

# **IX2 AIR Series**

**Wireless Thermal Camera for Smart Devices**

**User Manual V1.0.0**



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## 1. Safety Information



### WARNING

1. Before using the cleaning solution, ensure you have read all applicable Material Safety Data Sheets (MSDS) and warning labels on containers.
2. It is prohibited to place the product in high-temperature environments above 60°C and low-temperature environments below -20°C.
3. It is recommended to charge the device in room-temperature condition and power-off status. It is prohibited to charge the device in high-temperature environments above 40°C and low-temperature environments below 0°C. The device does support operating while charging.
4. It is prohibited to operate the device in high-temperature environments above 50°C and low-temperature environments below -10°C.
5. The device must operate within a relative humidity range of 10% to 95%, non-condensing.
6. Do not disassemble or refit the thermal camera at will.



### CAUTION

1. Do not use the product in conditions that exceed the specified environmental requirements. For detailed information on these requirements, refer to the product parameter table.
2. Do not apply cleaning solutions or similar liquids directly to the thermal camera, cables or other components.
3. Be careful when cleaning the infrared lenses. The lenses have a delicate coating that can be damaged by rough objects like paper towels or the application of excessive force.
4. Do not point the thermal camera at strong light sources or devices emitting laser radiation. Doing so can affect the accuracy of the thermal camera and potentially damage its detector.

5. Keep the product away from moisture, water, or dust to prevent internal circuit failures that may affect normal use.

6. Avoid contact between hard objects and the lens of the product to prevent damage to the lens.

7. Avoid mechanical impact, crushing, or throwing of the product.

8. Do not heat the product or place it in a microwave oven or pressure cooker.



2006/66/EC (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)



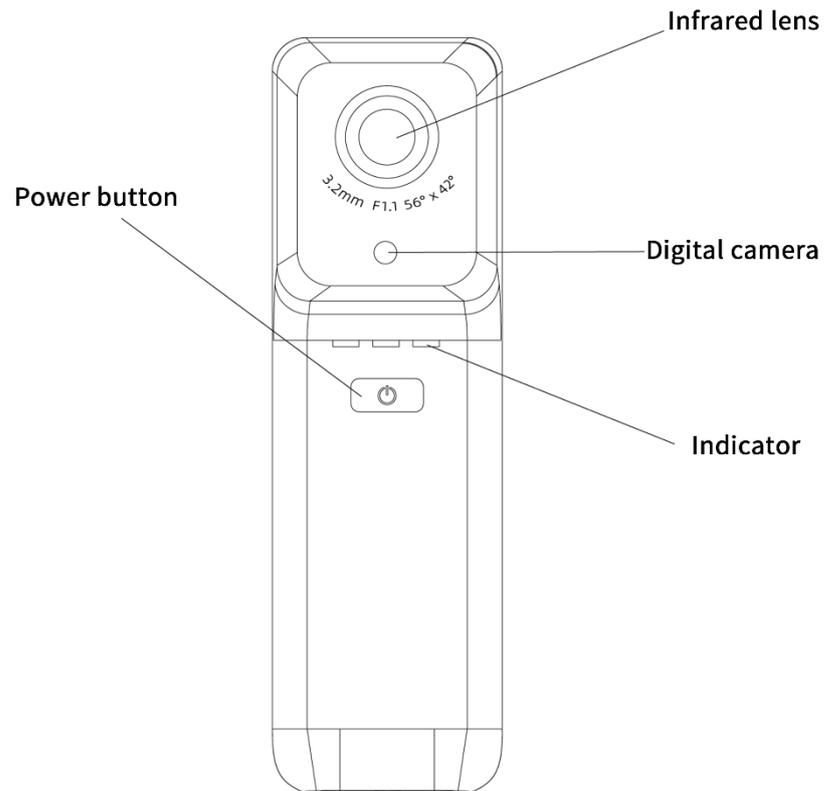
2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points.

For more information see: [www.recyclethis.info](http://www.recyclethis.info)

