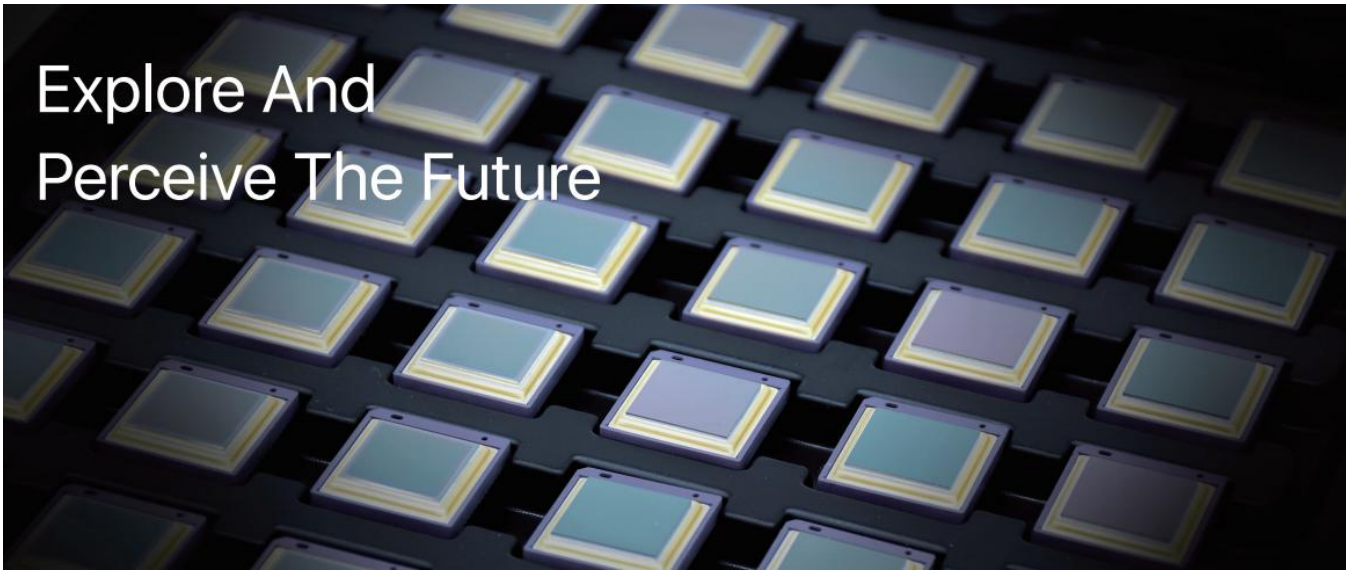
IX Series

Thermal Camera with Wireless Connectivity for Smartphones

User Manual

V1.0.0

IRay Technology Co., Ltd.



Introduction to IRay Technology

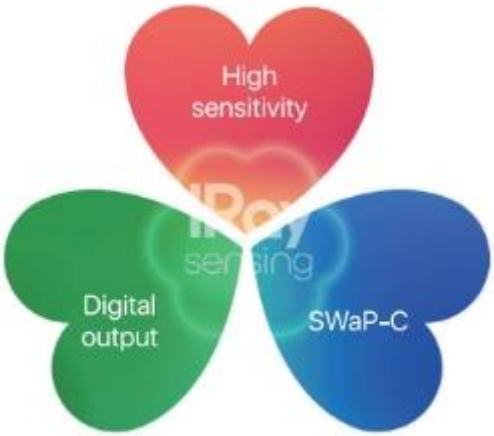
InfiRay®, Leader in Infrared Thermal Imaging

InfiRay® concentrates on developing infrared thermal imaging technologies and manufacturing relevant products, with completely independent intellectual property rights. InfiRay is committed to providing global customers with professional and competitive infrared thermal imaging products and solutions. The main products include infrared detectors, thermal imaging modules, night vision thermal cameras, and thermographic cameras for temperature measurement.

InfiRay® is famous for the unique "Ultra Clear" technology that provides high-definition images and ultra-low power consumption.

With 2000+ employees and R&D personnel accounts for 48% of all employees, 2030 intellectual property projects in terms of InfiRay® have been authorized and accepted, including those for integrated circuit chips, MEMS sensors design and manufacture, Matrix IV Image Algorithms, and AI-Temp Intelligent Accurate Temperature Measurement Algorithms. （The statistic data is up to April,2023）

InfiRay® products have been applied in various fields, including outdoor night vision, industrial thermography, security and firefighting, epidemic prevention, smartphone, AI, machine vision, and auto-piloting.



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1 Legal Disclaimer

1.1 Legal Disclaimer

The thermal cameras manufactured by IRAY TECHNOLOGY are warranted for a period of two-year and the accessories are warranted for a period of three-month form the delivery date of the original purchase, provided such products have been under normal storage, use and maintenance.

This warranty extends only to the original purchaser and is not transferable. It is not applicable to any product which has be subjected to misuse, neglect, accident or abnormal conditions of operation.

