

XEAST HT-A1

XEAST HT-A1 Thermal Imaging Camera User Manual

Model: HT-A1

1. INTRODUCTION

This user manual provides detailed instructions for the safe and effective operation, maintenance, and troubleshooting of your XEAST HT-A1 Thermal Imaging Camera. Please read this manual thoroughly before using the device to ensure optimal performance and longevity.

Safety Information

Observe the following safety precautions to prevent injury or damage to the device:

- Do not use the device in explosive, flammable, or corrosive environments.
- The product is a precision electronic and optical device. Avoid severe shocks or drops to prevent damage.
- A slight clicking noise every second during operation is normal and indicates the lens is capturing images.

2. PRODUCT OVERVIEW

Device Components

The HT-A1 Thermal Imaging Camera features a compact design with intuitive controls. Refer to the diagram below for an overview of its main components:



Image: Labeled diagram of the HT-A1 camera, showing Micro USB port, 3.2-inch Full Angle TFT Camera screen, Save button, Selection/Entry button, Navigation button, On/off button, Menu button, Digital camera lens, Infrared lens, Camera lamp, and Attachment point.

Key Features

- **High Resolution Infrared Detector:** 220 x 160 (35,200 pixels) infrared image resolution with 0.07°C thermal sensitivity.
- **Wide Temperature Range:** Measures temperatures from -20°C to 300°C (-4°F to 572°F).
- **Accuracy:** Measurement precision of $\pm 2\%$ or $\pm 2^\circ\text{C}$.
- **Full-Angle TFT Screen:** 3.2-inch full-angle TFT display for clear viewing.
- **Multiple Color Palettes:** Includes Rainbow, Iron Oxide Red, Cold Color, Black & White, and White & Black for diverse visualization.
- **Image Integration:** Option to integrate thermal images with visible light images at 25% steps.
- **Built-in Storage:** 3GB internal memory, capable of storing over 20,000 images in JPG format.
- **Portable Design:** Compact and lightweight (140 x 80 x 28 mm, 208g) for easy carrying.
- **Central Point Measurement:** Cursor for quick and precise localization of target object temperature.

3. SETUP

Initial Charging

Before first use, fully charge the HT-A1 camera. Connect the provided data cable to the Micro USB port on the device and the other end to a USB power adapter (included) or a computer's USB port. The charging indicator will show the charging status.

Powering On/Off

- **To Power On:** Press and hold the 'On/Off' button (usually marked with a power symbol) until the screen illuminates.
- **To Power Off:** Press and hold the 'On/Off' button until the device shuts down. The device also features an auto-off function, which can be set to 5 minutes, 20 minutes, or disabled.

4. OPERATION

Navigating the Menu

The HT-A1 features a user-friendly interface controlled by the navigation and selection buttons:

- **Menu Button:** Press to access the main menu.
- **Navigation Buttons (Up/Down/Left/Right):** Use these arrows to move through menu options and adjust settings.
- **Select/Enter Button:** Press to confirm a selection or enter a submenu.
- **Save Button:** Used to save captured images.

Understanding the Display

The 3.2-inch TFT screen displays real-time thermal images along with critical data. The main screen typically shows the thermal image, central point temperature, maximum and minimum temperatures within the view, emissivity setting, and battery status.



Image: The HT-A1 camera's screen showing a thermal image of an object, with temperature readings in Fahrenheit, emissivity setting, and battery indicator.

Adjusting Settings

Emissivity

Emissivity (ϵ) is a measure of an object's ability to emit infrared energy. Different materials have different emissivity values. For accurate temperature measurements, adjust the emissivity setting (0.01 to 1.00) to match the material being inspected. Consult a standard emissivity table for common materials.

Color Palettes

The HT-A1 offers five color palettes to visualize thermal data. Each palette highlights temperature differences in a unique way, making it easier to identify anomalies depending on the application.

Five Major Toning Imaging Models

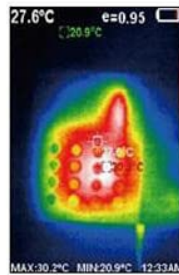
Can save/fully display the details of the target object for analysis



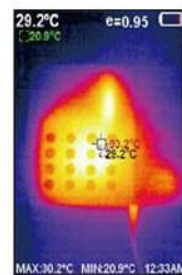
Black&white



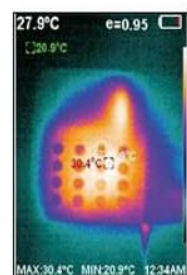
White black



Rainbow



Iron oxide red



Cool color

Image: The HT-A1 camera displaying examples of its five major toning imaging models: Black & White, White & Black, Rainbow, Iron Oxide Red, and Cool Color.

