

User Manual



IRTC600 Thermal Imaging Camera



Introduction

Congratulations on your purchase of the Triplett IRTC600 Thermal Imaging Camera. This instrument is useful in many applications such as preventative maintenance, troubleshooting of electrical and HVAC systems, mechanical breakdowns, water leaks and moisture buildup, heat loss from missing insulation and faulty windows/doors, automotive repair, and other places to find leaks and hot spots. With proper care the instrument will last for many years of accuracy and service.

Safety

Please read the safety information carefully before attempting to operate the meter. Failure to do so could cause personal injury or damage to the meter. Please read this manual carefully to ensure safe and correct use.

Do not attempt to repair this device:

Please contact Triplett Technical Support for any issues
[Product Support — Triplett Test Equipment & Tools](#)



Considerations

Please observe the following guide in order not to damage the product:

Don't assemble or dismantle the product without permission.

The product is a type of super precise equipment. Don't try to dismantle, assemble, or remodel any part of the product. Repair of the product should be made by technical personnel designated by Triplett service technicians only.

Avoid damage to probe of the product

Note: don't put the product close to strong heat source directly ****NOTE:**

**** Product Clicking – Sensor is automatically calibrating for image,**

When the product works, there is light sound of clicking every several seconds. This is normal and is calibrating when the lens captures images and senses temperature changes.

Charging – Avoid overcharging (over 24 hours) the battery and remove Power Adaptor when not charging. Use only the charging cable and adaptor that the unit is shipped with or make sure it is the same 5 V/2A max spec.

Water and Condensation – It is best to avoid water and condensation when storing the unit.

Cleaning – It is best to use water-based soap to clean and not abrasive solutions.

Lens Maintenance and Cleaning – Take care and be gentle when cleaning the lens as it is treated with an anti-reflection coating. Use an alcohol-based cleaning solution and a lint free soft cloth to remove dust and dirt. Compressed air is also an alternative that works well.

Charging Battery

Use USB data line to charge:

- The product has built-in chargeable 26650 lithium batteries.
- When the battery level is low, the top right of the screen will display “”. Please charge in time through Micro USB interface When the product is off, you can charge).
- Pull off the USB line after fully charging.

To make the lithium-ion battery can play the perfect performance:

- Don't place the battery on the charger exceeding 24 hours.
- The thermal imaging device should be charged for two hours at least every three months so as to extend the battery service life to the greatest extent.
- Don't try to charge the battery in extremely cold environment.

Meter and Keypad Description



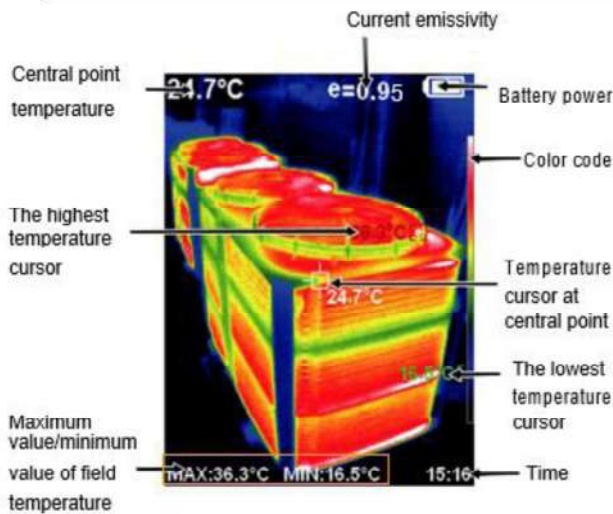
Keypad Operation



Specifications

Model	IRTC600
Display screen	3.5 " full angle TFT display screen
Infrared image resolution	220×160
Field angle	35°×26°
Visible image resolution	300,000 pixels
LCD resolution	320×240
Shortest focus length	0.15M
Thermal sensitivity	0.07°C
Temperature measurement range	-20°C to 300°C (-4°F to 572°F)
Measurement accuracy	±2°C/±2%
Emissivity	Adjustable from 0.01 to 1.00
Frame rate of thermal images	9Hz
Wavelength coverage	8-14um
Focus mode	Fixed
Color palette	Rainbow, iron oxide red, cold color, black & white, white & black
Storage capacity	Built-in 3G (above 20 thousand image stored)

Display Description



Color code: used to mark the color corresponding to the relative temperature from low to high in the field of vision.