## 2. Thermal Camera Overview

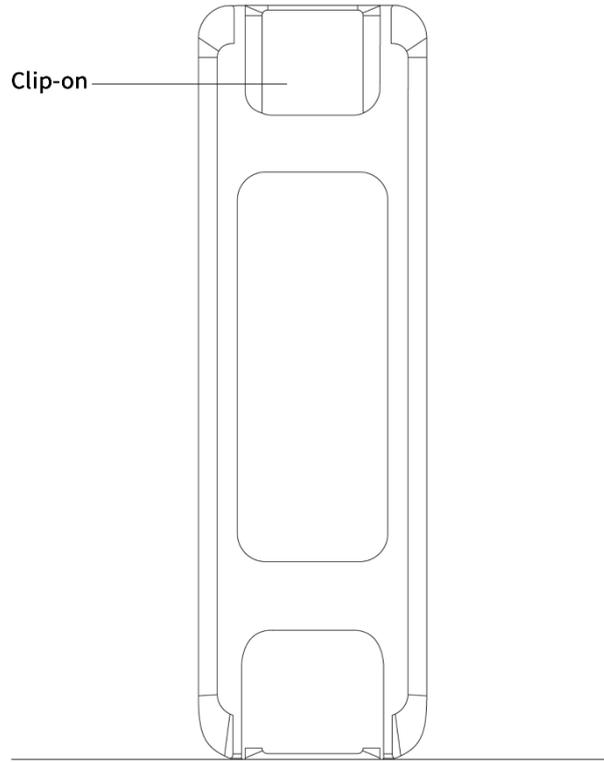
### 2.1. Front View

(Taking a specific model as an example)



## 2.2.Rear View

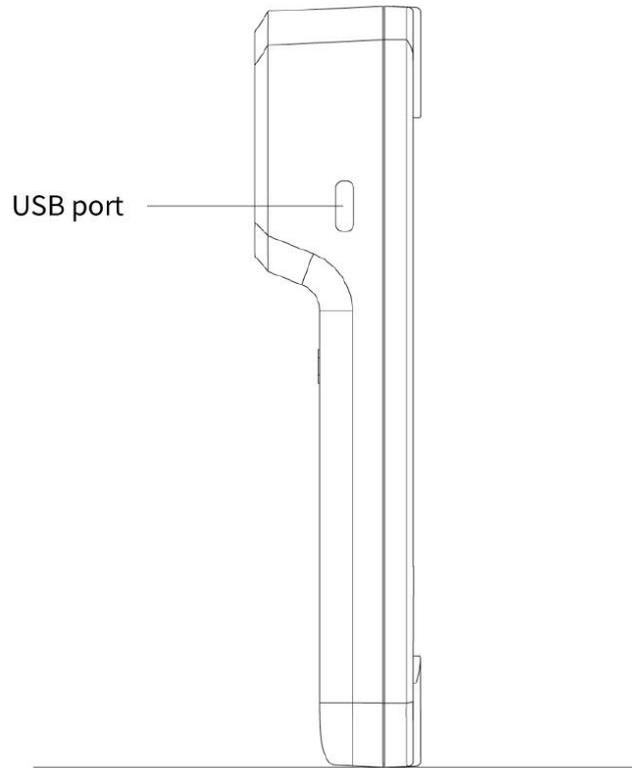
(Taking a specific model as an example)



| Name    | Function Description                             |
|---------|--|
| Clip-on | Stretchable, designed to clamp the smart devices |

### 2.3.Side View

(Taking a specific model as an example)



| Name     | Function Description                                     |
|----------|--|
| USB port | Connect the power adapter using a USB cable for charging |

## 2.4. Quick Start Guide

| Follow these steps:   |
|---|
| <b>1. Charging:</b> <ul style="list-style-type: none"><li>• 5V 2A power adapter and USB cable can be used to charge the device</li><li>• Please charge the device at room temperature</li></ul> |
| <b>2. Power-on</b> <p>Press and hold the power button  to turn on.</p>   |
| <b>3. Find the target</b> <p>Point the thermal camera at the object of interest.</p>  |
| <b>4. Capture image</b> <p>Use the smartphone App, click the Photo button to capture images, and click the Video button to record videos.</p>   |
| <b>5. PC Software Analysis</b> <p>Download the thermal camera client, transfer the data to a computer, run the client, and import the data for secondary analysis.</p>                          |
| <b>6. App Analysis</b> <p>Open the supporting App of the thermal camera, click into the Gallery, and select the images for secondary analysis.</p>  |

## 3. Description of Supporting Software

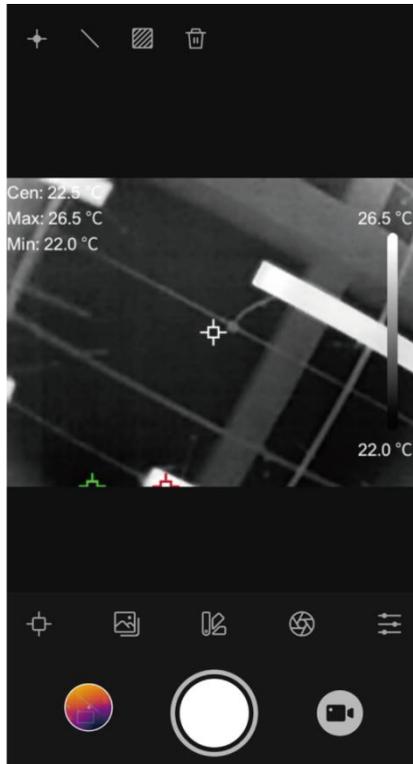
### 3.1. Software Introduction

The secondary analysis App for the thermal camera is fully compatible with the wireless thermal cameras. It supports various observation modes, including infrared, visible light, and dual-spectrum fusion. The App allows users to switch palettes, capture images, take videos, and perform custom point/line/box temperature analysis.