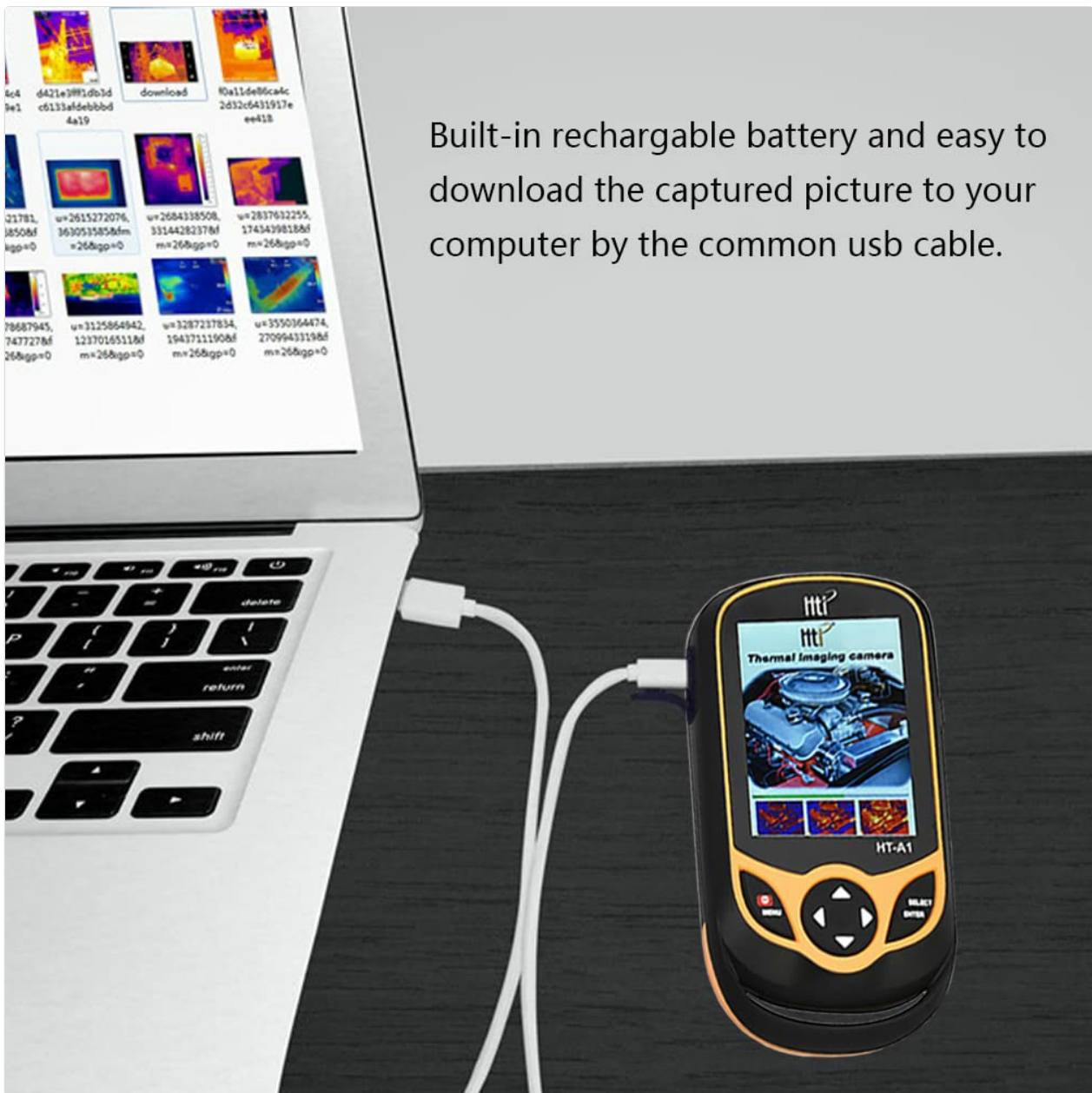
- **Rainbow:** Provides a full spectrum of colors, often used for general thermal analysis.
- **Iron Oxide Red:** Highlights hot spots with red and yellow tones.
- **Cool Color:** Emphasizes cooler areas with blue and purple tones.
- **Black & White:** Simple grayscale representation, useful for high contrast.
- **White & Black:** Inverted grayscale, also for high contrast.

