TC003

Thermal Imaging Camera I User Manual

TOPDON

Cautions

Read all instructions before use

- Do not point the thermal imaging camera at the sun or other strong energy sources for long periods of time, otherwise there might be damage to the detector in the thermal imaging camera.
- Keep the thermal imaging camera away from water to avoid electricity leakage or short circuits.
- Do not touch the lens with your hands. Do not knock, pry, puncture, or scratch the lens.
- Do not disassemble the thermal imaging camera.

About TC003

TOPDON's TC003 is an Android-based thermal imaging camera used for equipment inspection and maintenance. You can apply the camera in home heating, water leak detection, and agricultural protection. It can be used either on its own in standalone mode or in USB mode to work with a Windows-based computer.

Section 1
Product Overview

Buttons and Ports

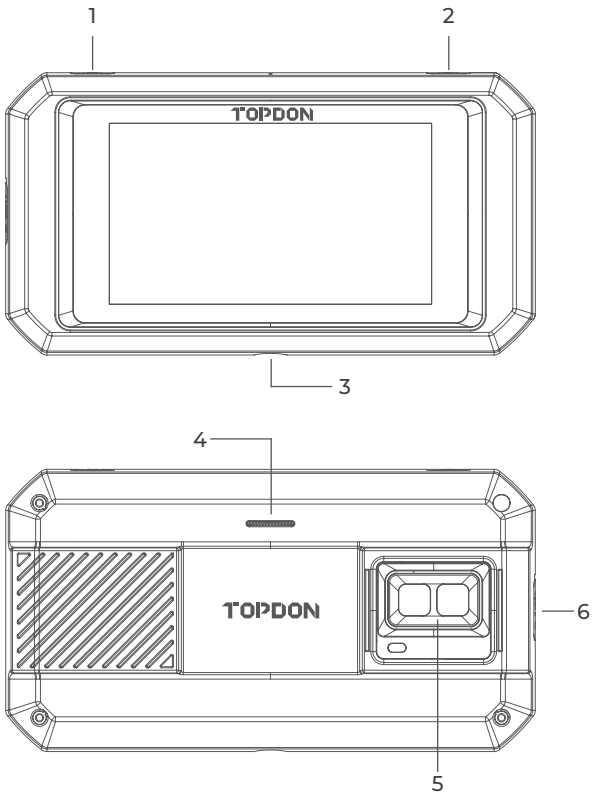


Figure 1.1.1

Item	Description
1. Power Button	Long press to power ON/OFF; short press to wake up/lock the screen.
2. Thermal Imaging Button	Whenever the screen lights up, long press to enable the thermal imaging software; after the software is enabled, short press to take a photo.
3. Screw Hole (1/4-20 unc)	Mounts the TC003 onto a tripod
4. Speaker	/
5. Visible light camera, infrared camera, and flashlight	/
6. USB Type-C Port	Used for charging, file transfer, OTG functions, or using the thermal imaging function on a computer.

Notes:
1. With the OTG function, you can connect the TC003 unit to USB flash drives, industrial borescopes, oscilloscopes, and more.
2. To ensure the system runs smoothly, installation of non-TOPDON apps is blocked on the TC003 unit. If you need to install non-TOPDON apps, please contact ***support@topdon.com*** *for help.*

Swipe-Down Menu

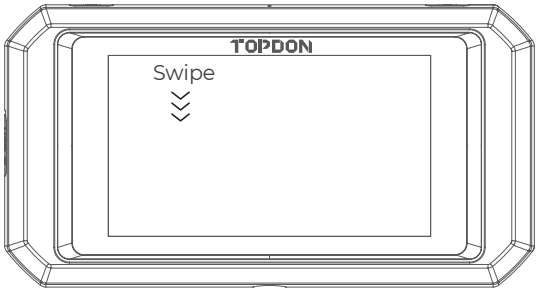


Figure 1.2.1

Swipe-Down Menu: Swipe down from the top of the screen to display the Swipe-Down Menu. This gives you instant access to Wi-Fi, Bluetooth, a flashlight, volume, screen brightness, screen projection, rotation, and screen recording (see Figure 1.2.2).

Figure 1.2.2

TC003 Software Shortcuts

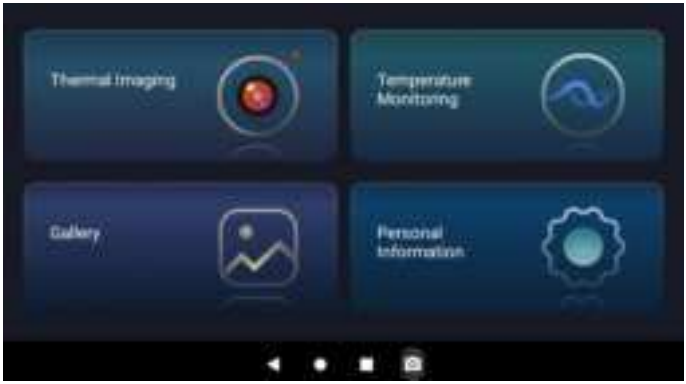
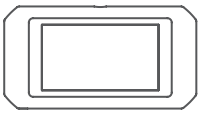


Figure 1.2.3

Icon	Description
◀	Returns to the previous page
●	Returns to the Home screen
■	Views opened apps
📷	Captures a screenshot

Section 2
What's in the Box?



TC003 Thermal Imaging Camera

Carrying Bag

User Manual

Section 3
Using TC003 in Standalone Mode

Thermal Imaging

Open the TC003 app from the Home screen. Then tap ***Thermal Imaging*** to enter the thermal imaging screen.
Alternatively, whenever the screen lights up, you can always long press the ***Thermal Imaging Button*** at the top right edge to enter the thermal imaging screen directly.