### 3.2. Device Connection

- (1) Press and hold the power button to turn on the device, and make sure that the Bluetooth function on your smartphone is enabled.
- (2) Open the App.
- (3) Click the device to be connected.
- (4) A pop-up box is displayed to remind the user whether they agree to join the network. Click Join to connect successfully (this step is only required for iPhone models).

### 3.3. Home Screen Introduction



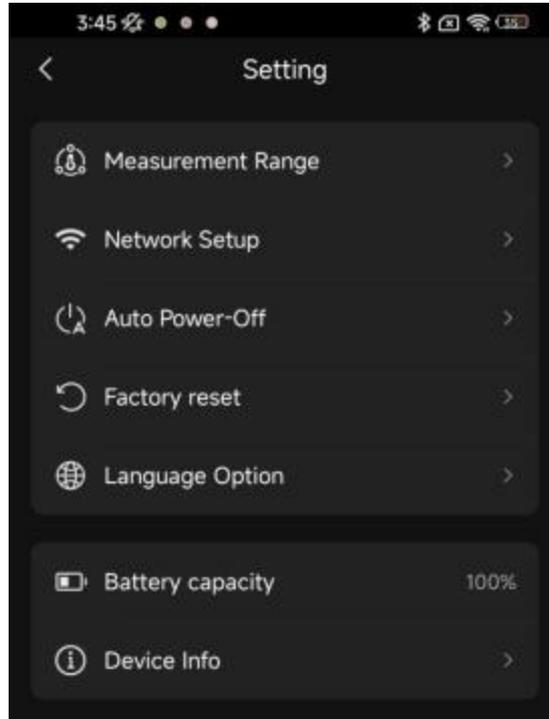
| Icon  | Function Name           | Function Description   |
|---|-------------------------|--|
|  | Preset template setting | Click to customize the drawing of points, lines, and boxes, or to delete |

|   |   |  |
|---|---|--|
|    | <p>Center, highest temperature point, lowest temperature point, isotherm switch</p> | <div style="display: flex; justify-content: space-around; align-items: center;">    </div> <p>Click to set the center, the highest and lowest temperature points displayed or closed in real time. When the corresponding temperature point is turned on, the upper left corner displays the temperature value in real time</p> <div style="text-align: center; margin-top: 20px;">  </div> <p>Click to quickly enable or disable the isotherm function</p> |
|   | <p>Image mode switching</p>   | <p>Support custom switching of five modes: infrared, visible light, dual-spectrum fusion, PIP and DDE (Only available for some models).</p>  |
|  | <p>Palette switching</p>  | <p>Support custom switching of iron hot, white-hot, black-hot, rainbow and other palettes</p>  |
|  | <p>Shutter</p>  | <p>Click to open the shutter and perform non-uniformity correction once</p>  |
|  | <p>Parameter Settings</p>   | <div style="text-align: center;">  </div> <p>Click to set the emissivity, ambient temperature and target distance</p>   |
|   |   | <div style="text-align: center;">  </div> <p>Click to set the temperature unit: Celsius, Kelvin and Fahrenheit</p>  |

|   |                        |  |
|---|------------------------|--|
|   |                        |  <p>Click to set the distance unit: meter and foot</p>  |
|    | <p>Gallery</p>         | <p>It supports deletion, downloading to local albums, forwarding and sharing. Image materials support secondary analysis (single-spectrum models are not supported).</p> <p>Click the icon  in the upper right corner to view the details of the corresponding images and videos.</p> <p>The report generated by secondary analysis can be viewed in the PDF screen.</p> |
|  | <p>Capture</p>         | <p>Click to capture the image and automatically save the current image to the Gallery</p>  |
|  | <p>Video Recording</p> | <p>Click to start video recording, click again to stop recording and automatically save it to the Gallery</p>  |

### 3.4. Setting

The Setting  interface is as follows:



| Icon  | Function Name     | Function Description   |
|---|-------------------|--|
|  | Measurement range | Low temperature range and high temperature range are optional; support automatic switching of temperature ranges.  |
|  | Temperature alarm | Support high and low temperature alarm settings. Alarm linkage can be enabled at the same time. When an alarm occurs, thermal images will be automatically captured. The capture interval and number of capture images can be set. Click Setting to apply. |

|  |                  |  |
|--|------------------|--|
|   | Isotherm         | Once enabled, high and low temperature values can be set. Click Setting to apply.  |
|   | Auto Power-Off   | Support custom settings of Off, 10 minutes and 20 minutes.   |
|   | Factory reset    | Click to restore factory settings. This operation can clear all device information.  |
|   | Battery capacity | Display the remaining power.   |
|  | Device Info      | View the device model, PN, SN and firmware version number. Click "Check for Updates" to upgrade the device to the latest version according to the prompts. |