The central point temperature cursor: used to indicate the central position in the screen area. The cursor color displays white. The temperature value is displayed top left corner of the screen.

The highest temperature cursor: used to indicate the highest temperature position in the screen area. It will move with the movement of the highest temperature. The cursor displays red. The temperature value is displayed at bottom left corner of the screen.

File format	JPG
USB	Micro USB 2.0
Power supply	Built-in chargeable 26650 battery
Working time	2-3 hours
Automatic power-off time	Selectable: 5 minutes/20 minutes/ not power off automatically
Setting command	Unit, Language, Date, Time, Information
Language	English, Chinese, Italian, German
Product size	248mm×97mm×112.8mm
Product weight	588 g
Work temperature	0°C to 45°C
Storage temperature	-20°C to 60°C
Relative humidity	< 85%RH

The lowest temperature cursor: used to indicate the lowest temperature position in the screen area. It will move with the movement of the lowest temperature. The cursor displays red. The temperature value is displayed at the central position of the screen.

Operation

POWER ON/OFF

- Press and hold the “” button for more than 3 seconds to turn the Thermal Imaging on or off.

Main Display

- After powering on the power, open the lens protection cover, the screen shows the thermal imaging status.

• ****Note: Time adjustment may be required when you move the camera between environments with widely varying ambient temperatures.**

Visible, Fused and Thermal Image Modes

Switching between infrared thermal image and visible image

Press “” or “” key to switch the degree of fusion between inferred thermal images and visible images (the degree of fusion is 0%, 25%, 50%, 75% and 100%)

Maximum and Minimum Temperature Display

The highest/ and lowest temperature is shown at the bottom of the screen over the image

after normal start up, pressing the “” button will toggle between displaying and hiding this information.

Image capture

- Quick pull of the image capture trigger to capture. When the capture is successful, the screen will show the prompt “Save image?”. If you want to save the image, select “Yes” and press the “SELECT/ENTER” button. The image will be stored. If you do not want to save the image you can select “No” and the image will be deleted.

Recording Video

Long press or pull of the image capture trigger the screen will prompt "record video?", if you select "Yes" at this time, please press the SELECT/ENTER button and video will start to be recorded.

Transferring Saved Images and Video

The saved images can be transferred and viewed by connecting with a computer through Micro USB.

Recalling Stored Images

Open the USB protective cover. Use USB cable to connect the USB port and then computer to read the images or save it into computers.

The supported operating system through verification includes: winxp, win7, win 8, win10, Apple system.

It is suggested to use the attached USB line or USB line with higher quality.

Note:

When connecting with a computer, pull off the data line after selecting "pop out device safely" to avoid causing file system damage and other problems. If "unable to save" and other problems occur, you may find the hard disc in the computer and fix it.

Press the left of "MENU" key and the menu bar appears. They are "Image registration", "Images", "Videos", "Color palette", "Emissivity" and "Settings" submenus.

Image Alignment (Submenu)

Description of Image Overlapping (Fusion)

Image overlapping makes it easier for users to understand the infrared images by using aligned visible images and infrared images. The use of image overlapping can capture the visible image of every infrared image so as to display the temperature distribution in the target region correctly and share with other people more effectively.

Adjusting of Image Overlapping (Visible and Thermal Cameras)

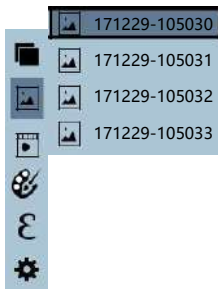
Press the  button to enter the main menu and select "Image registration" in the main menu.

