

UNI-T UTi120S

UNI-T UTi120S Thermal Imaging Camera User Manual

Model: UTi120S

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1. INTRODUCTION

This manual provides detailed instructions for the safe and effective use of the UNI-T UTi120S Thermal Imaging Camera. The UTi120S is a handheld infrared camera designed for high-accuracy temperature detection, offering a 120x90 IR resolution and 10800 pixels. It supports PC analysis and video recording, making it suitable for various industrial and scientific applications. Please read this manual thoroughly before operating the device to ensure proper usage and to prevent damage or injury.

2. SAFETY INFORMATION

Observe the following safety precautions to ensure safe operation and to avoid potential hazards:

- Do not point the laser directly at people or animals, as it can cause eye damage.
- Do not disassemble or modify the device. Repairs should only be performed by authorized service personnel.
- Keep the device away from water and moisture. The device has an IP54 rating, offering protection against dust and splashing water, but it is not fully waterproof.
- Avoid dropping the device. It is designed to withstand a 2-meter drop, but excessive force can still cause damage.
- Operate the device within the specified temperature range to ensure accurate readings and prevent damage.
- Use only the specified charging cable and power adapter to charge the device.

3. PRODUCT OVERVIEW

The UNI-T UTi120S Thermal Imaging Camera features an ergonomic design for comfortable handheld use. Below is an illustration of the instrument panel and key components:

INSTRUMENT PANEL



Figure 3.1: Front and Rear View of the UTI120S Instrument Panel, highlighting the LCD screen, control buttons, LED light, laser emission aperture, infrared camera lens, image capture trigger, USB Type-C interface, and SD card slot.

Key Components:

- **LCD Screen:** 2.4" TFT LCD display for real-time thermal imaging and menu navigation.
- **Control Buttons (OK, Up, Down, Power/Back):** Used for menu navigation, selection, and power control.
- **LED Light:** Provides illumination in dark environments.
- **Laser Emission Aperture:** Emits a laser pointer for precise targeting.
- **Infrared Camera Lens:** Captures thermal radiation to form the infrared image.
- **Image Capture/Trigger:** Button to capture thermal images.
- **USB Type-C Interface:** For charging and connecting to a PC for data transfer and analysis.
- **SD Card Slot:** For expanding memory and storing captured images/videos.

4. SETUP

4.1 Initial Charging

Before first use, fully charge the device. Connect the provided USB Type-C cable to the camera's USB port and the other end to a compatible USB power adapter. The charging indicator will show the charging status. A full charge provides over 9 hours of continuous operation.

4.2 Micro SD Card Installation

The UTi120S supports Micro SD cards up to 16GB for storing images and videos. Locate the SD card slot on the side of the device. Insert the Micro SD card with the contacts facing down until it clicks into place. To remove, gently push the card in until it springs out.

5. OPERATION

5.1 Power On/Off

Press and hold the **Power/Back** button to turn the device on or off. The device will display the thermal image upon startup.

5.2 Basic Measurement

Point the infrared camera lens towards the target object. The real-time thermal image will be displayed on the LCD screen. The device automatically detects and displays the temperature of the center point, as well as the highest and lowest temperatures within the view.

Your browser does not support the video tag.

Video 5.1: Demonstrates various application scenarios for the UNI-T UTi120S Thermal Imaging Camera, including distribution cabinet inspection, air conditioning vent inspection, motor detection, pipeline inspection, and tin furnace inspection, showcasing its versatility in different environments.

5.3 Temperature Measurement Modes

The UTi120S offers multiple measurement features:

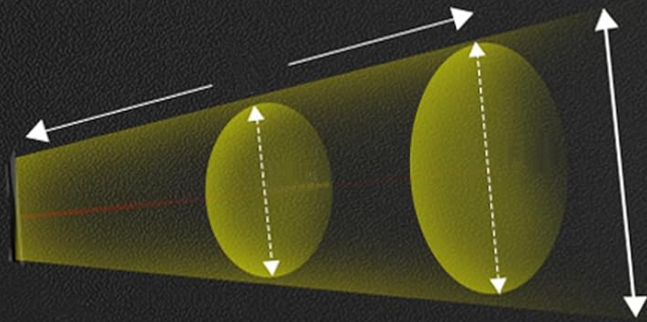
- **Center Spot:** Displays the temperature at the center of the screen.
- **Hi-Lo Temp Tracking:** Automatically identifies and tracks the highest and lowest temperatures within the field of view.

5.4 Color Palettes

The device features 7 color palettes to visualize thermal data. You can select the most suitable palette for your application to enhance contrast and detail:

MAKE WORK MORE EFFICIENT AND MORE CONVENIENT

better accuracy with adjustable emissivity



Not Accurate ❌

Accurate ✅

adjustable emissivity
FOR PRECISELY AIMING



Waterproof and dustproof



Laser indication



Infrared resolution



Temperature range



Exporting files



LED Flashlight



High and low temperature alarm



PC software analysis



2m anti-fall



6 color modes



9 hours of work



25Hz Frame Rate

Figure 5.2: Displays various thermal imaging color palettes available on the UTi120S, including Iron Red, White Heat, Black Heat, Rainbow, Red Heat, and Lava, allowing users to choose the best visualization for different inspection needs.

- Iron Red
- White Heat
- Black Heat
- Rainbow
- Red Heat
- Lava
- High Contrast Rainbow

Navigate through the menu using the **Up** and **Down** buttons and press **OK** to select a palette.

Your browser does not support the video tag.

Video 5.3: Illustrates the menu navigation and selection of different color palettes on the UNI-T UTi120S, along with other settings like language, temperature units, and emissivity.

