

TC640

Pocket Thermal Camera



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1. Introduction

The TC640 thermal camera has been specially designed for professional users in the infrared thermometry industry. The TC640 is equipped with infrared detectors with high sensitivity and higher resolution for clearer infrared images and a higher temperature measurement accuracy.

Supplemented by the Android operating system, a large-screen display and a rotatable lens structure, the TC640 is easy to use and powerful. It can collect visible and infrared images simultaneously and display key observation points by PIP or MIF. In addition, based on open APPs for Android, this product can be extended to a multipurpose mobile thermal imaging application platform.

2. Safety warnings

National Health and Safety Legislation requires users of this equipment and their employers to carry out valid risk assessments of all work to identify potential sources of danger and risk of injury.

Warnings and precautions must be read and understood before an instrument is used. They must be observed during operation of the instrument.

The following safety information must be observed to ensure maximum personal safety during the operation of this device.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Handling

- Avoid knocking, throwing or vibrating the device or its accessories to prevent damage.
- Do not disassemble or modify the device. There are no user serviceable parts within.
- Refer all servicing to Megger.
- Prolonged lens use may reduce contrast and whiten the screen. Switch the display mode to LCD screen display periodically.
- Do not expose the device to dust or moisture. Fit the lens cover when the device is not in use.
- Do not look into the laser beam or point beam to eyes.

Storage

- Store the device and all accessories in the special packing box when not in use.
- Store the packaged product in a well-ventilated and clean environment within temperatures ranging from -40°C to 70°C and relative humidity not exceeding 95%. Ensure the area is free of condensate and corrosive gas.

Transportation

- Protect the product from rain and water during transportation. Place it flat and protect it from violent vibration and impact. Handle with care.

Temperature

- Do not use the device at operating temperatures or storage temperature that are outside the allowed range.
- Avoid direct exposure of the device to high-intensity thermal radiation sources such as the sun, lasers, or spot welders.

Substances

- Liquid Exposure: Do not spill liquids on the device or cables, as this can cause damage.

Device Cleaning:

- Non-optical Surfaces: Use a clean, soft cloth to wipe non-optical surfaces.
- Optical Surfaces: Avoid staining the lens and touching it with hands, as sweat can leave traces and corrode the optical coating. When the lens surface is stained, clean it with a special lens-cloth.

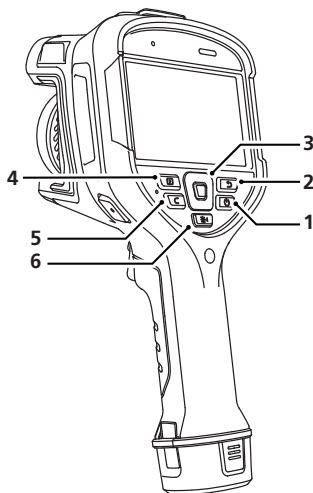
Battery

- The device is powered by a Lithium-ion battery; users must follow battery precautions:
- Do not place the battery in hot environments or near hot objects.
- Charge the battery as specified in the user guide, following the proper steps and precautions. Improper charging may heat or damage the battery, or even cause injuries.
- Never attempt to open or disassemble the battery. If the battery leaks and the liquid enters your eyes, flush your eyes with water immediately and seek medical attention.
- Avoid short-circuiting the battery's positive and negative poles.
- Do not place the battery in humid environments or water.

2.1 Safety symbols marked on the instrument

	Refer to user instructions		Equipment complies with current EU directives.
	Equipment protected throughout by Double Insulation		Indoor use only
	Warning: laser beam		Do not dispose of in landfill, sewage systems or by fire.
	This equipment contains a radio device meeting FCC requirements		Class 2 Laser Product. Do not look into the laser beam or point beam to eyes.

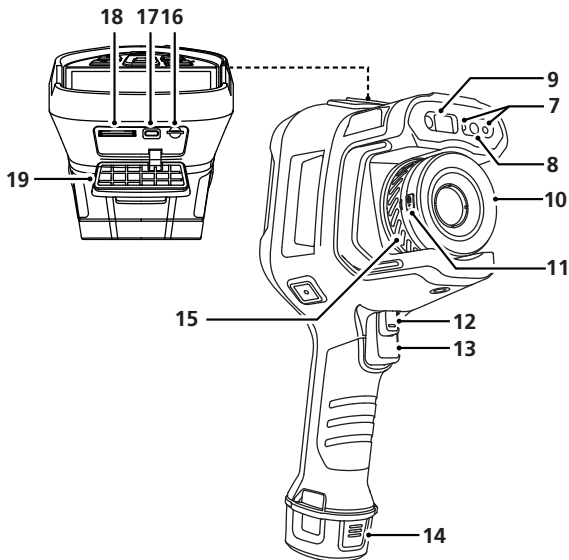
3. Product Overview



No.	Description	No.	Description
1	Power	4	Library
2	Back	5	Auxiliary
3	Five-way	6	Laser