Press the "SELECT/ENTER" button to enter the image overlap adjustment mode. Press the navigation keys (up, down, left and right buttons) to perform the visible image shift operation. Press the "SELECT/ENTER" button to exit the image blending mode (Note: If there is no operation for more than 6 seconds, the image blending mode will be automatically exited).

Images (Submenu)

View image

Press the "MENU" button to enter the main menu and select "Images" in the main menu.



As shown in the figure, then press "Right" key to enter image list. Press "Up" or "Down" key in navigation to select the image. Then press "SELECT/ENTER" key to view image. When viewing the images, press "Left" key to view the previous image, Press "Right" to view the next image.

Press "SELECT/ENTER" key to return. Press "MENU" key to exit from the menu.

Deleting Images

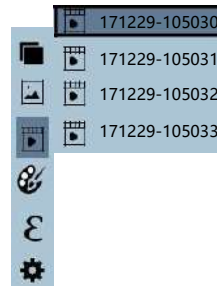
When viewing the images, the screen will show the prompt of "Delete photo" by pressing "Up" key. If "Yes" is selected now, press

"MENU" key to determine to delete the image. If "No" is selected, press "SELECT/ENTER" key to determine not to delete the image.

Video (Submenu)

View video

Press the "MENU" button to enter the main menu and select "Videos" in the main menu.



Press the "Right" key to enter the video list, press the "Up" "Down" keys in the navigation keys to select a video, and then press the "SELECT/ENTER" key to view the video.

When viewing a video, press the "Left" button to view the previous video, and press the "Right" button to view the next video. When playing a video, press the "SELECT/ENTER" button to pause playback, and press the "SELECT/ENTER" button again to resume playback.

Deleting Video

When viewing the video, press the "Up" button, and the prompt "Delete video?" will appear on the screen. If you want to select "Yes" at this time, please press the "MENU" key to confirm the deletion of the video. If you want to choose "No", please press the "SELECT/ENTER" button to confirm not to delete the video

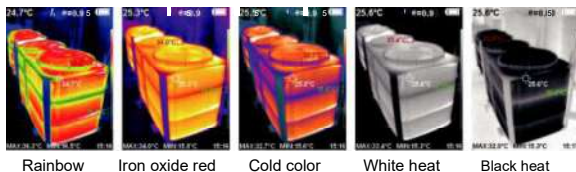
Color Palette (Submenu)

Color palette Description

The palette can be used to change the pseudo-color display of the infrared image on the display. Some tune Swatches are better suited for specific applications and can be set up as needed. The palette is divided into rainbow, iron red, cool, white hot, black hot, five palettes. These palettes work best with high thermal contrast and provide additional color contrast between high and low temperatures.

Suitable selection of color palette displays the details of the target objective better. Rainbow, iron oxide red and cold color palettes focus on display of color. Such color palettes are very suitable for high heat contrast and are used to improve the color contrast between high temperature and low temperature. But the black & white and white & black color palettes provide even linear color.

The following is the image of the same object with selection of different color palettes.



Selecting Color Palette



As shown in the figure, press "**⏏/MENU**" key to enter the main menu

and select "**⚙**" (color palette) option and press "**▶**" key to enter the color palette list. Press "**▲**" and "**▼**" keys in navigation to select the color palette. Then press "SELECT/ENTER" key to

select the color palette. Press "**◀**" to return. Press "**⏏/MENU**" key to exit from the menu.

Emissivity (Submenu)

Emissivity description

The emissivity of the product can be adjusted from 0.01 to 1.00 with the default value of 0.95. Many common objects and materials (such as timber, water, skin and textile fabric) can reflect the heat energy effectively. So it is easy to obtain relatively correct measurement value. The emissivity is usually set as 0.95 when the coarse objects that are easy to give out energy. For semi-matte objects that give out less energy, the emissivity is usually about 0.85 and the emissivity of semi-gloss objects is 0.6. The shiny objects are divided into materials with low radiation coefficient. The emissivity is usually set as 0.3 at the time of measurement. Correct setting of the value of emissivity is very important for you to carry out the most correct temperature measurement. The surface emissivity will produce giant impact on surface temperature measured by the product. Understanding the surface emissivity will enable you to obtain correct temperature measurement result.

