



Empowering you to work smarter

# NMT1000

## Thermal Imaging Camera User Manual



Failure to follow warnings could result in personal injury.

**SAVE THIS MANUAL FOR FUTURE REFERENCE.**

## **About this Manual**

The Manual includes instructions for using and managing the Product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Manual is subject to change, without notice, due to firmware updates or other reasons. Please find the latest version of this Manual at [www.navacglobal.com](http://www.navacglobal.com).

Please use this Manual with the guidance and assistance of professionals trained in supporting the Product.

## **Trademarks Acknowledgement**

- Trademarks and logos mentioned are the properties of their respective owners.

## **LEGAL DISCLAIMER**

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, THIS MANUAL AND THE PRODUCT DESCRIBED, WITH ITS HARDWARE, SOFTWARE AND FIRMWARE, ARE PROVIDED "AS IS" AND "WITH ALL FAULTS AND ERRORS". OUR COMPANY MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY, SATISFACTORY QUALITY, OR FITNESS FOR A PARTICULAR PURPOSE. THE USE OF THE PRODUCT BY YOU IS AT YOUR OWN RISK. IN NO EVENT WILL OUR COMPANY BE LIABLE TO YOU FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, OR INDIRECT DAMAGES, INCLUDING, AMONG OTHERS, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, OR LOSS OF DATA, CORRUPTION OF SYSTEMS, OR LOSS OF DOCUMENTATION, WHETHER BASED ON BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE), PRODUCT LIABILITY, OR OTHERWISE, IN CONNECTION WITH THE USE OF THE PRODUCT, EVEN IF OUR COMPANY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR LOSS.

YOU ACKNOWLEDGE THAT THE NATURE OF THE INTERNET PROVIDES FOR INHERENT SECURITY RISKS, AND OUR COMPANY SHALL NOT TAKE ANY RESPONSIBILITIES FOR ABNORMAL OPERATION, PRIVACY LEAKAGE OR OTHER DAMAGES RESULTING FROM CYBER-ATTACK, HACKER ATTACK, VIRUS INFECTION, OR OTHER INTERNET SECURITY RISKS; HOWEVER, OUR COMPANY WILL PROVIDE TIMELY TECHNICAL SUPPORT IF REQUIRED.

YOU AGREE TO USE THIS PRODUCT IN COMPLIANCE WITH ALL APPLICABLE LAWS, AND YOU ARE SOLELY RESPONSIBLE FOR ENSURING THAT YOUR USE CONFORMS TO THE APPLICABLE LAW. ESPECIALLY, YOU ARE RESPONSIBLE, FOR USING THIS PRODUCT IN A MANNER THAT DOES NOT INFRINGE ON THE RIGHTS OF THIRD PARTIES, INCLUDING WITHOUT LIMITATION, RIGHTS OF PUBLICITY, INTELLECTUAL PROPERTY RIGHTS, OR DATA PROTECTION AND OTHER PRIVACY RIGHTS. YOU SHALL NOT USE THIS PRODUCT FOR ANY PROHIBITED END-USES, INCLUDING THE DEVELOPMENT OR PRODUCTION OF WEAPONS OF MASS DESTRUCTION, THE DEVELOPMENT OR PRODUCTION OF CHEMICAL OR BIOLOGICAL WEAPONS, ANY ACTIVITIES IN THE CONTEXT RELATED TO ANY NUCLEAR EXPLOSIVE OR UNSAFE NUCLEAR FUEL-CYCLE, OR IN SUPPORT OF HUMAN RIGHTS ABUSES.

IN THE EVENT OF ANY CONFLICTS BETWEEN THIS MANUAL AND THE APPLICABLE LAW, THE LATER PREVAILS.

## **Regulatory Information**

### **FCC Information**

Please take attention that changes or modification not expressly approved by the party responsible for

compliance could void the user's authority to operate the equipment.

**FCC compliance:** 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 and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that 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 off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

#### FCC Conditions

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

#### EU Conformity Statement



2001/95/EC(GPSD) and Directive 2011/65/EU(RoHS).

This product and - if applicable - the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the Directive 2014/30/EU(EMCD), Directive



Directive 2012/19/EU (WEEE Directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: [www.recyclethis.info](http://www.recyclethis.info).



Directive 2006/66/EC and its amendment 2013/56/EU (Battery Directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: [www.recyclethis.info](http://www.recyclethis.info).

#### Industry Canada ICES-003 Compliance

This device meets the CAN ICES-3 (B)/NMB-3(B) standards requirements.

KC

B 급 기기: 이 기기는 가정용(B 급) 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

## Safety Instruction

These instructions are intended to ensure that user can use the product correctly to avoid danger or property loss.

