camera, it will display <XXX° or >XXX° with XXX being the min or max temperature of the selected range.

11-7 Temperature readings are incorrect

- Turn off the device; then, turn it back on
- To ensure the accuracy of temperature measurement, you are recommended to wait for 5 to 10 minutes after turning on the thermal imager and before temperature measurement.
- Ensure the correct temperature range is selected:
 - The default temperature range is -40 °C to 150 °C (-40 °F to 302 °F)
 - When measuring high temperature objects ensure the temperature range is set to the 100 °C to 800 °C (212 °F to 1472 °F) range
- Device is at proper height
- Ensure device is in focus
- Adjust emissivity
- Adjust for ambient temperature
- Wait for or perform a manual NUC operation
- Send the device in for recalibration

11-6 Memory card error

- Insert memory card

12 About ICI

ICI manufactures complete systems and software. We can provide complete engineering, software, and OEM solutions. Our Fortune 500 clients rely on us for infrared equipment and thermography training (which we offer through the Infrared Training Institute).

In addition to providing custom germanium, silica, and sapphire optics, we also build windows for enclosures, as well as custom pan and tilt units. We can even provide customizable explosion-proof systems.

Our knowledge and experience stems from years of using infrared imaging and temperature measurement instruments to provide solutions to: managers, engineers, scientists, inspectors and operators in space, power companies, medical, pulp and paper, food industry, research and development, and various process industries. You can see our products and services used in industrial, commercial, and government applications worldwide. Additionally, our ICI 7320 was awarded "Product of the Month" by NASA*. Originally named Texas Infrared (still DBA), Infrared Cameras, Inc. has been in business since March, 1995.

Thank you for your dedicated and continued support.

Infrared Cameras, Inc.
2105 W. Cardinal Dr.
Beaumont, TX 77705

Phone: (409) 861-0788
Toll Free: (866) 861-0788
International: (409) 861-0788

Customer Support: support@infraredcameras.com
Website: www.infraredcameras.com

You may reach a customer care representative by phone or email during regular business hours: Monday – Friday 8:00AM - 5:00PM CST.

*Volume 33 No. 2, February 2009 edition of NASA Tech Briefs