TIC Series Handheld Thermal Camera

User Manual

Safety Information

Caution

Failure to use or not operate the product according to the User Manual could cause injury and/or damage to the product. Do not use the product in explosive, corrosive or high humidity environments.

Do not point the lens at the sun or other high intensity radiation sources, as this may damage the internal components of the thermal camera and/or the detector.

Caution

Do not disassemble, repair or modify the product. Contact the dealer or local the thermal camera manufacturer if the product needs to be repaired or calibrated.

Use only accessories specified by the thermal camera manufacturer. Contact your dealer or local the thermal camera manufacturer before using any accessories not recommended in this manual.

Handle the product with care. Do not drop or strike the product. Keep the product in a dry environment. Do not apply pressure to the detector. Do not touch the detector lens. If the product is installed in a place where the power supply is unstable, it may not function properly. Do not aim the lens at strong radiation sources such as devices that emit laser beams.

Do not expose the product to any electromagnetic radiation environment. Do not touch the product with bare hands in high temperature environments.

Do not touch the detector lens with bare hands. If the lens is dirty, wipe the lens with a soft cloth. Do not expose the product to high temperature environments. Do not touch the product with bare hands in high temperature environments.

Warning

Do not stare at the target through the thermal camera. Do not use the product for any purpose other than those specified in this manual.

1 Camera Introduction

1.1 Appearance

Table 1.1 Component Introduction (Take Front Side As Example)

No.	Component	Function Description
1	Handle	Hold the product
2	Lanyard Hole	Connect a lanyard for a safety tether
3	Navigation Button	Navigation button
		Up: Increase the value / Move the focus frame up
		Down: Decrease the value / Move the focus frame down
		Left: Move the focus frame left
		Right: Move the focus frame right
		Center: Confirm the selection
4	Power button	Hold for 3 seconds to power on/off
5	Trigger button	Short press: Capture a thermal image
6	Lens	Focusing lens

Table 1.2 Component Introduction (Take Rear Side As Example)

No.	Name	Description
7	Indicator	Hold for 3 seconds to power on/off, or to power off
		Short press the indicator to change the screen brightness
8	Screen	Display the thermal image
9	USB port	Connect to a PC for data transfer
		Connect to a power adapter for charging
		Connect to an external camera
		Connect to an USB flash drive for data transfer
10	Tripod mount	Mounting on a tripod

Table 1.3 Component Introduction (Take Bottom Side As Example)

No.	Name	Description
11	Microphone	Recording voice
12	Speaker	Playing back voice

1.2 Preparation

Power Supply Recommendations

Battery

The battery pack DP14.4-T-10-10 provided by Guide is rated 14.4V and 10Ah.

Charger

Use the charger provided by the thermal camera manufacturer to charge the battery pack. Refer to the charger's instructions for the charging procedure.

Lanyard

Attach the lanyard to the handle and secure it.

SD Card

Recommended TF(Micro SD) card: Class10 Ultra speed Class and 32G memory capacity.

Power Adapter

Recommended DC12V 2A power adapter.

Power On/Off

Hold the power button for 3 seconds to power on/off.

Hold the indicator for 3 seconds to power off.

Lanyard Installation

Pass the lanyard through the lanyard hole and secure it.

Charging

Connect the DC12V 2A power adapter to the charger, then connect the charger to the battery pack, and finally connect the charger to the power supply. The charging indicator will turn red, and when it turns green, the battery is fully charged.

Screen Brightness Adjustment

Short press the indicator to adjust the screen brightness.

Time Setting

Refer to the Time Setting section in the menu.

Time Zone Setting

Refer to the Time Zone Setting section in the menu.

Language Setting

Refer to the Language Setting section in the menu.

Formatting

Refer to the Formatting section in the menu.

Firmware Upgrade

Refer to the Firmware Upgrade section in the menu.

Factory Reset

Refer to the Factory Reset section in the menu.

2 Operating Instructions

2.1 Power On & Off

Hold the power button, long press the power button to power on.

Hold the power button for 3 seconds to power off, or hold the indicator for 3 seconds to power off.

2.2 Screen Brightness Adjustment

Short press the indicator to change the brightness of the screen.