### Laws and Regulations

- Use of the product must be in strict compliance with the local electrical safety regulations.

### Transportation

- Keep the device in original or similar packaging while transporting it.
- Keep all wrappers after unpacking them for future use. In case of any failure occurred, you need to return the device to the factory with the original wrapper. Transportation without the original wrapper may result in damage on the device and the company shall not take any responsibilities.
- Do not drop the product or subject it to physical shock. Keep the device away from magnetic interference.

### Power Supply

- Input voltage should meet the Limited Power Source (5 VDC, 300 mA) according to the IEC61010-1 standard. Please refer to technical specifications for detailed information.
- Make sure the plug is properly connected to the power socket.
- DO NOT connect multiple devices to one power adapter, to avoid over-heating or fire hazards caused by overload.
- Use the power adapter provided by a qualified manufacturer. Refer to the product specification for detailed power requirements.

### Battery

- The built-in battery cannot be dismantled. Please contact the manufacture for repair if necessary.
- For long-term storage of the battery, make sure it is fully charged every half year to ensure the battery quality. Otherwise, damage may occur.
- Make sure the plug is properly connected to the power socket.
- When the device is powered off and the RTC battery is full, the time settings can be kept for 15 days.
- In the first use, power on the device and charge the RTC battery with the lithium battery for more than 8 hours.
- The standard adapter power supply is 5 V.
- The battery is certified by UL2054.

### Maintenance

- If the product does not work properly, please contact your dealer or the nearest service center. We shall not assume any responsibility for problems caused by unauthorized repair or maintenance.
- Wipe the device gently with a clean cloth and a

small quantity of ethanol, if necessary.

- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the device may be impaired.
- We recommend you send the device back for calibration once a year, and please contact the local dealer for the information on maintenance points.
- Your camera will periodically perform a self-calibration to optimize image quality and measurement accuracy. In this process the image will pause briefly and you'll hear a "click" as a shutter moves in front of the detector. The self-calibration will be more frequent during start up or in very cold or hot environments. This is a normal part of operation to ensure optimum performance for your camera.

### Calibration Service

We recommend you send the device back for calibration once a year, and please contact the local dealer for the information on maintenance points.

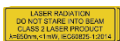
### Using Environment

- Make sure the running environment meets the requirement of the device. The operating temperature shall be  $-10^{\circ}\text{C}$  to  $50^{\circ}\text{C}$  ( $14^{\circ}\text{F}$  to  $122^{\circ}\text{F}$ ), and the operating humidity shall be 95% or less.
- DO NOT expose the device to high electromagnetic radiation or dusty environments.
- DO NOT aim the lens at the sun or any other bright light.
- When any laser equipment is in use, make sure that the device lens is not exposed to the laser beam, or it may burn out.
- The device is suitable for indoor and outdoor uses, but do not expose it in wet conditions.
- The level of protection is IP 54.
- The pollution degree is 2.

### Emergency

If smoke, odor, or noise arises from the device, immediately turn off the power, unplug the power cable, and contact the service center.

### Laser Light Supplement Warning



Warning: The laser radiation emitted from the device can cause eye injuries, burning of skin or inflammable substances. Prevent eyes

from direct laser. Before enabling the Light Supplement function, make sure no human or inflammable substances are in front of the laser lens. The wave length is 650 nm, and the power is less than 1 Mw. The laser meets the IEC60825-1:2014 standard.

Laser maintenance: It is not necessary to maintain the laser regularly. If the laser does not work, the laser assembly needs to be replaced in the factory under warranty. Keep the device power off when replacing laser assembly. Caution-Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

COMPLIANCE NOTICE: The thermal series products might be subject to export controls in various countries or regions, including without limitation,

the United States, European Union, United Kingdom and/or other member countries of the Wassenaar Arrangement. Please consult your professional legal or compliance expert or local government authorities for any necessary export license requirements if you intend to transfer, export, re-export the thermal series products between different countries.

# Contents

<b>1 Introduction .....</b>	<b>1</b>
1.1 Box Content .....	1
1.2 Product Introduction .....	1
<b>2 Appearance .....</b>	<b>2</b>
2.1 Dimensions .....	2
2.2 Interfaces .....	2
<b>3 Basic Operations .....</b>	<b>3</b>
3.1 Charging the Device .....	3
3.2 Interface Description .....	4
3.3 Format Micro SD Card .....	4
3.4 Capture Snapshots .....	4
3.5 View Snapshots .....	5
3.6 Export File .....	5
3.7 Upgrade .....	5
<b>4 Main Configurations .....</b>	<b>5</b>
4.1 Temperature Measurement .....	5
4.2 Other Configurations .....	6
<b>5 System Information .....</b>	<b>7</b>
<b>6 Appendix .....</b>	<b>7</b>
6.1 Common Material Emissivity Reference .....	7
6.2 Frequently Asked Questions (FAQ) .....	7