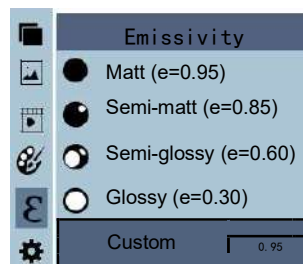
Emissivity Setting

The product is provided with four types of object measurement modes:

- Matt (0.95)
- Semi-matt (0.85)
- Semi-glossy (0.60)
- Glossy (0.30)

According to the characteristics of the measured objects, users may set the emissivity value through the "self-define" option (please refer to the table of "emissivity of common materials").

The operating step is as the following:



As shown in the figure, press " Φ /MENU" key to enter the main menu and select "€" (emissivity) option and press "▶" key to enter the emissivity lists.

Press "▲" and "▼" keys in navigation key to select the emissivity. Then press "SELECT/ENTER" key to determine selection of the

emissivity. Press "◀" key again to return.

If you select "self-defined" emissivity, press the "SELECT/ENTER" " " button to enter the editing state. Press " ◀ " / " ▶ " Keys to select the number to be changed, press " ▲ " " ▼ " Keys to change the value. After the selection is completed, press "SELECT/ENTER" " to confirm, then press " ◀ " to return. The " * ◻ / MENU " button exits the menu.

The emissivity value of common materials

Substance	Thermal radiation	Substance	Thermal radiation
Bitumen		Black cloth	
Concrete		Human skin	
Cement		Foam	
Sand		Charcoal dust	
Earth		Paint	
Water		Matte paint	
Ice		Black rubber	
Snow		Plastic	
Glass		Timber	
Ceramics		Paper	
Marble		Chromium hemi trioxide	
Gypsum		Copper oxide	
Mortar		Ferric oxide	

Settings (Submenu)

Press " * ◻ / MENU " key to select the " ⚙ " (Settings) option in the main menu. Press " ▶ " key again to enter the "setting" sub-menu.

Settings		
 Auto shutdown ▶	Auto shutdown	NO 5min 20min
 Intensity ▶	Intensity	Low Medium High
 Language ▶	Language	English Chinese Italian German
°C Unit ▶	Unit	Celsius Fahrenheit
24h  Time format ▶	Time Format	24 hour AM/PM
 Set time ▶	Set time	Year 2020 Month 10 Day 26 Hour 02 Minute 52 Second 03
 Spot ▶	Spot	Off On

Auto Power OFF (APO) Setting

After entering the "Settings" Submenu Select "Auto Shutdown". The selections available are No, 5 mins or 20 minutes. Select the desire APO time with the Up or Down arrow buttons and press "Select/Enter" button to confirm and save setting.

Intensity Setting

After selecting "☼" (intensity), press the "▶" button in the navigation key to enter the brightness setting. Can be set to low or medium or bright.

Language Setting

After selecting "🌐" (language), press the "▶" button in the navigation key to enter the language setting.

Available in 4 languages: English, Chinese, Italian, German.

Unit Setting

After selecting "°C" (unit), press the "▶" button in the navigation key to enter the temperature unit setting. Can be set to Celsius or Fahrenheit.

Time Format Setting

After you select "24" (time format), press the "▶" key in the navigation key to enter the time format setting. Can be set to 24 hours or 12 hours.

After the time setting is completed, press "◀" key to return.

Time Setting

As shown in the figure, after selecting "🕒" (set time), press "▶" in the navigation key to enter the setting time.

The screenshot shows a 'Set time' menu with a vertical list of settings on the left and their corresponding values on the right. The settings are: Year (2020), Month (10), Day (26), Hour (03), Minute (10), and Second (54). Each setting has a small icon to its left: a power button for Year, a clock for Month, a calendar for Day, a 24-hour clock for Hour, a clock for Minute, and a clock for Second. The 'Set time' title is at the top.

