

# Thermal Imager Mini2 V2/Mini2Plus V2/MiniE

**User Manual** 



Contact Us

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# 1 Introduction

# 1.1 Thermal Imager and HIKMICRO Viewer

The thermal imager (hereinafter refers to as **the Device** or **the Imager**) is an infrared thermal camera connected to mobile devices like smartphones or pads with Android or iOS systems through Type-C and Lightning connectors.

The imager needs to work with the HIKMICRO Viewer (hereinafter refers to as **the APP**).

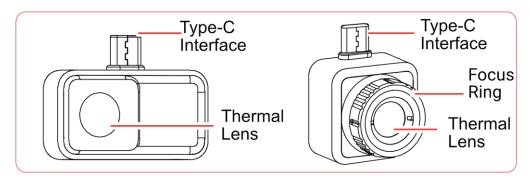


Figure 1-1 Thermal Imager Appearance



This manual describes and explains the features for multiple thermal imagers.

## 1.2 Download HIKMICRO Viewer



Figure 1-2 HIKMICRO Viewer QR Code

# 1.3 Connect Thermal Imager and HIKMICRO Viewer

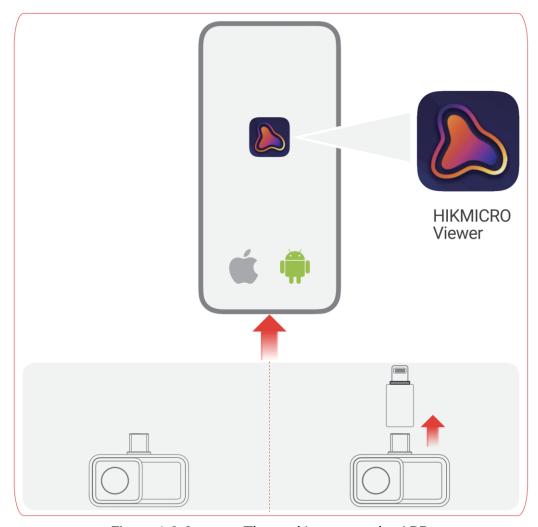


Figure 1-3 Connect Thermal Imager to the APP



- The thermal imager in figure above is for demonstration ONLY.
- If connected successfully, "Connected" will show on the home screen.
- The Lightning Adapter and the Type-C Extension Cord cannot use

together.



## 1.4 User Manual

In the home screen, tap **Device Info > Help** for detailed information about the device.

# 2 Live View

# 2.1 Live View

In **Live View**, you can adjust and calibrate thermal image, measure temperatures, change palettes, etc.

## 2.1.1 Live View Interface

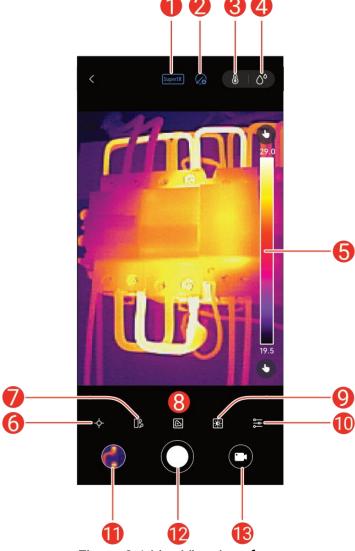


Figure 2-1 Live View Interface

Table 2-1 Live View Interface Icons

Nia		Description
No.	Functions	Description
1	SuperIR	Enhance the object outlines for better image display.
2	Image Calibration	Correct image uniformity to improve image quality and temperature measurement accuracy.
3	Measurement Parameters	Set key parameters such as temperature measurement distance and emissivity to ensure the measurement accuracy.
4	Scene Mode	You can switch scenes freely and perform detection quickly.
5	Temperature Scale and Display Termperature Range	Auto A: Display temperature range will be automatically adjusted  Manual : Drag the temperature value to adjust temperature range. In manual adjustment, the palette turns to focus palette mode, in which objects falling in the range remain the selected palette while the rest is displayed in white hot palette.
6	Measurement Tools	Set rules for temperature measurement.
7	Palettes	Select color styles for thermal imaging.
8	Image Mode	You can set the thermal/optical view of the device.  Thermal, Visual, and Fusion are selectable.
9	Image	Adjust brightness, sharpness, contrast and color distribution.
10	Parameter	Set parameters such as temperature measurement range and temperature alarm.
11	Album	View sanpshots and videos.
12	Capture/Record	Tap to capture the image in snapshot mode or to start/stop recording in video mode.
13	Snapshot/Video Mode	Switch between snapshot and video mode.