# 1 Introduction

## 1.1 Box Content



Thermal Imaging Camera (×1)



Power Adapter (×1)



USB Cable (×1)



Wrist Strap (×1)



Manual (×1)



Protective Bag (×1)

**Note:** The thermal imaging camera includes one battery and one Micro SD card.

## 1.2 Product Introduction

NMT1000 Thermal Imaging Camera is a camera with thermal images. It can do thermometry, and snapshot capturing. The built-in high-sensitivity IR detector and high-performance sensor detects the temperature change and measure the real-time temperature. The temperature measurement range is  $-20^{\circ}\text{C}$  to  $550^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$  to  $1022^{\circ}\text{F}$ ) with the accuracy of ( $\pm 2^{\circ}\text{C}/3.6^{\circ}\text{F}$ ,  $\pm 2\%$ ) when the ambient temperature is  $15^{\circ}\text{C}$  to  $35^{\circ}\text{C}$  ( $59^{\circ}\text{F}$  to  $95^{\circ}\text{F}$ ) and the object temperature is above  $0^{\circ}\text{C}$  ( $32^{\circ}\text{F}$ ). It helps the users to find the risky part and lower their property loss. The device supports live viewing, and capturing, etc.

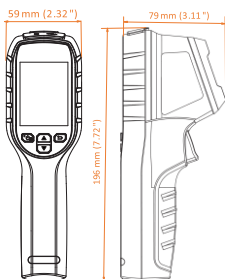
The thermal imaging camera adopts ergonomic design, and it is easy to use. The device is mainly applied to various industries, such as Building, HVAC, and auto industry, etc.

You can use the client to analyze pictures offline, and generate a report.



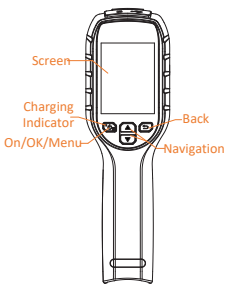
## 2 Appearance

### 2.1 Dimensions



The dimension may vary according to different camera model.

### 2.2 Interfaces



Hold: Power On/Off  
Press: Display menu or confirm operation



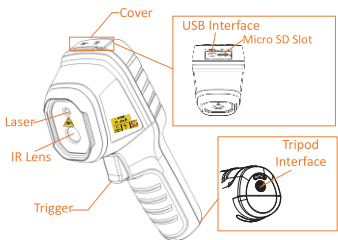
Exit the menu or return to previous menu.



Navigation Button  
Press the ,  button to select parameters.

Press the  button to confirm.

---



**Note:**

The warning sign is under the laser and on the left side of the device.

Charging Indicator	When the device is charging, the LED indicator is red. When the device is fully charged, the LED indicator is green.
--------------------	--

USB Interface	Charge the battery and export snapshots with the USB cable.
---------------	---

Trigger	Pull the trigger to capture snapshots. When the Laser function is switched on, pull the trigger to turn on/off the laser light.
---------	---



**Warning:**

The laser radiation emitted from the device can cause eye injuries, burning of skin or inflammable substances. Prevent eyes from direct laser. Before enabling the Light Supplement function, make sure no human or inflammable substances are in front of the laser lens. The wave length is 650 nm, and the power is less than 1 Mw. The laser meets the IEC60825-1:2014 standard.

## 3 Basic Operations

### 3.1 Charging the Device

**Steps:**

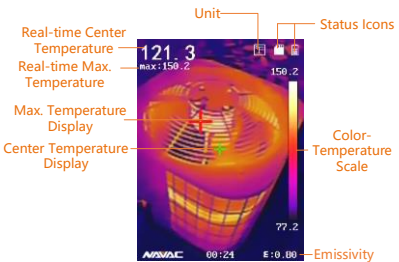
1. Open the top cover of the camera.
2. Connect the USB interface and the power adaptor with USB cable.



**Note:**

- For the first charge, charge the device for more than 8 hours when the device is turned on.
- The built-in cell battery that powers the real time clock (RTC) of the device may drain during longtime transportation or storage. It is recommended to recharge the RTC battery for the well functioning of the device clock.
- To fully charge the RTC battery, the following requirements should be met:
  - a) The rechargeable lithium batteries should be installed on the device.
  - b) The device should keep working for more than 8 hours before shutting down.

## 3.2 Interface Description







## 3.3 Format Micro SD Card

**Before you start:**

Confirm the Micro SD card is properly installed before use.

**Steps:**



1. In the live view interface, press  button to show the menu bar.
2. Press / button to select **Format Micro SD**.
3. Press  button and select **OK** to start format Micro SD Card.

