

TOOLTOP TT-ET14S

TOOLTOP ET14S User Manual

2-IN-1 THERMAL IMAGER & MULTIMETER

1. Introduction

The TOOLTOP ET14S is a versatile 2-in-1 device combining a high-resolution thermal imager with a full-featured AC/DC current voltage multimeter. Designed for professionals and enthusiasts, it offers precise measurements and clear thermal imaging for various applications, including pipeline heating inspection, electronic circuit analysis, and general electrical diagnostics. Its compact design and intuitive interface make it an essential tool for efficient and accurate work.



Figure 1: The TOOLTOP ET14S displaying its multimeter and thermal imaging capabilities.

This manual provides detailed instructions on how to set up, operate, and maintain your ET14S device. Please read it thoroughly before use to ensure safe and optimal performance.

2. Safety Information

Always observe the following safety precautions to prevent personal injury and damage to the device:

- Do not attempt to repair or modify the device. Refer all servicing to qualified personnel.
- Do not operate the device in explosive atmospheres or in the presence of flammable gases or fumes.
- Ensure proper polarity when connecting test leads to avoid damage to the device or the circuit under test.
- Always disconnect power to the circuit before making resistance, capacitance, or diode measurements.
- Use caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC, as these pose a shock hazard.
- Keep the device dry. Do not expose it to rain or moisture.
- Clean the device only with a dry, soft cloth. Do not use abrasive cleaners or solvents.

3. What's in the Box

Upon opening the package, verify that all items listed below are present and in good condition:

- ET14S Thermal Imager & Multimeter
- Instrument storage bag
- Multimeter probe
- Data line (USB cable)
- Product manual (this document)
- Packaging box

Model: ET14S (not include Macro lens)



ET14S



Instrument storage bag



Multimeter probe



Data line



Product manual



Packaging box

Figure 2: Included items in the ET14S package.

4. Setup

4.1 Battery Installation and Charging

The ET14S is powered by a built-in rechargeable 18650 lithium battery. Before first use, ensure the battery is fully charged.

1. Locate the battery compartment cover on the back of the device.
2. Open the cover and insert the 18650 battery, ensuring correct polarity.
3. Connect the provided USB data cable to the device's charging port and the other end to a standard USB power adapter (not included) or a computer USB port.
4. The charging indicator on the screen will show the charging status. A full charge typically takes several hours and provides up to 8 hours of continuous use (measured at 30% screen brightness).



Figure 3: Battery installation and charging port.

4.2 Initial Power On

To power on the device, press and hold the power button located on the side until the screen illuminates. The device will boot up and display the main interface, typically starting in multimeter mode.

5. Operating Instructions

5.1 General Operation

The ET14S features a 2.8-inch IPS high-definition full-view LCD screen for clear display of measurements and thermal images. Navigation is primarily done using the buttons below the screen.

2.8-INCH IPS HIGH-DEFINITION SCREEN

2.8-inch high-definition full view LCD screen,
Minor faults and hidden dangers have nowhere to escape!



Figure 4: The ET14S 2.8-inch IPS high-definition screen.

5.2 Thermal Imaging Mode

The thermal imager features an ISR 240x240 resolution with a 25Hz image capture frequency, providing detailed thermal insights. The temperature range is -20°C to +550°C.

1. To switch to thermal imaging mode, press the dedicated IR/DMM button.
2. The screen will display a thermal image, with temperature readings and a crosshair indicating the measurement point.
3. Adjust emissivity settings if necessary for accurate temperature readings on different surfaces. Refer to the on-screen menu for this setting.

THERMAL IMAGING

MULTIMETER

Infrared resolution:

240*240

TEMP RANGE:

-20°C~550°C



Figure 5: Thermal imaging display with temperature range.

5.3 Multimeter Mode

The integrated multimeter is a 9999 counts True RMS device, capable of measuring AC/DC current, voltage, resistance, capacitance, frequency, and performing diode and continuity tests.

1. To switch to multimeter mode, press the IR/DMM button.
2. Connect the multimeter probes to the appropriate input jacks (VΩHz, COM, A).
3. Use the function buttons (V, Ω, Hz/%, A) to select the desired measurement type. The device supports auto-ranging.
4. For specific functions like AC/DC selection or relative measurement, use the AC/A and REL buttons.

1 PORTABLE MULTIFUNCTIONAL MACHINE

Built in thermal imaging multimeter function



Figure 6: Multimeter display showing voltage and current readings.

5.4 Optional Macro Lens Usage

An optional macro lens can be attached to the device for inspecting small details, such as those on PCB boards. This enhances the thermal imaging capability for electronic research and repair.

1. To install the macro lens, align it with the camera module on the back of the device and slide it into place.
2. Ensure the lens is securely seated.
3. When using the macro lens, small details of 1mm * 1mm can be clearly seen.