# 2.1.2 Adjust Image Display

## Focusing Adjustment (for Some Imagers)

Aim the thermal lens to your target, and rotate the focus ring to make the image clear.

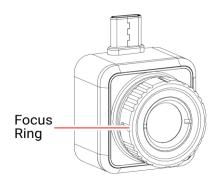


Figure 2-2 Thermal Imager with a Focus Ring



Focusing Adjustment is ONLY supported by the imager with a focus ring.

#### Image Rotation

Tap 🔀 > 9 to rotate live image by 90 degrees.

#### Zoom



**Zoom** function varies within the series. See your actual device for available operations.

### **SuperIR**

Switch on SuperIR to get an enhanced thermal image. Captured thermal image with SuperIR is clearer than the original one.

For some series, you can select Performance Mode or Quality Mode.



- Compared to **Performance Mode**, **Quality Mode** provides higher image resolution but consumes more phone resource and battery power, which may reduce the live view frame rate and cause the phone to overheat.
- If the phone performance is insufficient, it may not support **Quality Mode**. Please use the feature according to actual situation

### Display Mode

Tap (a) to select the display mode of the live view.

- In **Thermal** mode, the device displays the thermal image.
- In **Visual** mode, the device displays the thermal image overlaid with a visual image in the upper-left corner. You can drag the visual image frame to move it.
- In **Fusion** mode, the device displays the thermal image of the live view outlined from visual image.



- The visual image is captured by your phone's camera. To use either **Visual** or **Fusion** mode, it is required to grant the APP permission to access your phone's camera.
- When **Fusion** is enabled, **Rotation** and **SuperIR** will be unavailable, and **Sharpness** value will reset to zero.

### Camera Alignment

To display the precise fusion view of the thermal and visual image, please follow the instructions to finish **Camera Alignment** for the first time.

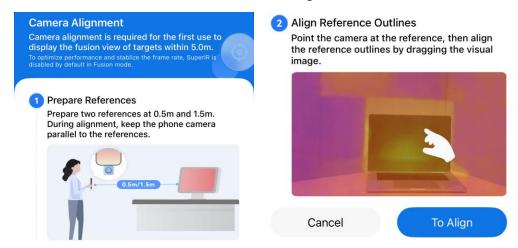


Figure 2-3 Camera Alignment

- 1. Prepare two references at 0.5 m and 1.5 m. During alignment, keep the phone camera parallel to the references.
- 2. Point the phone camera at the reference, then align the reference outlines by dragging the visual image.
- 3. After completing initial alignment, tap to adjust the fusion distance based on target range. For closer targets, slide the bar to the left; for distant targets, slide it to the right until the visual and thermal image outlines are perfectly aligned.
- 4. If the outlines are misaligned, tap 

  to perform Camera Alignment again.



After **Camera Alignment**, partial visual light loss around the edges may occur due to differences in position and field of view (FOV) between the phone camera and the thermal imager camera. This is a normal phenomenon.

# 2.1.3 Thermal Image Calibration

For temperature measurement accuracy and image effect, it is recommended to conduct image calibration. It is common to have brief image freeze during image calibration.

#### Auto Calibration

In this mode, the imager automatically calibrates images according to its internal rules.

Tap of to enable Auto Calibration.

#### Manual Calibration

Tap 🕜 to calibrate the image for one time.

#### Turn off Calibration

Tap 🏠 to turn off the calibration function.



It is recommended to enable **Auto Calibration**. Otherwise, you need conduct **Manual Calibration** from time to time for the accuracy of thermal imaging and temperature measurement.