5.5 Laser Pointer and LED Lighting

The device includes a laser pointer for accurate targeting and an LED light for illuminating dark areas.

- **Laser Pointer:** Long press the trigger button to activate the laser pointer, which helps pinpoint the exact measurement area.
- **LED Lighting:** The LED light can be toggled on/off through the device's menu settings to assist in visual inspections.



Figure 5.4: Shows the UNI-T UTi120S in use, demonstrating how the laser pointer helps target specific areas for thermal measurement and the LED light illuminates the inspection zone.

5.6 Adjustable Emissivity

Emissivity is a measure of an object's ability to emit infrared energy. Different materials have different emissivity values. For accurate temperature readings, adjust the emissivity setting (0.01~0.99) in the device menu to match the material being inspected.

120x90 IR Resolution & 10800 Pixels

Heavy and low temperature warnings The UTi120S will automatically warn the user when the detected temperature is out of range.



256°192 Hi-Res
IR Camera

2M

DROP PROOF

2 M DROP
PROOF



-4 to 1022°F
(-20 to 550°C)



Analyze Images
with the PC



9 Hours of
Battery Life

Quick and Accurate Measurement
Temperature Range

4°F to 752°F
(-20°C to 400°C)

Accuracy
+3°C/+3%

73.1°F



54.2°F



High and low temperature,
buzzer alarm

Figure 5.5: Illustrates the concept of adjustable emissivity for precise thermal imaging, showing how correct emissivity settings improve measurement accuracy compared to incorrect settings.

5.7 High Refresh Rate

The UTi120S features a 25Hz refresh rate, providing smooth and responsive thermal imaging. This allows for quick and accurate identification of temperature anomalies, even when scanning moving objects or performing rapid inspections.

25Hz Fast Image Frequency

Crisp and smooth 25Hz refresh rate, experience unprecedented smoothness, allowing you to accurately and easily see and locate your target.



Figure 5.6: Highlights the 25Hz fast image frequency of the UTi120S, demonstrating the smooth and clear thermal imaging experience compared to lower refresh rates, which aids in accurately locating targets.

6. PC ANALYSIS AND DATA MANAGEMENT

6.1 Connecting to PC for Online Analysis

The UTi120S can be connected to a Windows computer via the USB Type-C cable for real-time online analysis. This allows for live monitoring of object temperature changes, 3D imaging, and advanced point-line-surface temperature measurements using dedicated PC software.

6.2 Data Export and Offline Analysis

Captured thermal images and videos are stored on the Micro SD card. You can transfer these files to a computer for offline analysis. The PC software supports analyzing saved images, generating data reports, and performing deeper data interpretation.

PC analysis & Tripod support operation

Real-time temperature measurement / Mounts on a Tripod for a Stable View



Figure 6.1: Illustrates the UNI-T UTi120S connected to a laptop for PC analysis, showing real-time temperature measurement and data export capabilities. It also highlights the 1/4" screw hole for tripod mounting (tripod not included).

7. MAINTENANCE

7.1 Cleaning the Device

Regularly clean the device to ensure optimal performance. Use a soft, dry cloth to wipe the exterior. For the infrared lens and LCD screen, use a lens cleaning cloth and specialized cleaning solution to avoid scratches. Do not use abrasive cleaners or solvents.

7.2 Battery Care

The UTi120S is equipped with a rechargeable lithium polymer battery. To prolong battery life:

- Charge the battery fully before long periods of storage.
- Avoid completely discharging the battery frequently.
- Store the device in a cool, dry place when not in use.

8. TROUBLESHOOTING

If you encounter issues with your UTi120S, refer to the table below for common problems and solutions:

Problem	Possible Cause	Solution
Device does not power on.	Battery is depleted.	Charge the device using the provided USB Type-C cable.
Image is blurry or unclear.	Infrared lens is dirty or damaged.	Clean the lens with a soft, lint-free cloth. If damaged, contact support.
Inaccurate temperature readings.	Incorrect emissivity setting or measurement distance.	Adjust emissivity to match the target material. Ensure proper measurement distance.
Cannot save images/videos.	Micro SD card is full or not inserted correctly.	Check SD card insertion. Delete old files or replace with a new SD card.
Device freezes or becomes unresponsive.	Software glitch or temporary error.	Perform a soft reset by holding the power button until the device restarts.

9. SPECIFICATIONS

The following are the technical specifications for the UNI-T UTi120S Thermal Imaging Camera:

Feature	Detail
IR Resolution	120x90 pixels (10800 pixels)
Temperature Range	-20°C to 400°C (-4°F to 752°F)
Accuracy	±2°C or ±2% (whichever is greater)
Thermal Sensitivity (NETD)	≤ 60mK
Frame Rate	25Hz
Display	2.4" TFT LCD
Color Palettes	7 (Iron Red, White Heat, Black Heat, Rainbow, Red Heat, Lava, High Contrast Rainbow)
Emissivity	Adjustable from 0.01 to 0.99
Battery Type	3.7V/2600mAh Rechargeable Lithium Polymer
Battery Life	Over 9 hours continuous operation
Storage	Micro SD Card (up to 16GB supported)
PC Communication	USB Type-C for online analysis and data transfer
Drop Protection	2 meters
IP Rating	IP54
Dimensions	196 x 75 x 63 mm
Item Weight	Approximately 1.21 pounds

10. WARRANTY AND SUPPORT

The UNI-T UTi120S Thermal Imaging Camera comes with a standard manufacturer's warranty. For specific warranty terms, please refer to the warranty card included with your product or visit the official UNI-T website. For technical support, service, or

replacement parts, please contact UNI-T customer service through their official channels.