## 4. Technical Data

### 4.1. IX2 AIR SE

| Technical Index                |                                  | IX2 AIR SE   |
|--------------------------------|----------------------------------|--|
| Technical Parameters           | Detector type                    | Uncooled VOx   |
|                                | Detector resolution              | 256x192  |
|                                | Pixel pitch                      | 12μm   |
|                                | Spectral range                   | 7.5 ~ 14 μm  |
|                                | Frame rate                       | 25Hz   |
|                                | Focal length                     | 3.2mm  |
|                                | F#                               | 1.1  |
|                                | FOV                              | 56°×42°  |
|                                | Focus mode                       | Fixed  |
|                                | Focus distance                   | 0.3m~infinity  |
|                                | IFOV                             | 3.75mrad   |
|                                | NETD                             | 40mK   |
|                                | Visible                          | /  |
|                                | Color Palettes                   | White hot, Black hot, Iron hot, Lava, Rainbow, Rainbow HC, Black red |
| Image mode                     | Infrared                         |  |
| Communication and Data Storage | Remote access and control        | It can connect to smart devices via Wi-Fi from up to 8 meters away.  |
|                                | Compatibility                    | Supports phones with iOS 12.0 or later and Android 9.0 or later.     |
|                                | Clamping width                   | Min.131mm/Max. 172mm   |
|                                | Capture mode                     | Video, static image  |
|                                | Image file format                | .jpg   |
|                                | Video file format                | MP4  |
|                                | Network protocols                | http, rtsp   |
|                                | Update method                    | OTA  |
| WiFi                           | IEEE 802.11 a/b/g/n/ac           |  |
| Measurement and Analysis       | Temperature measurement range    | -20~+150℃, +100~ +400℃ (auto switch available)                       |
|                                | Temperature measurement accuracy | ±2% or ±2℃ of the reading (the larger value shall prevail)           |

|                  |   |  |
|------------------|---|--|
|                  | Temperature measurement analysis  | Coldest and hottest points, center point, custom measurements (supports 3 custom points, 3 custom lines, and 3 custom boxes) |
|                  | Emissivity setting  | 0.01-1.00  |
|                  | Secondary analysis  | /  |
| Others           | Connection method   | Wi-Fi, USB Type-C  |
|                  | Battery   | 1050mAh  |
|                  | Charging time   | About 1.5h   |
|                  | Charging condition  | 0~+40°C<br>(Please do not charge the device in environments where temperatures exceed 40°C or fall below 0°C.)               |
|                  | Charging method   | USB Type-C   |
|                  | Battery life  | About 2h, with battery status indicator  |
|                  | Operating temperature range   | -10 ~ +50°C  |
|                  | Storage temperature range   | -20 ~ +60°C  |
|                  | RH  | 10%~90%(non-condensing)  |
|                  | Protection rating   | IP54   |
|                  | Drop test   | Drop from 2 meters   |
|                  | Certification   | CE/RoHS/DGM/WEEE/Calibration Certificate   |
|                  | Shock & Vibration   | 2G(IEC60068-2-6), 25G(IEC60068-2-29)   |
|                  | Dimension (L×W×H)   | 135.6mm×41mm×29.1mm  |
|                  | Net weight  | About 130g   |
|                  | Gross weight  | About 360g   |
| Package contents | Cablex1, Camera x1, QSG x1, Package contents x1, Quality certificate x1 |  |