### 2.1.4 Select Palettes

**Palettes** highlights the imaging details as the image displays different colors according to temperature range.

Tap 🗓 to select appropriate palettes.

**Custom Palettes** and predefined palettes are available.



Figure 2-4 Different Palettes



- NO MORE THAN 4 colors are supported to set in the Custom Palettes.
- Tap Custom Palettes > ⊕ to add appropriate colors. Swipe the palettes points to adjust the color distribution of the palettes bar.



Figure 2-5 Custom Palettes

## 2.1.5 Adjust Display Temperature Range

After selecting appropriate palettes, it is advisable to adjust display temperature range to highlight the thermal image of the target of interest.

### Auto Adjustment

Tap • the imager will shift to **Auto Adjustment**, and the display temperature range will be automatically adjusted.

### Manual Adjustment

Tap A, the imager will shift to **Manual Adjustment**. It is a focus palette that you can swipe the temperature value up and down to adjust the range, focusing on the target in the set range.



Tap  $\cong$  >  $\square$  to display or hide the temperature scale. The function varies within the series. See your actual device for available operations.

## 2.1.6 Set Image Parameters

For better image analysis, it is recommended to tap to set appropriate parameters:





Color Distribution supports Linear and Histogram:

- Linear: The mode displays relatively huge temperature gap.
- Histogram: The mode displays relatively small temperature gap.

# 3 Temperature Measurement

## 3.1 Select Scene Mode

To conduct fast anomaly detection, several preset templates are included in scene mode for various detection scenarios. Users can choose an appropriate scene or customize a scene as per targets, and set temperature alarms or anomalies recognition as needed.

- 1. Tap  $\blacksquare$  to select the scene mode, and tap **Confirm** to perform detection. The icon varies according to different scene modes.
- Tap Modify Parameters to edit the default parameters such as emissivity and alarm mode, refer to the following chapters for details.
   Tap 
   to restore the default configuration of the current scene mode.

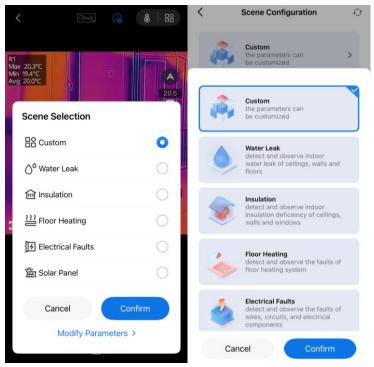


Figure 3-1 Scene Mode

- In Custom, Floor Heating, Electrical Faults, and Solar Panel mode, you
  can configure temperature measurement and alarm parameters.
  - **Custom**: Users can customize a mode to save desired temperature measurement parameters for future use.
  - Floor Heating: To detect and observe the faults of floor heating system.
  - **Electrical Faults**: To detect and observe the faults of wires, circuits, electrical components, terminators, etc.
  - Solar Panel: To detect and observe the faults of solar panels.
- In Water Leak and Insulation mode, you can configure SuperScene.
   The feature can assist in fast recognition of the location of water leak points and defective heat-insulated areas.



**Temperature Range** and **Temperature Alarm** settings are not supported in Water Leak and Insulation mode.

 Water Leak: To inspect the water leak of building ceilings, walls and floors indoors. When SuperScene is enabled and water leak anomalies are detected, the suspect point will be marked in the live view.



Figure 3-2 Water Leak Anomalies Recognition

 Insulation: To detect indoor insulation deficiency of building walls, ceilings. When **SuperScene** is enabled and insulation anomalies are detected, the suspect point will be marked in the live view.

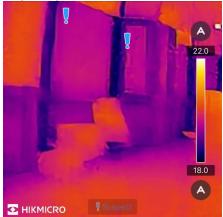


Figure 3-3 Insulation Anomalies Recognition



- Due to the complexity of onsite scenarios, **SuperScene** cannot achieve 100% accuracy. For example, missed or even wrong reporting emerges when temperature difference of the areas with leak anomalies is too subtle to be recognized, etc. It is recommended to give a second diagnosis based on **SuperScene** results.
- The algorithm of **SuperScene** is being updated, please update the device firmware and APP software version promptly for optimal performance.