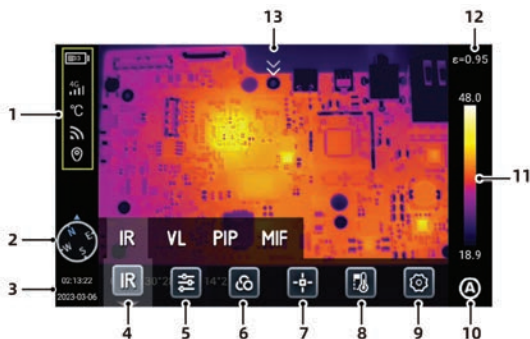
3.1 Activation

1. Place the battery in the battery compartment.
2. Press and hold the power button for 2 - 3 s to power on the thermographic camera.
3. Set the language (for first use).
4. Go to the real-time IR image state and aim the camera at the target.
5. Focus to make the target image sharp.
6. Select a shot or video mode, and press the shooting/recording button to save the image or record the video.
7. Perform other operations via the touch screen or buttons.



No.	Description	No.	Description
7	Light	14	Battery
8	Visible light camera	15	Focus ring
9	Laser	16	SIM card slot
10	Infrared camera	17	USB type-C input
11	Change lens	18	microSD card slot
12	Focus	19	Port cover
13	Photo		

3.2 Display screen



No.	Description
1	Status bar: battery capacity, WiFi, 4G network (support some models), location.
2	Compass information: enter Settings - turn on/off in Image Tags, or long press [] in the real-time interface to enter Image Tags to turn on/off.
3	Time and date: enter Settings - General – Date & Time, or long press in the real-time interface to enter Date & Time interface.
4	Image mode: infrared, visible light, MIF, PIP.
5	Temperature measurement parameters: set the reflected temperature, atmospheric temperature, relative humidity, target distance, atmospheric transmissivity, etc.
6	Palette: set and add custom colors.
7	Analysis target: set the analysis target, such as the point, line, circle, rectangle, outline and temperature difference.
8	Isotherm: upper isotherm, lower isotherm and isotherm within the range.
9	Settings: conduct system settings.
10	LEVEL SPAN mode: switch between automatic, semi-automatic and manual modes through the buttons or touch screen.
11	Switch the basic colors and custom colors in real time.
12	Emissivity: set the emissivity based on the target.
13	Shortcut menu: slide down the touch screen in the main preview interface to enter the Shortcut menu.

3.3 Tips for taking images

1. Avoid direct sunlight on the object to be observed.
2. Do not directly expose the device to high-intensity thermal radiation sources, such as the sun, lasers and spot welders.
3. During the observation, make sure the target is clear; otherwise, you may get wrong measurement results.
4. Proper analysis of IR images requires technical knowledge of the application.

3.4 Thermo Tools App

Download the Thermo Tools app to your PC using the link below. Connect the computer and the thermal camera with a USB cable, and import the data from the thermal camera for secondary analysis within the Thermo Tools app.

Download Thermo Tools app

megger.link/TC640-app

3.5 Cloud service

Using the online cloud storage, you can upload your photos using the local wifi connection at any time. You can then download the images later or colleagues can download the photos to analyze the problem while you are on location.

Steps:

1. Enter the settings menu and select **Cloud service**. Connect to wifi, and register an account for the first time (mobile phone number or e-mail).
2. Login in to the cloud server.
3. Enter the album and select **Cloud album**, then synchronize local photos.
4. You can open the infrared analysis software and login in your cloud account in a PC to download the photos for analysis.

4. Common problems

Emissivity of common objects

Material	Material Emissivity
Wood	0.85
Black paper	0.86
Water	0.96
Polycarbonate	0.8
Brick	0.75
Concrete	0.97
Stainless steel	0.14
Copper oxide	0.78
Adhesive tape	0.96
Cast iron	0.81
Aluminum plate	0.09
Rust	0.8
Copper plate	0.06
Gypsum	0.75
Dark aluminum	0.95
Paint	0.9
Human skin	0.98
Rubber	0.95
Asphalt	0.96
Soil	0.93
PVC material	0.93