## 4.2. IX2 AIR

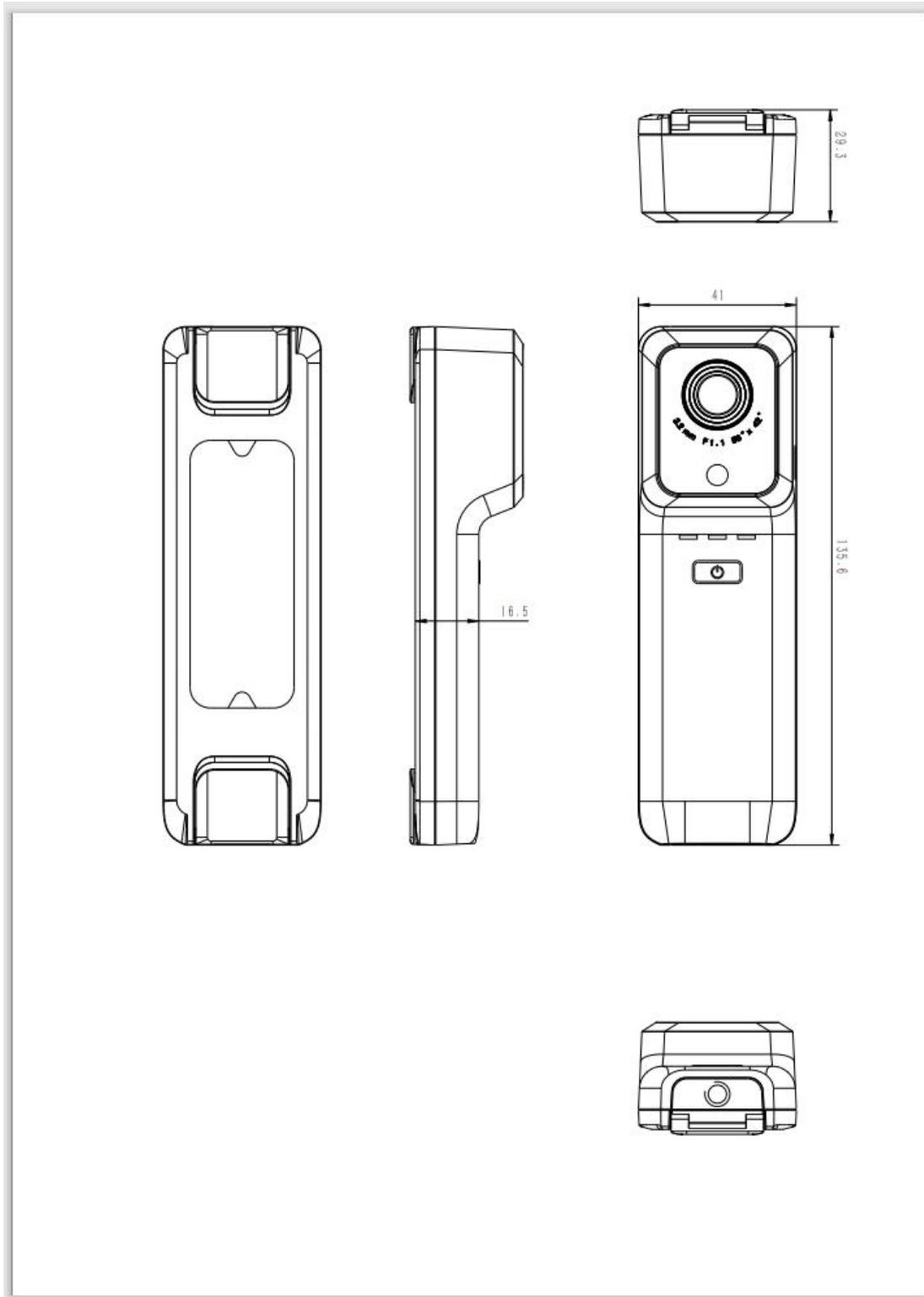
| Technical Index                |                                      | IX2 AIR  |
|--------------------------------|--------------------------------------|--|
| Technical Parameters           | Detector type                        | Uncooled VOx   |
|                                | Detector resolution                  | 256×192  |
|                                | Pixel pitch                          | 12μm   |
|                                | Spectral range                       | 7.5 ~ 14 μm  |
|                                | Frame rate                           | 25Hz   |
|                                | Focal length                         | 3.2mm  |
|                                | F#                                   | 1.1  |
|                                | FOV                                  | 56°×42°  |
|                                | Focus mode                           | Fixed  |
|                                | Focus distance                       | 0.3m ~ infinity  |
|                                | IFOV                                 | 3.75mrad   |
|                                | NETD                                 | 40mK   |
|                                | Visible                              | 2MP  |
|                                | Color Palettes                       | White hot, Black hot, Iron hot, Lava, Rainbow, Rainbow HC, Black red   |
| Image mode                     | Infrared, visible, PIP, fusion, DDE* |  |
| Communication and Data Storage | Remote access and control            | It can connect to smart devices via Wi-Fi from up to 8 meters away.  |
|                                | Compatibility                        | Supports phones with iOS 12.0 or later and Android 9.0 or later.   |
|                                | Clamping width                       | Min.131mm/Max. 172mm   |
|                                | Capture mode                         | Video, static image  |
|                                | Image file format                    | .jpg(with radiometric data)  |
|                                | Video file format                    | MP4  |
|                                | Network protocols                    | http, rtsp   |
|                                | Update method                        | OTA  |
| WiFi                           | IEEE 802.11 a/b/g/n/ac               |  |
| Measurement and Analysis       | Temperature measurement range        | -20~+150°C, +100~ +550°C (auto switch available)   |
|                                | Temperature measurement accuracy     | ±2% or ±2°C of the reading (the larger value shall prevail)  |
|                                | Temperature measurement analysis     | Coldest and hottest points, center point, custom measurements (supports 3 custom points, 3 custom lines, and 3 custom boxes) |