# 3.2 Set Temperature Measurement Parameters

For more accurate measurement, tap  $\rightleftharpoons$  to set parameters before temperature measurement.

- 1. Tap 👃 to set thermometry distance and emissivity.
- Distance: Set the distance between the target and the imager.
- Emissivity: Select or customize the emissivity of the target.
- 2. Tap 🔁 to set the temperature measurement range and unit.

Table 3-1 Temperature Measurement Parameters

Icon	Function	Description
Po	Temperature Range	Set the temperature range of targets.
°C	Temperature Unit	Set temperature unit. You can select °C, °F, or K.



## 3.3 Measure Temperature

Measure temperature with tools. Available tools are **Point**, **Line** and **Rectangle**.

### 3.3.1 Add Point Measurement Tool

1. Tap → to add point tools.

Table 3-2 Point Measurement Tools

Icon	Function	Description
<b></b>	Center Point	Display the real-time temperature of the center of the live image.
<b></b>	Hot Point	Display the real-time highest temperature in the Live View.
<b></b>	Cold Point	Display the real-time lowest temperature in the <b>Live View</b> .
ф	Custom Point	Display the temperature of a user-defined point.



Tap 🛅 to clear all measurement tools.

2. Optional: Edit the point

Move Point: Drag or tap the point to desired locations.

Remove Point:

- Tap the point
- Tap the pop-up ≥ button



NO MORE THAN 3 custom points are supported to set on the Live View.

### 3.3.2 Add Line Measurement Tool

- 1. Tap -♦ > \ to add a line on the **Live View**
- 2. Optional: Edit the line

Move Line: Drag the line to move it

Resize Line: spread fingers apart and pinch them together to adjust its size.

### Remove Line:

- Tap the line
- Tap 🗓 on the pop-up window to remove it
- 3. Optional: Show/Hide Temperature Result
  - Tap the line

  - Tap **OK** to confirm the settings

## 3.3.3 Add Rectangle Measurement Tool

- 1. Tap  $-\diamondsuit$  >  $\square$  to add a rectangle on the **Live View**.
- 2. **Optional**: Edit the rectangle.

#### Move Rectangle:

- Drag the rectangle
- Tap any part outside of the rectangle to end the moving process

### Resize Rectangle:

- Tap to turn off the rectangle tool
- Tap the rectangle and drag its vertex
- Tap any part outside of the rectangle to end the resizing process

### Remove Rectangle:

- Tap the rectangle, and it will pop up an edition window
- Tap iii to remove it

- 3. Optional: Show/Hide Temperature Result
  - Tap the rectangle, and it will pop up an edition window.

  - Tap **OK** to confirm the settings



NO MORE THAN 3 rectangles are supported to set on the Live View.

## 3.3.4 Set Temperature Alarm (Optional)

The exceptional temperature will cause the flashing **High Temp** or **Low Temp** at the bottom of the **Live View** and the vibration.

- 1. Tap 🚾.
- 2. Tap •• to input the maximum value of **High Temp** and the minimum value of **Low Temp** in the pop-up window.



Threshold range of temperature exception alarm is -20°C ~ 400°C.

3. Slide to switch on the **High Temp** alarm or the **Low Temp** Alarm respectively.



It does NOT support to enable **High Temp** alarm and **Low Temp** alarm at the same time.

4. Tap **OK** to confirm the settings.



You can tap \( \frac{1}{2} \) to select the scene mode to perform quick detection with preset parameter templates, or customize the temperature alarm parameters for different scenes. Temperature alarm settings are not supported in \( \text{Water Leak} \) and \( \text{Insulation} \) scene mode.

# 4 Capture Snapshots and Record Videos

# 4.1 Capture Snapshots

If you need to save snapshots to your phone, please click **Settings** > **General** > **Save Pictures and Videos to Phone**.

Tap • to capture thermal images and save them to the APP album and your phone.

## 4.2 Record Videos

- 1. Tap to shift into **Video** mode.
- 2. Tap o to start the video recording, and tap again to stop.