5. Troubleshooting

Symptom	Cause	Measure
Unable to power up the device	Insufficient SOC of the battery	Use the battery after recharging
	Bad contact of the battery	Remove the battery, put it back in the battery compartment and install it in place
	The plug of the external power supply is not inserted properly	Unplug the power plug, plug it back in and push it into place
A large deviation between the SOC indication and the actual SOC of the battery	The battery runs out	Replace with a fully charged battery
	The battery life is exhausted	Replace with new battery
Unsharp IR images	No focus	Set MF or AF for sharper images
	The lens is covered with water vapor or contaminated	Clean the lens with special tools
Inaccurate temperature measuring	The lens does not focus on the target	Set MF or AF for sharper images before reading the temperature
	Incorrect setting of temperature measuring parameters	Change parameter settings, or directly reset
	Lack of non-uniformity correction for a long time	Set the custom button as calibration in the menu, press the physical custom button (with the shutter sound heard) to perform nonuniformity correction.
	Temperature measuring immediately upon power on	To ensure the temperature measuring accuracy, we recommend that you turn on the thermographic camera and wait for 5 - 10 minutes before starting the temperature measurement.
	No calibration for a long time	To get accurate temperature measuring results, we recommend that you send the device back for calibration once a year.

6. Specifications

Imaging and optics

Detector type	VOx, 7.5 – 14 µm
Infrared resolution	640 × 480@12 µm
Super resolution	Upgrade images to 1280 × 960
NETD	30 mK
Frame rate	9 Hz
Focal length	17.7 mm
Field of view	25 ° × 19 ° / 24 ° × 18 °
IFOV	0.68 mrad / 0.66 mrad
Min. object distance	0.15 m
D:S	1470:1
Focusing mode	Manual / Automatic / Touch autofocus / Continuous autofocus
Digital zoom	1.1x to 20x

Measurement and analysis

Measurement range	Support auto-switching: -40°C to 150°C, 0°C to 650°C
Measurement accuracy	±2°C or ±2%, whichever is greater
Analyzed target	16 in total (Spot/Line/Area)
Alarm	Full screen temperature threshold alarm (image, voice and flash)
Other settings	Isothermals, Smart Stroke, Area calculation

Image display

Screen size	4.3" LCD, colour touchscreen, 800×480
Image mode	InfraRed, Visible Light, Multi-Image Fusion and Picture-in-Picture
Color palettes	15: White Hot, Iron Red, Arctic, Rainbow 2, Hot Iron, Rainbow 1, Fulgurite, Medical, Tint, Black Hot, Blue Hot, Sepia, Green Hot, Ice and Fire, Amber; Customized
Image adjustment	Level span mode: Automatic, Semi-automatic, Manual
Digital camera	13 MP

Functions

Laser	Laser (indication, ranging 0.1 m to 40 m)
Recording function	Photo (image stitching) and Video (infrared and visible light)
Cloud services	Available
Other	2 Customized buttons, OTA update

Storage and transmission

Storage media

Image file type

Video file type

Built-in (64 GB) and external SD card (up to 256 GB)

JPG with temp info

MP4 format (without temp info) can be used to record audio synchronously; Irgd (with temp info), up to 30 Hz (optional) for temperature analysis

USB-C, SD card slot, Tripod socket

Wifi connection to the mobile terminal for image and real-time video transmission

External interface

Wifi

Power system

Battery type

Interchangeable rechargeable

lithium-ion battery (2 pcs)

Operating time

4 hours

Environmental parameters

Working temperature

-20°C to 50°C

IP rating

IP54

Drop

2 m drop test

Physical parameters

Hardware

Spotlight x 2, Microphone, Speaker, Electronic compass, GPS

Weight

1.2 kg (with battery)

Size

292 × 125 × 125 mm

Software kit

PC: ThermoLink app

iOS/android: Thermography app

Box contents

TC640 Thermal camera (with lens), Lens front and back cover, Lithium-ion battery (2 pcs), Soft protective case that fits inside hard transport case, Desktop charger, Power adapter, Adapter plug, USB-C to USB-C Cable, USB-A to USB-C Cable, RJ45 Ethernet Patch Cable, USB-C to Ethernet Adapter, SD card (64 GB), Wrist strap, Shoulder strap, Quick Start Guide, Calibration certificate.

Optional accessories

Lithium-ion battery pack

7. Warranty

New instruments are covered by a two year warranty from the date of purchase by the User, the second year being conditional on the free registration of the product on **www.megger.com/register**. You will need to register and then login to complete the registration of your product. The second year warranty covers faults, but not recalibration of the instrument which is only warranted for one year. Any unauthorised prior repair or adjustment will automatically invalidate the warranty.

The battery is covered by a one year warranty from the date of purchase by the User.

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