Set time	
Year	2020
Month	10
Day	26
Hour	03
Minute	10
Second	54

- Press "▲"/"▼" to select year/month/day/hour/minute.
- After selecting, press "SELECT" key to enter the edit state.
- Press "◀" and "▶" keys to select the figure to be changed. Press "▲"/"▼" key to change the value. After completing the change, press "ENTER" to enter.

Thermal Analysis Software

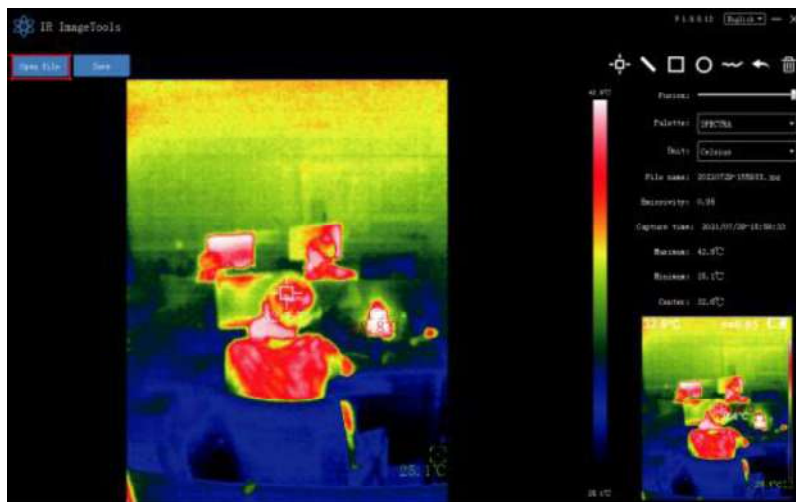
Software Installation and Operation

1. Connect the product with a USB cable, and then connect to the computer
Open the removable disk in the computer, find the "INSTALLATION PACKAGE"

folder and open it, and click  to install the software.

2. After installation, open  Enter the picture analysis software interface

3. , Click "Open File", and select the picture to be analyzed, as shown in the figure:



Software User Interface Introduction

1. Select the language in the upper right corner of the interface, you can choose Chinese, English, and switch between the two languages.
2. On the right are shown as: fusion rate, color palette, temperature unit, picture information.
 - Fusion rate: Moving the slider can realize the fusion of visible light image and infrared thermal image. The left end is a visible light image, and the right end is an infrared thermal image.
 - Palette: In the palette, click the " ▼ " icon to choose from five color palettes: rainbow, iron red, cold, white hot, black hot.
 - Temperature unit: In the temperature unit, click the " ▼ " icon to select three temperature units: Celsius, Fahrenheit, and Kelvin.
 - Picture information: display file name, emissivity, capture time, maximum temperature, minimum temperature, center point temperature, original thermal image.
3. "Open File" in the upper left corner of the interface, open the thermal image to be read. When you need to save the picture after the operation, click "Save" (Note: the saved picture cannot be opened again with this software).

Icon Introduction

1. "  " icon, take the temperature of the thermal image.
2. "  "icon, select the maximum temperature and minimum temperature of the thermal image in a straight line.
3. "  "icon, select the thermal imaging map to select the maximum temperature and minimum temperature.
4. "  " icon, circle the thermal imaging map to get the maximum temperature and the minimum temperature.
5. "  "icon, arbitrarily circle the thermal imaging map to take the maximum temperature and the minimum temperature.
6. "  "Return icon, when an operation error occurs, you can click this icon to return to the previous operation.
7. "  "Delete icon, when you select multiple temperature values and need to cancel all of them, click Delete.

Warranty

Triplett / Jewell Instruments extends the following warranty to the original purchaser of these goods for use. Triplett warrants to the original purchaser for use that the products sold by it will be free from defects in workmanship and material for a period of (1) one year from the date of purchase. This warranty does not apply to any of our products which have been repaired or altered by unauthorized persons in any way or purchased from unauthorized distributors so as, in our sole judgment, to injure their stability or reliability, or which have been subject to misuse, abuse, misapplication, negligence, accident or which have had the serial numbers altered, defaced, or removed. Accessories, including batteries are not covered by this warranty

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