Snapshot and Video modes can be freely switched around.

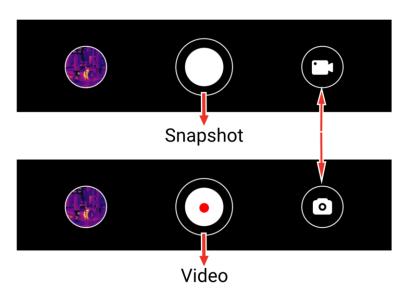


Figure 4-1 Switch Between Snapshot and Video Modes

# 4.3 View Snapshots/Videos

You can view the pictures and videos saved in the album as follows:

• Tap the snapshot or video on the lower left corner on the **Live View**.

- Tap the snapshot or video on the lower left corner on the Live View, then tap , and you can view all the snapshots and videos.
- Tap in the home scree, and you can view all the snapshots and videos

# 4.4 Edit Snapshots

You can adjust the parameters of the snapshot to get more accurate temperature results.

- 1. Enter to the **Album** and select the snapshot.
- 2. Tap 🗹 to enable editing functions.

Table 4-1 Icons for Snapshots Editing

Icon	Function	Description
<b></b>	Measurement	Adjust the temperature values on the rectangular box on the <b>Live View</b> . Tap again to hide the results.
	Image Mode	Select image modes, including <b>Thermal, Visual,</b> and <b>Fusion</b> .
€	Level and Span	Select <b>Auto</b> , <b>Manual</b> and <b>1-Tap</b> modes to highlight certain temperature range.
	Palettes	Select palettes.
<u>-`♠</u> -	Color Alarms	Set the highest and lowest temperature or centain temperature range of the snapshot to highlight the required areas.
<b></b>	Parameter	Adjust emissivity, distance, and environment temperature. You can also remark on the picture.



- Video does NOT support editing functions.
- The temperature range of **Color Alarms** is -20°C ~ 150°C.

# 4.5 Share Snapshots and Videos

- 1. Enter to **Albums**, and tap **I** to select the snapshots and videos.
- 2. Tap 🗂 to share the snapshots and videos with the third party.
- 3. **Optional**: Tap 🛂 to save snapshots and videos to your phone.

# 4.6 Generate and Share PDF Report

1. Enter to the **Album** and select the snapshot.

2. Tap PDF to edit the report information.
File Name is a MUST.
3. Tap Next > ✓ to generate a PDF report.



Video does NOT support PDF report generation and sharing.

4. Tap 🗂 to share the report with the third party.

# 5 Update and Maintenance

# 5.1 Update the Imager

For better operation experience, it is recommended to update to the latest version in time. The imager update is as follows:

- In the home screen, tap Device Upgrade > Check for Updates.
- In the home screen, tap Device Info > Device Upgrade > Check for Updates.

# 5.2 Reset the Imager

Tap **Device Info > Reset > OK** to restore the thermal imager.



Be careful to use this function, or the data will be lost.

## 5.3 Error Diagnosis

If you encounter some device exception during the operation, error diagnosis can help you quickly troubleshoot. Feedback paths are as follows:

- In the home screen, tap Device Info > Device Diagnosis.
- In the home screen, tap Settings > Support to get online service support, hotline support or to submit logs.

# **Legal Information**

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#### 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 the HIKMICRO website (www.hikmicrotech.com/).

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

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# **Regulatory Information**

These clauses apply only to the products bearing the corresponding mark or information.

## **EU Conformity Statement**



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 2014/35/EU (LVD), Directive 2011/65/EU (ROHS).



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 According to the Waste Electrical and Electronic Equipment Regulations 2013: Products marked with this symbol cannot be disposed of as unsorted municipal waste in the United Kingdom. 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.

## **Industry Canada ICES-003 Compliance**

This device meets the CAN ICES- 003 (B) / NMB- 003 (B) standards requirements.