2.3 Time Setting

Refer to the Time Setting section in the menu.

2.4 Time Zone Setting

Refer to the Time Zone Setting section in the menu.

2.5 Language Setting

Refer to the Language Setting section in the menu.

2.6 Formatting

Refer to the Formatting section in the menu.

2.7 Firmware Upgrade

Refer to the Firmware Upgrade section in the menu.

2.8 Factory Reset

Refer to the Factory Reset section in the menu.

3 Menu Operation

3.1 Menu Introduction

Short press the indicator to enter the menu, then use the navigation button to navigate. Refer to the following sections for specific operations.

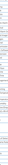
3.2 Image Mode Introduction

Thermal Image

Visible Light

Fusion

Edge



Pseudo

Pseudo Fusion

Pseudo Edge

Pseudo Edge Fusion

Pseudo Edge Fusion Pro

Pseudo Edge Fusion Pro Fusion

Pseudo Edge Fusion Pro Edge

Note

Pseudo: Pseudo-color mode, which displays different colors for different temperature ranges, enhancing the visual effect of the thermal image.

Fusion: Fusion mode, which combines the thermal image and the visible light image to provide more detailed information.

Edge: Edge mode, which enhances the edges in the image to make the contours more clear.

Pseudo Fusion: Pseudo-color fusion mode, which combines pseudo-color and fusion modes to provide more detailed information.

Pseudo Edge: Pseudo-color edge mode, which combines pseudo-color and edge modes to provide more detailed information.

Pseudo Edge Fusion: Pseudo-color edge fusion mode, which combines pseudo-color, edge, and fusion modes to provide more detailed information.

Pseudo Edge Fusion Pro: Pseudo-color edge fusion pro mode, which combines pseudo-color, edge, and fusion pro modes to provide more detailed information.

Pseudo Edge Fusion Pro Fusion: Pseudo-color edge fusion pro fusion mode, which combines pseudo-color, edge, and fusion pro fusion modes to provide more detailed information.

Pseudo Edge Fusion Pro Edge: Pseudo-color edge fusion pro edge mode, which combines pseudo-color, edge, and fusion pro edge modes to provide more detailed information.

3.3 Palette Mode

Palette Mode

Palette Mode Inverse

Note

Palette Mode: The thermal image displays different colors for different temperature ranges.

Palette Mode Inverse: The thermal image displays the inverse colors of the palette mode.

3.4 Measurement Mode

Point Measurement

Point measurement displays the temperature of the center point of the screen.

Line Measurement

Line measurement displays the maximum, minimum, and average temperatures of the line.

Rectangle Measurement

Rectangle measurement displays the maximum, minimum, and average temperatures of the rectangle.

Circle Measurement

Circle measurement displays the maximum, minimum, and average temperatures of the circle.

Measurement Mode Settings

Measurement Mode Settings allows you to set the measurement parameters. The measurement mode settings include the following:

Display Temperature: Set the display temperature. The temperature can be displayed in Celsius (°C) or Fahrenheit (°F).

Temperature Correction: Set the temperature correction. The temperature can be corrected within the range of -10°C to +10°C.

Emissivity: Set the emissivity. The emissivity can be set within the range of 0.01 to 1.00.

Reflective Temperature: Set the reflective temperature. The reflective temperature can be set within the range of -20°C to +120°C.

Distance: Set the distance. The distance can be set within the range of 0.1m to 10.0m.

Alarm Mode: Set the alarm mode. The alarm mode can be set to Off, Above, Below, or Interval.

Alarm Threshold: Set the alarm threshold. The alarm threshold can be set within the range of -20°C to +120°C.

3.5 Image Correction

Image Correction

Image correction is used to compensate for the non-uniformity of the thermal sensor to ensure the accuracy of the thermal image. It is recommended to perform image correction when the ambient temperature changes significantly.

Image Correction Operation

Image correction can be performed in two ways: automatic and manual. By default, the camera performs automatic image correction every 30 minutes. The interval for automatic image correction can be adjusted in the menu, with options of 10 minutes, 30 minutes, or 60 minutes.