Capturing and Saving Images

To capture a thermal image, aim the camera at the target object and press the 'Save' button. The image will be stored in the internal 3GB memory in JPG format.

Transferring Data

Images stored on the HT-A1 can be easily transferred to a computer using the provided USB data cable. Connect the camera to your computer, and it will appear as a removable storage device, allowing you to copy the JPG files.



Built-in rechargeable battery and easy to download the captured picture to your computer by the common usb cable.

Image: The HT-A1 camera connected to a laptop via a USB cable, demonstrating the ease of downloading captured images to a computer.

Applications

The XEAST HT-A1 is a versatile tool suitable for various applications, including:

- **Electrical Inspections:** Identifying overloaded circuits, loose connections, or faulty components.
- **Building Diagnostics:** Detecting insulation deficiencies, moisture intrusion, and HVAC issues.
- **Mechanical Inspections:** Monitoring bearings, motors, and other mechanical systems for overheating.
- **Automotive Diagnostics:** Checking engine components, exhaust systems, and brakes for thermal anomalies.
- **Floor Heating Detection:** Locating heating pipes and identifying blockages or leaks.



Car maintenance



Check exhaust system



Electric box check



Detection of floor heating

Image: Examples of the HT-A1's use in car maintenance, checking exhaust systems, inspecting electric boxes, and detecting floor heating.