|                  |   |  |
|------------------|---|--|
|                  | Emissivity setting  | 0.01-1.00  |
|                  | Secondary analysis  | Supports app and PC software   |
| Others           | Connection method   | Wi-Fi, USB Type-C  |
|                  | Battery   | 1050mAh  |
|                  | Charging time   | About 1.5h   |
|                  | Charging condition  | 0 ~ +40°C<br>(Please do not charge the device in environments where temperatures exceed 40°C or fall below 0°C.) |
|                  | Charging method   | USB Type-C   |
|                  | Battery life  | About 2h, with battery status indicator  |
|                  | Temperature measurement range   | -10 ~ +50°C  |
|                  | Storage temperature range   | -20 ~ +60°C  |
|                  | RH  | 10%~90% (non-condensing)   |
|                  | Protection rating   | IP54   |
|                  | Drop test   | Drop from 2 meters   |
|                  | Certification   | CE/RoHS/DGM/WEEE/Calibration Certificate   |
|                  | Shock & Vibration   | 2G(IEC60068-2-6), 25G(IEC60068-2-29)   |
|                  | Dimension (Lx Wx H)   | 135.6mm x 41mm x 29.1mm  |
|                  | Net weight  | About 132g   |
|                  | Gross weight  | About 362g   |
| Package contents | Cablex1, Camera x1, QSG x1, Package contents x1, Quality certificate x1 |  |

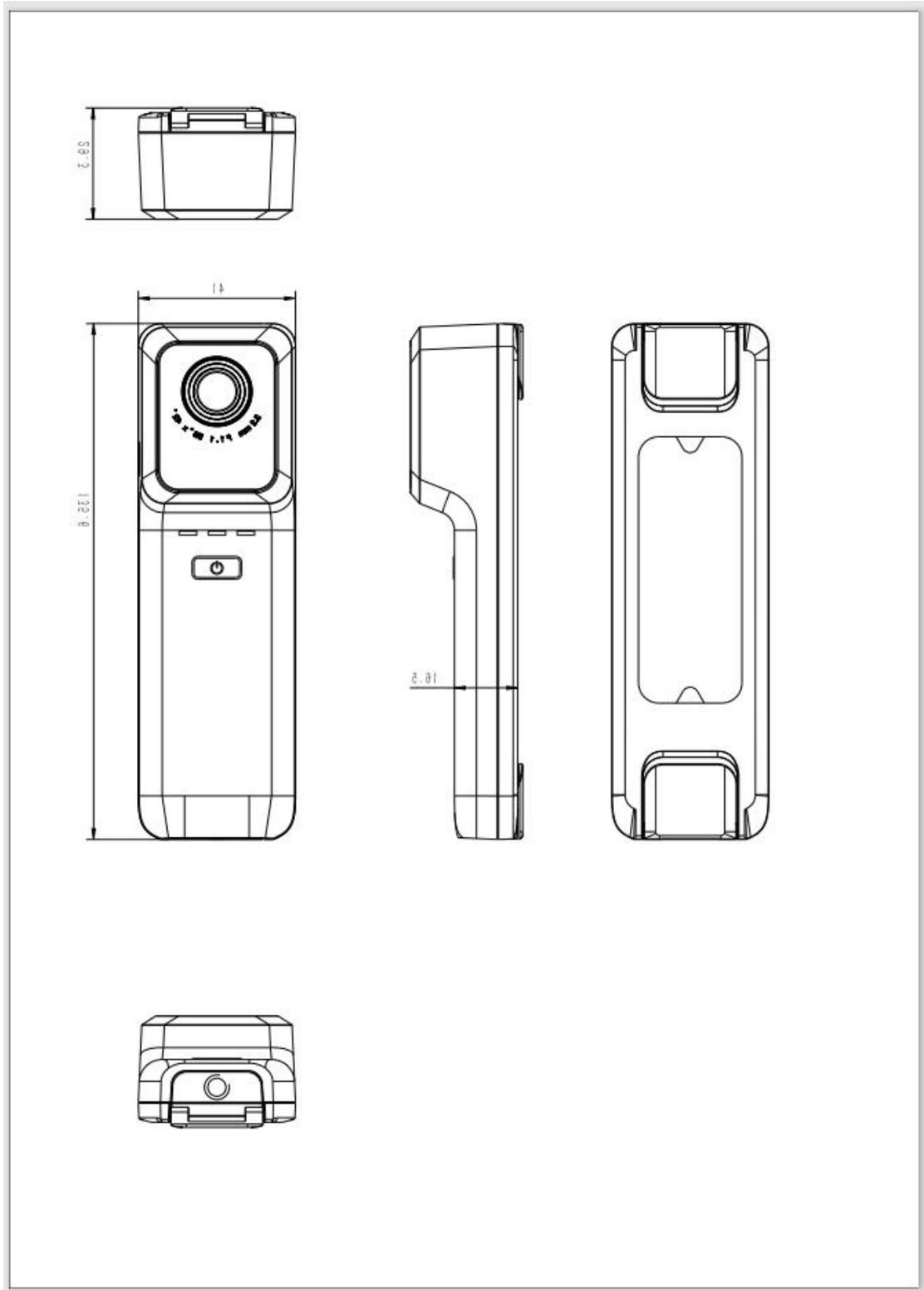
**\*indicates that it is unavailable for some models.**