Manual image correction can be performed by pointing the lens at a uniform target and then pressing the image correction button in the menu.

3.6 Image Enhancement

Image Enhancement Parameters

Image enhancement parameters include Contrast, Brightness, and Sharpness. The Contrast and Brightness can be set within the range of 0 to 255, and the Sharpness can be set within the range of 0 to 100.

Image Enhancement Operation

Image enhancement can be performed in two ways: automatic and manual. By default, the camera performs automatic image enhancement every 30 minutes. The interval for automatic image enhancement can be adjusted in the menu, with options of 10 minutes, 30 minutes, or 60 minutes.

Manual image enhancement can be performed by pointing the lens at a target and then pressing the image enhancement button in the menu.

3.7 Other Settings

Time Setting

Refer to the Time Setting section in the menu.

Time Zone Setting

Refer to the Time Zone Setting section in the menu.

Language Setting

Refer to the Language Setting section in the menu.

Formatting

Refer to the Formatting section in the menu.

Firmware Upgrade

Refer to the Firmware Upgrade section in the menu.

Factory Reset

Refer to the Factory Reset section in the menu.

4 Technical Specifications

Table 4.1 Technical Specifications

Thermal Module	
Detector Type	Uncooled Focal Plane Array (UFPA)
Pixel Pitch	12μm
Resolution	256×192
Spectral Response	8~14μm
Focal Length	2.4mm
Field of View	56°×42°
Temperature Measurement Range	-20°C~120°C
Temperature Measurement Accuracy	±2°C or ±2% (Take the greater one)
Image Frame Rate	25Hz
Image Enhancement	Contrast, Brightness, Sharpness
Image Correction	Automatic Correction, Manual Correction
Image Mode	Thermal, Visible Light, Fusion, Edge, Pseudo, Pseudo Fusion, Pseudo Edge, Pseudo Edge Fusion, Pseudo Edge Fusion Pro, Pseudo Edge Fusion Pro Fusion, Pseudo Edge Fusion Pro Edge
Palette Mode	Palette Mode, Palette Mode Inverse
Measurement Mode	Point Measurement, Line Measurement, Rectangle Measurement, Circle Measurement
Measurement Mode Settings	Display Temperature, Temperature Correction, Emissivity, Reflective Temperature, Distance, Alarm Mode, Alarm Threshold
Visible Light Module	
Sensor Type	1/2.8" Sony IMX307 Sensor
Resolution	1920×1080
Focal Length	3.6mm
Field of View	56°×42°
Image Enhancement	Brightness, Contrast, Sharpness
Image Mode	Thermal, Visible Light, Fusion, Edge, Pseudo, Pseudo Fusion, Pseudo Edge, Pseudo Edge Fusion, Pseudo Edge Fusion Pro, Pseudo Edge Fusion Pro Fusion, Pseudo Edge Fusion Pro Edge
Palette Mode	Palette Mode, Palette Mode Inverse
Measurement Mode	Point Measurement, Line Measurement, Rectangle Measurement, Circle Measurement
Measurement Mode Settings	Display Temperature, Temperature Correction, Emissivity, Reflective Temperature, Distance, Alarm Mode, Alarm Threshold
Fusion Module	
Fusion Mode	Fusion, Pseudo Fusion, Pseudo Edge Fusion, Pseudo Edge Fusion Pro, Pseudo Edge Fusion Pro Fusion, Pseudo Edge Fusion Pro Edge
Image Correction	Image Correction Operation
Image Enhancement	Image Enhancement Operation
Other	
Time Setting	Time Setting
Time Zone Setting	Time Zone Setting
Language Setting	Language Setting
Formatting	Formatting
Firmware Upgrade	Firmware Upgrade
Factory Reset	Factory Reset
Power Supply	
Battery Type	Rechargeable Lithium Battery
Battery Capacity	14.4V 10Ah
Charger	Dedicated Charger
Power Adapter	DC12V 2A
Power Consumption	5W
Battery Life	4.5h
Charging Time	4.5h
Hot Swap	Supported
Interface	
Screen	3.5" 640×480
Indicator	Supported
Lanyard Hole	Supported
Navigation Button	Supported
Microphone	Supported
Speaker	Supported
Tripod Mount	Supported
Micro SD Card Slot	Supported
USB Port	Supported
Lens	
Focusing Lens	Focusing Lens
Other	
Operating Temperature	-20°C~50°C
Storage Temperature	-40°C~70°C
Operating Humidity	10%~90%
Storage Humidity	10%~90%
Dimensions	190mm×75mm×75mm
Weight	500g