#### INFORMATIONEN FÜR PRIVATE HAUSHALTE

1. Getrennte Erfassung von Altgeräten:

Elektro- und Elektronikgeräte, die zu Abfall geworden sind, werden als Altgeräte bezeichnet. Besitzer von Altgeräten haben diese einer vom unsortierten Siedlungsabfall getrennten Erfassung zuzuführen. Altgeräte gehören insbesondere nicht in den Hausmüll, sondern in spezielle Sammel- und Rückgabesysteme.

#### 2. Batterien und Akkus sowie Lampen:

Besitzer von Altgeräten haben Altbatterien und Altakkumulatoren, die nicht vom Altgerät umschlossen sind, die zerstörungsfrei aus dem Altgerät entnommen werden können, im Regelfall vor der Abgabe an einer Erfassungsstelle vom Altgerät zu trennen. Dies gilt nicht, soweit Altgeräte

einer Vorbereitung zur Wiederverwendung unter Beteiligung eines öffentlich-rechtlichen Entsorgungsträgers zugeführt werden.

### 3. Möglichkeiten der Rückgabe von Altgeräten:

Besitzer von Altgeräten aus privaten Haushalten können diese bei den Sammelstellen der öffentlich-rechtlichen Entsorgungsträger oder bei den von Herstellern oder Vertreibern im Sinne des ElektroG eingerichteten Rücknahmestellen unentgeltlich abgeben. Rücknahmepflichtig sind Geschäfte mit einer Verkaufsfläche von mindestens 400 m² für Elektround Elektronikgeräte sowie diejenigen Lebensmittelgeschäfte mit einer Gesamtverkaufsfläche von mindestens 800 m², die mehrmals pro Jahr oder dauerhaft Elektro- und Elektronikgeräte anbieten und auf dem Markt bereitstellen. Dies gilt auch bei Vertrieb unter Verwendung von Fernkommunikationsmitteln, wenn die Lager- und Versandflächen für Elektro- und Elektronikgeräte mindestens 400 m² betragen oder die gesamten Lager- und Versandflächen mindestens 800 m² betragen. Vertreiber haben die Rücknahme grundsätzlich durch geeignete Rückgabemöglichkeiten in zumutbarer Entfernung zum jeweiligen Endnutzer zu gewährleisten. Die Möglichkeit der unentgeltlichen Rückgabe eines Altgerätes besteht bei rücknahmepflichtigen Vertreibern unter anderem dann, wenn ein neues gleichartiges Gerät, das im Wesentlichen die gleichen Funktionen erfüllt, an einen Endnutzer abgegeben wird.

#### 4. Datenschutz-Hinweis:

Altgeräte enthalten häufig sensible personenbezogene Daten. Dies gilt insbesondere für Geräte der Informations- und Telekommunikationstechnik wie Computer und Smartphones. Bitte beachten Sie in Ihrem eigenen Interesse, dass für die Löschung der Daten auf den zu entsorgenden Altgeräten jeder Endnutzer selbst verantwortlich ist.

5. Bedeutung des Symbols "durchgestrichene Mülltonne":



Das auf Elektro- und Elektronikgeräten regelmäßig abgebildete Symbol einer durchgestrichenen Mülltonne weist darauf hin, dass das jeweilige Gerät am Ende seiner Lebensdauer getrennt vom unsortierten Siedlungsabfall zu erfassen ist.

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

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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.

# **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.

## **Technical Support**

https://www.hikmicrotech.com/en/contact- us.html portal will help you as a HIKMICRO customer to get the most out of your HIKMICRO products. The portal gives you access to our support team, software and documentation, service contacts, etc.

#### Maintenance

- DO NOT maintain the camera when it is powered on, or it may cause electric shock! 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.

## **Using Environment**

- Make sure the running environment meets the requirement of the device. The operating temperature shall be -10 °C to 50 °C (14 °F to 122 °F), and the operating humidity shall be 95% or less.
- Place the device in a dry and well-ventilated environment.
- 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 use only.

## **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.

## **Emergency**

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

## **Manufacture Address**

Room 313, Unit B, Building 2, 399 Danfeng Road, Xixing Subdistrict, Binjiang District, Hangzhou, Zhejiang 310052, China Hangzhou Microimage Software Co., Ltd.