## 5. Dimensions

### 5.1. IX2 AIR SE



## 5.2.IX2 AIR



## 6. Cleaning Thermal Camera

### 6.1. Cleaning Camera Housing, Cables and Other Items

| Camera Housing, Cables and Other Items |  |
|--|--|
| Liquids                                | One of the following liquids can be used.<br>1. Warm water<br>2. A Weak detergent solution   |
| Cleaning Tools                         | A soft cloth   |
| Cleaning Procedure                     | Please follow this procedure:<br>1. Soak a soft cloth in the liquid.<br>2. Twist the cloth to remove excess liquid.<br>3. Clean the camera parts with the cloth. |



#### CAUTION

Do not apply solvents or similar liquids to the camera, the cables, or other items. This can cause damage.

### 6.2. Cleaning Infrared Lens

| Cleaning Infrared Lens |  |
|------------------------|--|
| Liquids                | One of the following liquids can be used.<br>1. Commercial lens cleaning liquid with more than 30% isopropyl alcohol.<br>2. 96% ethyl alcohol (C <sub>2</sub> H <sub>5</sub> OH).                |
| Cleaning Tools         | cotton wool  |
| Cleaning Procedure     | Please follow this procedure:<br>1. Soak the cotton wool in the liquid.<br>2. Twist the cotton wool to remove the excess liquid.<br>3. Clean the lens one time only and discard the cotton wool. |



#### CAUTION

Do not clean the infrared lens too vigorously. This can damage the anti-reflective coating.

## Appendix A Emissivity of Commonly Used Materials

### (1) Metal

| Material                         | Temperature (°C) | Emissivity |
|----------------------------------|------------------|------------|
| <b>Aluminum</b>                  |                  |            |
| Polished aluminum                | 100              | 0.09       |
| Commercial aluminum foil         | 100              | 0.09       |
| Mild aluminum oxide              | 25~600           | 0.10~0.20  |
| Strong aluminum oxide            | 25~600           | 0.30~0.40  |
| <b>Brass</b>                     |                  |            |
| Brass mirror (highly polished)   | 28               | 0.03       |
| Brass oxide                      | 200~600          | 0.59~0.61  |
| <b>Chromium</b>                  |                  |            |
| Polished chromium                | 40~1090          | 0.08~0.36  |
| <b>Copper</b>                    |                  |            |
| Copper mirror                    | 100              | 0.05       |
| Strong copper oxide              | 25               | 0.078      |
| Cuprous oxide                    | 800~1100         | 0.66~0.54  |
| Molten copper                    | 1080~1280        | 0.16~0.13  |
| <b>Gold</b>                      |                  |            |
| Gold mirror                      | 230~630          | 0.02       |
| <b>Iron</b>                      |                  |            |
| Polished cast iron               | 200              | 0.21       |
| Machined cast iron               | 20               | 44         |
| Completely rusted surface        | 20               | 0.69       |
| Cast iron (oxidized at 600°C)    | 19~600           | 0.64~0.78  |
| Electrolytic iron oxide          | 125~520          | 0.78~0.82  |
| Iron oxide                       | 500~1200         | 0.85~0.89  |
| Iron plate                       | 925~1120         | 0.87~0.95  |
| Cast iron, heavy iron oxide      | 25               | 0.8        |
| Melted surface                   | 22               | 0.94       |
| Melted cast iron                 | 1300~1400        | 0.29       |
| Pure molten iron                 | 1515~1680        | 0.42~0.45  |
| <b>Steel</b>                     |                  |            |
| <b>Steel (oxidized at 600°C)</b> |                  |            |
| Steel oxide                      | 100              | 0.74       |