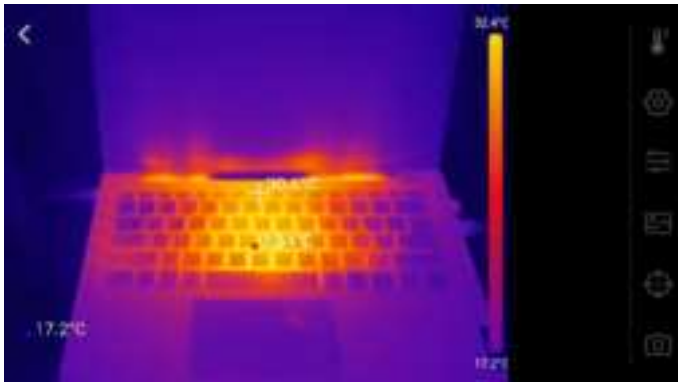


Figure 3.1.1

Temperature Monitoring

In this module, real-time temperature data can be displayed in a graph, allowing you to intuitively observe the temperature changes.

1. Tap "***Generate Image***", and select the desired monitoring type as prompted. Then, select the place to be monitored on the screen.

2. Tap "***Start Recording***". Real-time temperature of the measured object will be displayed in a graph.

Figure 3.2.1

Gallery

To view the captured images and videos, tap "***Gallery***", or select the thumbnail image on the photo/video recording screen to access the Gallery.

Figure 3.3.1

Temperature Correction

To ensure accuracy of measurement in different scenarios, this module allows you to set Ambient Temperature, Distance to Spot and Emissivity in default mode, or add custom modes and set the corresponding parameters.
Nine commonly used emissivity values are listed on the screen for reference.
Please go to "***Personal Information***" and tap "***Temperature Correction***" to enter the setting screen.

Figure 3.4.1

Section 4
Specifications

Resolution of infrared camera	256*192
Spectral range	8 to 14 μm
Pixel size	12 μm
NETD	< 40 mK
FOV	56°*42°
IFOV	3.85 mrad
Measurement range	-4 to 1,022°F (-20 to 550°C)
Measurement accuracy	±2°C or ±2% of reading, the larger value shall prevail
Measurement resolution	0.1°C
Resolution of visible light camera	5 megapixels
Storage capacity	2GB RAM + 32GB internal storage
Battery capacity	5,000 mAh

Section 5
FAQ

Q ***While I'm using the thermal imaging function, why is there a clicking sound with a frozen screen, once every few dozens of seconds?***

A As the temperature of the infrared imaging camera changes slightly during use, to ensure measurement accuracy, a periodic internal temperature calibration is needed every a few dozens of seconds. The micro-motor controlled activation or deactivation of such internal calibration makes a clicking sound during which the screen freezes for about one second. To turn off the internal calibration function, please open the TC003 app, go to ***Personal Information***, and turn off Auto shutter.

Q ***Can the TC003 detect objects underwater, through glass or a wall?***

A No. Infrared detectors mainly detects 8 to 14 μm long-wave infrared areas, and can only be used to measure surface temperature.

Q ***Why is there a lower temperature reading when the device gets far from the object and a higher reading when the device gets closer to the object?***

A Infrared radiation attenuates when passing through the atmosphere. The longer the distance, the greater the attenuation. Thus, the accuracy of temperature measurement at a distance will decrease.
To ensure accuracy of measurement, go to ***Personal Information > Temperature Correction > Distance to Spot***, and input the actual distance (max: 5 meters) to get the corrected temperature.

Q ***Is the TC003 compatible with iOS devices?***

A No, the TC003 is ONLY compatible with Android devices and Windows computers.

Q ***Why is the measured temperature not very precise?***

A The temperature resolution of TC003 is ±2%. And the TC003 provides a normal temperature range of -4 to 302°F (-20 to 150°C), and a high temperature range of 302° to 1022°F (150 to

550°C). Please select the corresponding range in the app before measuring.

Q ***What external factors will affect the infrared temperature measurement?***

A The following factors will have an impact on the measurement results:
a) Emissivity of the object surface.
b) Ambient temperature: The object will reflect the infrared rays emitted by surrounding objects, which affects the temperature measurement of the object itself.
c) Atmospheric temperature: The atmosphere itself also emits infrared rays.
d) Atmospheric transmittance: the infrared rays emitted by the object are attenuated in the atmosphere.
e) Distance: the longer the distance, the greater the attenuation of the infrared rays emitted by the object in the atmosphere.

Section 6
Warranty

TOPDON's One Year Limited Warranty
TOPDON warrants to its original purchaser that the company's products will be free from defects in material and workmanship for 12 months from the date of purchase (Warranty Period).
For the defects reported during the Warranty Period, TOPDON will either repair or replace the defective part or product according to its technical support analysis and confirmation.
TOPDON shall not be liable for any incidental or consequential damages arising from the device's use, misuse, or mounting.
If there is any conflict between the TOPDON warranty policy and local laws, the local laws shall prevail.
This limited warranty is void under the following conditions:
• Misused, disassembled, altered or repaired by unauthorized stores or technicians.
• Careless handling and/or improper operation.

Notice:
All information in this manual is based on the latest information available at the time of publication and no warranty can be made for its accuracy or completeness. TOPDON reserves the right to make changes at any time without notice.

Section 7
FCC

Any changes or modifications not expressly approved by the party responsible for compliance couldvoid the user's authority to operate the equipment.
This device complies with Part 15 of the FCC Rules. Its 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.
Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications.
However, there is no guarantee that the interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the antenna.
- Increase the distance between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from the one connected to the receiver.
- Consult a dealer or an experienced radio/TV technician for help.