OPTIONAL MACRO LENS



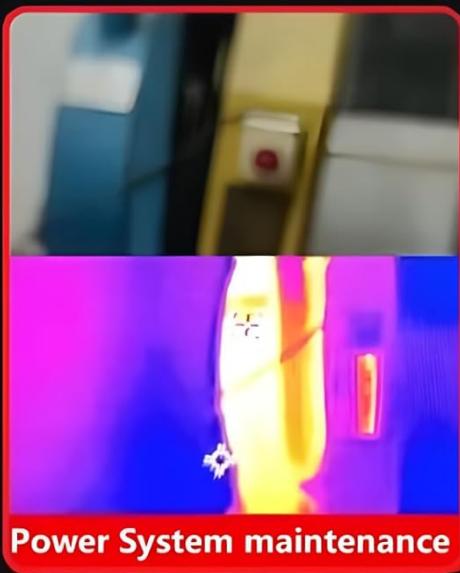
Figure 7: Optional macro lens attachment and its effect on thermal image detail.

5.5 Wide Applications Range

The ET14S is suitable for a variety of applications due to its dual functionality:

- **Power System Maintenance:** Identify overheating components or faulty connections.
- **Underfloor Heating Inspection:** Locate heating elements and identify blockages or leaks.
- **Automobile Maintenance:** Diagnose electrical issues, check engine component temperatures.
- **PCB Board Repair:** Pinpoint hot spots on circuit boards for efficient troubleshooting.

Wide Applications Range



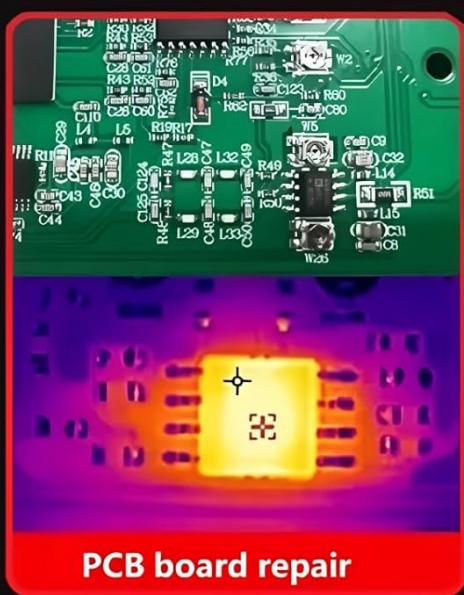
Power System maintenance



Underfloor Heating



Automobile Maintenance



PCB board repair

Figure 8: Examples of ET14S applications.

6. Maintenance

6.1 Cleaning

To ensure the longevity and accuracy of your ET14S, follow these cleaning guidelines:

- Wipe the device's exterior with a soft, dry cloth.
- For stubborn dirt, a slightly damp cloth with mild soap can be used, followed by a dry cloth.
- Do not use abrasive cleaners, solvents, or harsh chemicals, as these can damage the casing or screen.
- Keep the thermal lens and multimeter input jacks free of dust and debris. Use a soft brush or compressed air if necessary.

6.2 Storage

When not in use, store the ET14S in a cool, dry place, away from direct sunlight and extreme temperatures. Use the provided instrument storage bag to protect it from dust and physical damage.

7. Troubleshooting

If you encounter issues with your ET14S, refer to the table below for common problems and their solutions:

Problem	Possible Cause	Solution
Device does not power on	Low battery or battery not installed correctly.	Charge the battery or ensure it is correctly inserted with proper polarity.
Inaccurate temperature readings	Incorrect emissivity setting; lens dirty; object too far.	Adjust emissivity; clean the thermal lens; move closer to the object.
Multimeter readings are unstable or zero	Loose probe connection; incorrect function selected; circuit not powered.	Ensure probes are securely connected; select the correct measurement function; verify the circuit is live if measuring voltage/current.
Screen is dim or flickering	Low battery; display settings.	Charge the battery; check display brightness settings in the menu.

8. Technical Specifications

Below are the key technical specifications for the TOOLTOP ET14S:

Feature	Specification
Model Number	TT-ET14S
Thermal Camera Resolution	ISR 240x240 pixels
Image Capture Frequency	25Hz
Temperature Range	-20°C ~ +550°C (-4°F ~ +1022°F)
Temperature Accuracy	±2°C or ±2%
Measurement Resolution	0.1°C/0.1°F
Multimeter Counts	9999 counts True RMS
Display Screen	2.8-inch IPS High-Definition LCD
Battery Type	Rechargeable 18650 Lithium Battery
Continuous Use Time	Up to 8 hours (at 30% screen brightness)
Power Source	Battery Powered
Item Weight	1 Kilogram (2.2 Pounds)
Package Dimensions	7.87 x 5.91 x 3.94 inches
Certifications	CE, RoHS

Key Features:

- ISR240x240 Thermal Camera, Upgraded imaging pixels of 240x240 and 25hz image capture frequency.

- High-precision Multimeter, 9999 counts True RMS multimeter.
- Up to 8 hours of continuous use. The universal 18650 battery design.
- Compact and Portable, with a 2.8-inch large screen and innovative stand design.
- Temperature range: -20°C ~ +550°C; Accuracy: $\pm 2^\circ\text{C}$ or $\pm 2\%$; Measurement resolution: 0.1°C/0.1°F.

9. Warranty and Support

TOOLTOP products are manufactured to high quality standards. For warranty information, technical support, or service inquiries, please refer to the contact details provided on the product packaging or visit the official TOOLTOP website. Please have your model number (TT-ET14S) and purchase date ready when contacting support.

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