| <b>Material</b>                                      | <b>Temperature (°C)</b> | <b>Emissivity</b> |
|--|-------------------------|-------------------|
| Melted mild steel                                    | 1600~1800               | 0.28              |
| Molten steel   | 1500~1650               | 0.42~0.53         |
| <b>Lead</b>  |                         |                   |
| Pure lead (non-oxidized)                             | 125~225                 | 0.06~0.08         |
| Mildly oxidized                                      | 25~300                  | 0.20~0.45         |
| <b>Magnesium</b>                                     |                         |                   |
| Magnesium oxide                                      | 275~825                 | 0.55~0.20         |
| <b>Mercury</b>                                       |                         |                   |
| Mercury  | 0~100                   | 0.09~0.12         |
| <b>Nickel</b>  |                         |                   |
| Electroplating and polishing                         | 25                      | 0.05              |
| Electroplating without polishing                     | 20                      | 0.01              |
| Nickel wire  | 185~1010                | 0.09~0.19         |
| Nickel plate (oxidized)                              | 198~600                 | 0.37~0.48         |
| Nickel oxide   | 650~1255                | 0.59~0.86         |
| <b>Nickel alloy</b>                                  |                         |                   |
| Nickel-chromium (heat resistant) alloy wire (bright) | 50~1000                 | 0.65~0.79         |
| Nickel-chromium alloy                                | 50~1040                 | 0.64~0.76         |
| Nickel-chromium (heat resistant)                     | 50~500                  | 0.95~0.98         |
| <b>Silver</b>  |                         |                   |
| Polished silver                                      | 100                     | 0.05              |
| <b>Stainless steel</b>                               |                         |                   |
| 18/8 stainless steel                                 | 25                      | 0.16              |
| 304 (8Cr, 18Ni)                                      | 215~490                 | 0.44~0.36         |
| 310 (25Cr, 20Ni)                                     | 215~520                 | 0.90~0.97         |
| <b>Tin</b>   |                         |                   |
| Commercial tin plate                                 | 100                     | 0.07              |
| <b>Zinc</b>  |                         |                   |
| Oxidation at 400°C                                   | 400                     | 0.01              |
| Galvanized bright iron plate                         | 28                      | 0.23              |
| Grey zinc oxide                                      | 25                      | 0.28              |

**(2) Non-metal**

| <b>Material</b>              | <b>Temperature (°C)</b> | <b>Emissivity</b> |
|------------------------------|-------------------------|-------------------|
| Brick                        | 1100                    | 0.75              |
| Firebrick                    | 1100                    | 0.75              |
| Graphite (lamp black)        | 96~225                  | 0.95              |
| Enamel (white)               | 18                      | 0.9               |
| Asphalt                      | 0~200                   | 0.85              |
| Glass (surface)              | 23                      | 0.94              |
| Heat-resistant glass         | 200~540                 | 0.85~0.95         |
| Wall plaster                 | 20                      | 0.9               |
| Oak                          | 20                      | 0.9               |
| Carbon sheet                 | -                       | 0.85              |
| Insulating sheet             | -                       | 0.91~0.94         |
| Metal sheet                  | -                       | 0.88~0.90         |
| Glass tube                   | -                       | 0.9               |
| Coil type                    | -                       | 0.87              |
| Enamel product               | -                       | 0.9               |
| Enamel pattern               | -                       | 0.83~0.95         |
| <b>Capacitor</b>             |                         |                   |
| Rotary type                  | -                       | 0.30~0.34         |
| Ceramic (bottle type)        | -                       | 0.9               |
| Film                         | -                       | 0.90~0.93         |
| Mica                         | -                       | 0.94~0.95         |
| Flume type mica              | -                       | 0.90~0.93         |
| Glass                        | -                       | 0.91~0.92         |
| <b>Semiconductor</b>         |                         |                   |
| Transistor (plastic package) | -                       | 0.80~0.90         |
| Transistor (metal)           | -                       | 0.30~0.40         |
| Diode                        | -                       | 0.89~0.90         |
| <b>Transmitting coil</b>     |                         |                   |
| Pulse transmission           | -                       | 0.91~0.92         |
| Flat chalk layer             | -                       | 0.88~0.93         |
| Top ring                     | -                       | 0.91~0.92         |

---

| <b>Material</b>             | <b>Temperature (°C)</b> | <b>Emissivity</b> |
|-----------------------------|-------------------------|-------------------|
| <b>Electronic materials</b> |                         |                   |
| Epoxy glass plate           | -                       | 0.86              |
| Epoxy phenol plate          | -                       | 0.8               |
| Gold-plated copper sheet    | -                       | 0.3               |
| Solder-coated copper        | -                       | 0.35              |
| Tin-coated lead wire        | -                       | 0.28              |
| Copper wire                 | -                       | 0.87~0.88         |