**Note:**

Format Micro SD Card before first use of it.

## 3.4 Capture Snapshots

**Steps:**





1. In the live view interface, pull the trigger to capture snapshot. The live view freezes and device displays the snapshot with temperature information.
2. Press  button to save the picture, press  button to cancel it.

**Note:**

You can not capture when the device is connected with PC.

## 3.5 View Snapshots

**Steps:**

1. Go to **Menu > Picture** to view the capture snapshots.
2. Press  button to view the selected picture, press / button to switch pictures.
3. (Optional) Press  button to delete picture in picture view interface.

## 3.6 Export File

**Purpose:**

Connect the thermal imaging camera to your PC with USB cable, you can export the captured snapshots.

**Steps:**

1. Open the USB cover.
2. Connect the camera to your PC with USB cable and open the detected disk.
3. Select and copy the snapshots to PC and view the files.
4. Disconnect the device from your PC.

**Note:**

For the first time connection, the driver will be installed automatically.

Do not disconnect the USB connection from PC or pull out the Micro SD card during drive installation or it may cause the device damage.

## 3.7 Upgrade

**Steps:**

1. Connect the thermal imaging camera to your PC with USB cable and open the detected disk.
2. Copy the upgrade file and replace it to the root directory of the device.
3. Disconnect the device from your PC.
4. Reboot the device and then it will upgrade automatically. The upgrading process will be displayed in the main interface.

**Note:** After the upgrading, the device automatically reboot. You can view the current version in **Menu > About**.

# 4 Main Configurations




## 4.1 Temperature Measurement

**Purpose:**

The thermometry (temperature measurement) function provides the real-time temperature of the scene and display it on the left of your screen. The thermometry function is turned on by default.

The thermometry parameters affect the accuracy of temperature measurement.

**Steps:**






- 1 In the live view interface, press  button show the menu bar.
- 2 Press  button to select desired setting bar.
- 3 Press  button to go to the setting interface.

- **Emissivity:** Set the emissivity of your target as the effectiveness in emitting energy as thermal radiation.

**Note:** Refer to the 6.1 Common Material Emissivity Reference for emissivity values.

- **Temperature:** Set the average temperature of the environment.
- **Distance (m/feet):** Set the straight-line distance between the target and the device.





**Note:** The recommended thermometry distance is 0.2 m to 2 m with target size 80 × 80 mm.

- **Rule:** Select **Hot Spot**, **Cold Spot** to show the max. temperature, min. temperature in the live view interface.
- 4 Press  button to select desired parameter, and press  button to enable it.
  - 5 If necessary, press  button to increases / decrease the setting values. Hold  button to change the value quickly.
  - 6 Press  button to save and exit.

## 4.2 Other Configurations

Here is an example of setting laser light function.

**Steps:**

- 1 In the live view interface, press  button show the menu bar.
- 2 Press  button to select **Laser**.
- 3 Press  button to turn on / turn off laser light function.
- 4 Press  button to save and exit.
- 5 In live view interface, pull the trigger to turn on laser light, release the trigger to turn off laser light.

**Note:** Other parameters, such as temperature measurement range, unit, palettes and so on, can be configured as steps above.

## 5 System Information

Go to **Menu > About** to view the device information: Model, Version No., FPGA Version No., Serial No., Capacity and so on. You can also set the auto power-off duration, date and time in **Menu**.

## 6 Appendix

### 6.1 Common Material Emissivity Reference

Material	Emissivity
Human Skin	0.98
PCB	0.91
Cement Concrete	0.95
Ceramics	0.92
Rubber	0.95
Paint	0.93
Wood	0.85
Asphalt	0.96
Brick	0.95
Sand	0.90
Soil	0.92
Cotton	0.98
Cardboard	0.90
White Paper	0.90
Water	0.96

### 6.2 Frequently Asked Questions (FAQ)

**Q:** The charge indicator flashes red.

**A:** Examine the items below:

1. Examine whether the device is charged with the standard power adapter.
2. Make sure the environment temperature is above 0°C (32°F).

**Q:** Capturing or recording fails.


**A:** Examine the items below:

1. Whether the device is connected to your PC and the capture function is unavailable.
2. Whether the storage space is full.
3. Whether the device is low-battery.

**Q: The PC cannot identify the camera.**

A: Examine whether the device is connected to your PC with standard USB cable.

**Q: The camera can not be operated or no responding.**

A: Hold  button to reboot the camera.

**NAVAC Inc.**

[www.NavacGlobal.com](http://www.NavacGlobal.com)

+1 877-MY-NAVAC

877-696-2822

[techsupport@navacglobal.com](mailto:techsupport@navacglobal.com)