Built-in LED Light

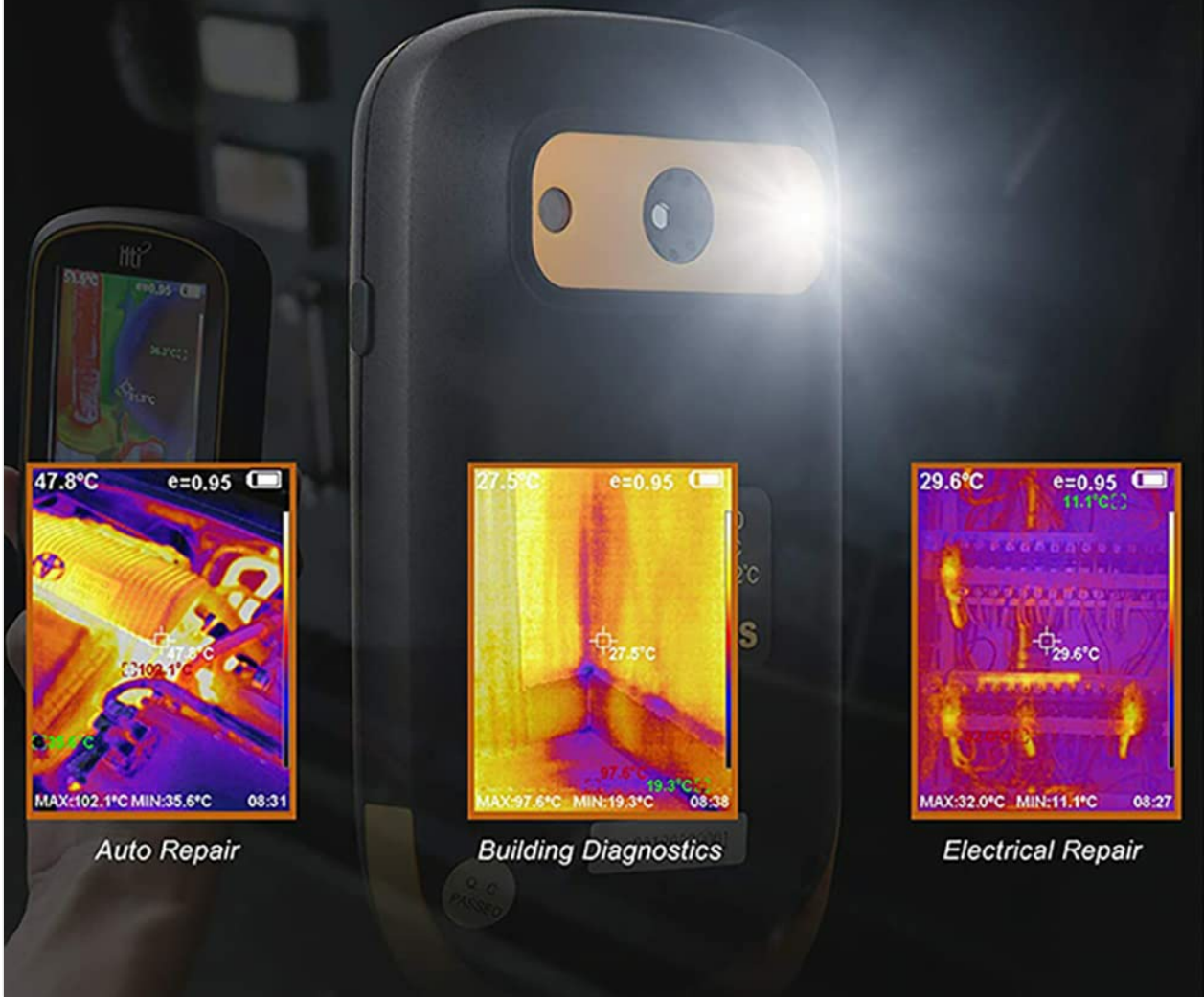


Image: The HT-A1 camera demonstrating its built-in LED light and showing thermal images from auto repair, building diagnostics, and electrical repair scenarios.