5 Pin Diagram

Table 5.1 Pin Diagram

No.	Pin Name	Function
1	Power Supply	Power supply
2	Data Line	Data transmission
3	Ground	Ground

6 Precautions

Do Not Disassemble, Repair or Modify the Product

Do not disassemble, repair or modify the product. Contact your dealer or local the thermal camera manufacturer if the product needs to be repaired or calibrated.

Do Not Aim the Lens at Strong Radiation Sources

Do not point the lens at the sun or other high intensity radiation sources, as this may damage the internal components of the thermal camera and/or the detector.

Use Only Specified Accessories

Use only accessories specified by the thermal camera manufacturer. Contact your dealer or local the thermal camera manufacturer before using any accessories not recommended in this manual.

Handle the Product with Care

Do not drop or strike the product. Keep the product in a dry environment. Do not apply pressure to the detector. Do not touch the detector lens. If the product is installed in a place where the power supply is unstable, it may not function properly. Do not aim the lens at strong radiation sources such as devices that emit laser beams.

Do Not Expose the Product to Electromagnetic Radiation Environments

Do not expose the product to any electromagnetic radiation environment.

Do Not Touch the Product with Bare Hands in High Temperature Environments

Do not touch the product with bare hands in high temperature environments.

Do Not Touch the Detector Lens with Bare Hands

Do not touch the detector lens with bare hands. If the lens is dirty, wipe the lens with a soft cloth.

Do Not Expose the Product to High Temperature Environments

Do not expose the product to high temperature environments.

Do Not Touch the Product with Bare Hands in High Temperature Environments

Do not touch the product with bare hands in high temperature environments.

7 Cleaning and Care

Lens Cleaning

Use a soft cloth to wipe the lens. If the lens is dirty, you can first use a cotton swab dipped in a small amount of neutral cleaning solution to gently wipe the lens surface, then use a dry cotton swab to wipe the lens surface to remove any residual cleaning solution.

Cleaning Precautions

Do not touch the lens with your bare hands during cleaning. Do not use strong acids, strong alkalis, or other chemicals to clean the lens. Do not use abrasive materials to clean the lens. Do not apply excessive force when cleaning the lens.

Storage Environment

Store the product in a dry environment. Avoid exposure to high temperatures and high humidity environments.

Long-Term Storage

If the product will be stored for a long time, it is recommended to remove the battery and store it separately.

Regular Inspection

Regularly inspect the product for any damage or aging. If any issues are found, contact your dealer or local the thermal camera manufacturer for repair.

8 Troubleshooting

Table 8.1 Troubleshooting

Problem	Cause	Solution
Unable to power on	Insufficient battery power	Charge the battery
	Battery damaged	Replace the battery
	Power button not pressed correctly	Hold the power button for 3 seconds
	Power adapter not connected properly	Check the power adapter connection
	Power adapter damaged	Replace the power adapter
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to charge	Charger not connected properly	Check the charger connection
	Charger damaged	Replace the charger
	Battery damaged	Replace the battery
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Image not displaying	Lens cover not removed	Remove the lens cover
	Lens focus not adjusted properly	Adjust the lens focus
	Screen brightness too low	Adjust the screen brightness
	Screen damaged	Replace the screen
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Image blurry	Lens focus not adjusted properly	Adjust the lens focus
	Lens dirty	Clean the lens
	Image correction needed	Perform image correction
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Image too dark or too bright	Image enhancement parameters improperly set	Adjust the image enhancement parameters
	Image correction needed	Perform image correction
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Image freezes	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to connect to PC	Data cable not connected properly	Check the data cable connection
	Data cable damaged	Replace the data cable
	Computer USB port not recognized	Try another USB port
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to recognize TF card	TF card not inserted properly	Reinsert the TF card
	TF card damaged	Replace the TF card
	TF card not formatted	Format the TF card
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to save data	TF card full	Delete some files or replace the TF card
	TF card damaged	Replace the TF card
	TF card not formatted	Format the TF card
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to upgrade firmware	Upgrade file incorrect	Obtain the correct upgrade file
	Insufficient battery power	Charge the battery
	Upgrade interrupted	Restart the device and retry the upgrade
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to perform measurement	Measurement mode not enabled	Enable measurement mode
	Measurement parameters improperly set	Adjust the measurement parameters
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to adjust screen brightness	Screen damaged	Replace the screen
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to adjust time	Time setting function not enabled	Enable time setting function
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to adjust time zone	Time zone setting function not enabled	Enable time zone setting function
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to adjust language	Language setting function not enabled	Enable language setting function
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to perform formatting	Formatting function not enabled	Enable formatting function
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to perform firmware upgrade	Firmware upgrade function not enabled	Enable firmware upgrade function
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to perform factory reset	Factory reset function not enabled	Enable factory reset function
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to perform image correction	Image correction function not enabled	Enable image correction function
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to perform image enhancement	Image enhancement function not enabled	Enable image enhancement function
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to perform measurement mode settings	Measurement mode settings function not enabled	Enable measurement mode settings function
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to perform image mode switching	Image mode switching function not enabled	Enable image mode switching function
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to perform palette mode switching	Palette mode switching function not enabled	Enable palette mode switching function
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair
Unable to perform fusion mode switching	Fusion mode switching function not enabled	Enable fusion mode switching function
	Internal hardware failure	Contact your dealer or local the thermal camera manufacturer for repair

9 FAQ

Table 9.1 FAQ

Question	Answer
Can the thermal camera be used in rain or snow?	No, the thermal camera is not waterproof and should not be used in rain or snow.
Can the thermal camera be used in high temperature environments?	The thermal camera can be used in high temperature environments, but it should not be used for long periods.
Can the thermal camera be used in low temperature environments?	The thermal camera can be used in low temperature environments, but it should not be used for long periods.
Can the thermal camera be used in explosive environments?	No, the thermal camera should not be used in explosive environments.
Can the thermal camera be used in corrosive environments?	No, the thermal camera should not be used in corrosive environments.
Can the thermal camera be used in high humidity environments?	No, the thermal camera should not be used in high humidity environments.
Can the thermal camera be used for any purpose other than those specified in this manual?	No, the thermal camera should not be used for any purpose other than those specified in this manual.
Can the thermal camera be used to measure the temperature of people?	No, the thermal camera should not be used to measure the temperature of people.
Can the thermal camera be used to measure the temperature of food?	No, the thermal camera should not be used to measure the temperature of food.
Can the thermal camera be used to measure the temperature of electronic devices?	No, the thermal camera should not be used to measure the temperature of electronic devices.
Can the thermal camera be used to measure the temperature of liquids?	No, the thermal camera should not be used to measure the temperature of liquids.
Can the thermal camera be used to measure the temperature of gas?	No, the thermal camera should not be used to measure the temperature of gas.
Can the thermal camera be used to measure the temperature of solids?	No, the thermal camera should not be used to measure the temperature of solids.
Can the thermal camera be used to measure the temperature of the ground?	No, the thermal camera should not be used to measure the temperature of the ground.
Can the thermal camera be used to measure the temperature of the sky?	No, the thermal camera should not be used to measure the temperature of the sky.
Can the thermal camera be used to measure the temperature of the sun?	No, the thermal camera should not be used to measure the temperature of the sun.
Can the thermal camera be used to measure the temperature of the moon?	No, the thermal camera should not be used to measure the temperature of the moon.
Can the thermal camera be used to measure the temperature of the stars?	No, the thermal camera should not be used to measure the temperature of the stars.
Can the thermal camera be used to measure the temperature of the universe?	No, the thermal camera should not be used to measure the temperature of the universe.
Can the thermal camera be used to measure the temperature of the earth?	No, the thermal camera should not be used to measure the temperature of the earth