Real Shot Screen Display

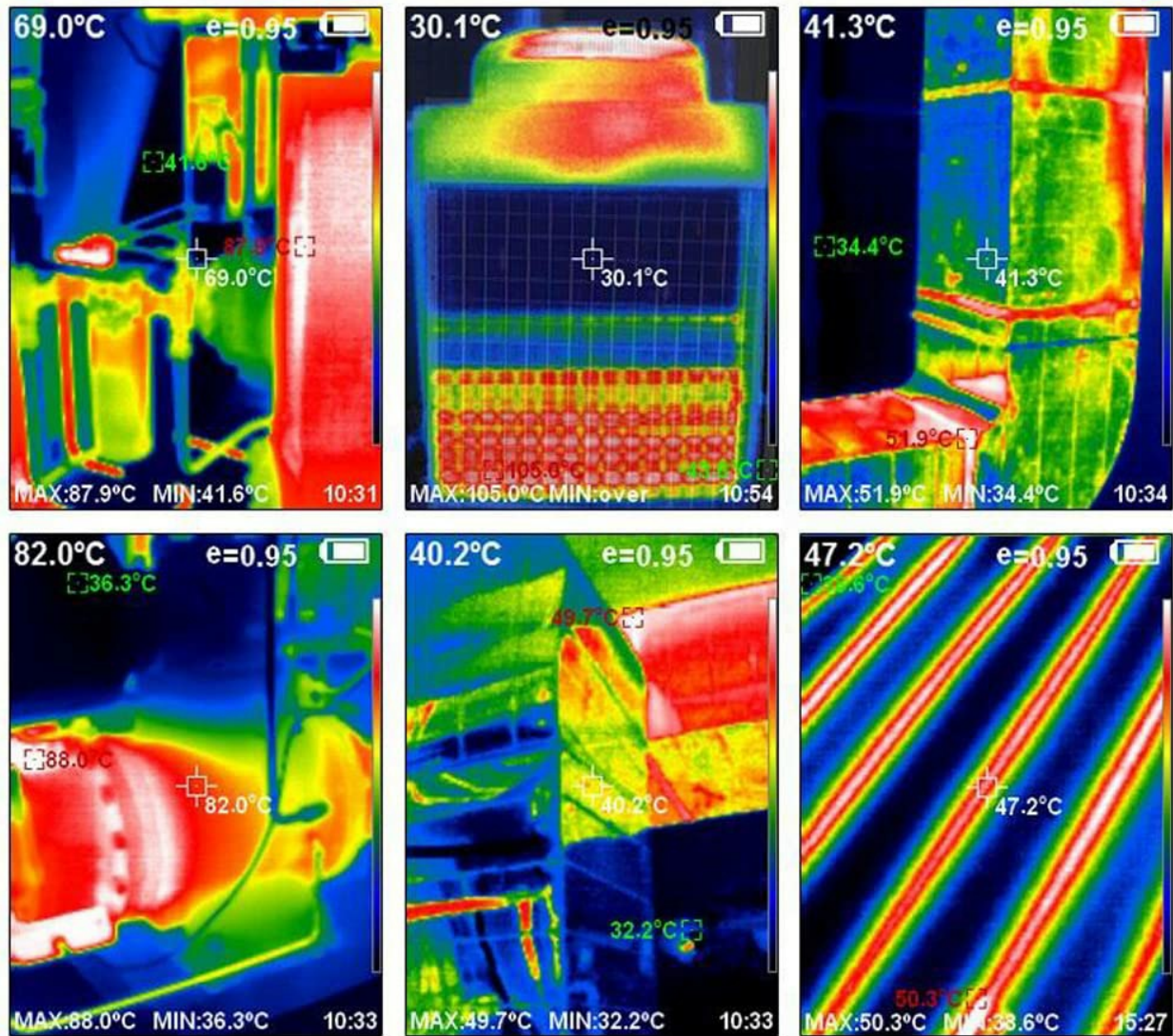


Image: A collage of six real-shot screen displays from the HT-A1, showcasing various thermal patterns and temperature distributions.

5. MAINTENANCE

Device Care

- **Cleaning:** Wipe the device exterior with a soft, damp cloth. Do not use abrasive cleaners or solvents. Ensure the lens is clean for optimal image quality.
- **Storage:** Store the camera in a cool, dry place away from direct sunlight and extreme temperatures.

Battery Maintenance

The HT-A1 uses a built-in Lithium-ion battery. To prolong battery life:

- Avoid fully discharging the battery frequently.
- Charge the device regularly, even if not in use, to maintain battery health.

6. TROUBLESHOOTING

If you encounter issues with your HT-A1 camera, refer to the table below for common problems and their solutions:

Problem	Possible Cause	Solution
Device does not power on.	Low battery; device frozen.	Charge the device. If still unresponsive, perform a soft reset (refer to manual for specific reset instructions if available, otherwise hold power button for extended period).
Image is blurry or unclear.	Dirty lens; incorrect focus (if applicable).	Clean the infrared and visible light lenses with a soft, lint-free cloth. The HT-A1 has a fixed focus, ensure proper distance to target.
Inaccurate temperature readings.	Incorrect emissivity setting; environmental interference.	Adjust the emissivity value to match the target material. Ensure no strong heat sources or reflections are interfering with the measurement.
Cannot transfer images to computer.	Faulty USB cable; driver issue; device not recognized.	Try a different USB port or cable. Ensure the device is powered on when connected. Check computer's device manager for driver issues.

7. TECHNICAL SPECIFICATIONS

Parameter	Value
Model	HT-A1
Display Screen	3.2-inch Full-Angle TFT Screen
Infrared Image Resolution	220 x 160 pixels
Visible Image Resolution	640 x 480 pixels (300,000 pixels)
LCD Resolution	320 x 240 pixels
Field Angle / Focus Length	27° x 35° / 4mm
Thermal Sensitivity	0.07°C
Temperature Measurement Range	-20°C to 300°C (-4°F to 572°F)
Measurement Accuracy	±2% / ±2°C
Emissivity	Adjustable from 0.01 to 1.00
Thermal Image Frame Rate	9 Hz
Wavelength Coverage	8-14 µm
Focus Mode	Fixed
Color Palettes	Rainbow, Iron Oxide Red, Cold Color, Black & White, White & Black
Viewing Option	Thermal image integration with 25% step and visible image
Storage Medium	Built-in 3GB (stores over 20,000 images)
File Format	JPG
Auto Shut-off Time	5 minutes / 20 minutes / No automatic shut-off
Power Source	Battery Powered (1 Lithium-ion battery included)
Dimensions	140 x 80 x 28 mm
Weight	208 g

8. PACKAGE CONTENTS

The XEAST HT-A1 Thermal Imaging Camera package includes:

- 1 x HT-A1 Handheld Infrared Thermal Imager
- 1 x Data Cable (USB)
- 1 x Plug Adapter
- 1 x Lanyard
- 1 x User Manual