In the case of a defect in a product covered by this warranty the product must not be further used or maintained in order to prevent additional damage. The purchaser shall promptly report any defect to IRAY TECHNOLOGY or this warranty will not apply.

IRAY TECHNOLOGY will, at its option, repair or replace any such defective product free of charge if, upon inspection, the product or accessories prove to be defective, the user can contact with after-sales service department of IRAY TECHNOLOGY within the said warranty period.

1.2 Copyright

This manual is used as a guide. The photos, graphics, diagrams and illustrations provided in the manual are only used to explain, which may be different from the specific product. The real product shall prevail. We try our best to make sure the contents in this manual are accurate. We do not provide any representations or warranties in this manual.

IRAY TECHNOLOGY reserve the right to update the manual. If you need the latest version of this manual, please contact us. It is recommended that you use this manual with the guidance of professionals.

1.3 Quality Assurance

The Quality Management System under which these products are developed and manufactured has been certified in accordance with the ISO9001 standard.

We reserve the right to make changes and improvements on any of the products without prior notice.

2 Safety Information

WARNING

Applicability: Class B digital devices.

1. 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.

2. Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: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.

Frequency range of WLAN radio module: 5.15~5.85GHz.
Maximum power of WLAN radio module: 13dBm.(Only for EU)
IRay Technology declares that the radio equipment type IX2 is in compliance with Directive 2014/53/EU, 2011/65/EU.

To comply wth RF exposure requirements, a minimum separation distance of 0mm must be maintained between the user's body and the handset , including the antenna.

Make sure that you read all applicable MSDS (Material Safety Data Sheets) and warning labels on containers before you use a liquid.

It is prohibited to place the product in a high temperature above 60 °C or in a low temperature below-20 °C.

It is recommended to charge the device at room temperature and while it is powered off. Charging the device in high-temperature environments exceeding 40°C or low-temperature environments below 0°C is prohibited. The device supports charging while in operation.
The device is prohibited from operating in environments exceeding 50°C or below -10°C.
The relative humidity for device use is 10% to 95%, non-condensing.
Unauthorized disassembly or modification of the thermal camera is prohibited.

CAUTIONS
1. Do not use the product under conditions that doesn't match the environmental requirements. For specific use environment requirements, see the product parameter table.
2. Do not apply solvents or equivalent liquids to the camera, the cables, or other items.
3. Be careful when you clean the infrared lenses. The lens has an anti-reflective coating which is easily damaged. Damage to the infrared lens can occur with too much force or cleaning with rough objects such as tissues.
4.No matter there is a lens cover or not, do not point the infrared thermal camera towards strong light or equipment with laser radiation. This will affect the accuracy of the thermal camera and even damage the detector in the thermal camera.

3 Notice to user

3.1 Calibration

IRAY TECHNOLOGY recommends that you verify your calibration yearly in order to ensure accuracy. You can verify the calibration through IRAY TECHNOLOGY or third-party organizations.

3.2 Accuracy

For very accurate results, we recommended that you wait 5 minutes after you have started the camera before measuring a temperature.

3.3 Video Teaching

You can search for mount and use videos from our website: www.infiray.com.

3.4 Documentation Updates

Our manuals are updated several times per year, and we also issue product-critical notifications of changes on a regular basis. Please visit our website to access the latest manuals and notifications.

3.5 Scope of Application

This manual is applicable for all products in a range, which means that parts of the manual may not apply to a particular model.

3.6 Disposal of Electronic Waste

2012/19EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For properrecyclng, return this product to your local supplier upon the purchase of equivalentnew equipment, or dispose of it at designated collection points.For more information see: www.recyclethis.imnfo

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

4 Customer Help

4.1 FAQ

You can find answers to FAQ about this model on the service support page of our official website.

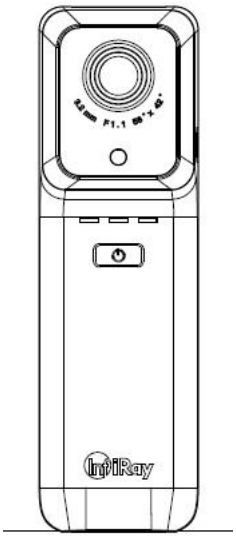
4.2 Download

You can download the following contents from our website: www.infiray.com

- Product Documentation
- Client Software
- How-to Videos

5 Camera Overview

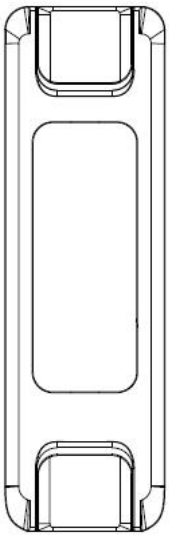
5.1 Front View



No.	Name
1	Infrared lens
2	Digital camera
3	LED indicator
4	Power button

Table 5.1 Component Introduction

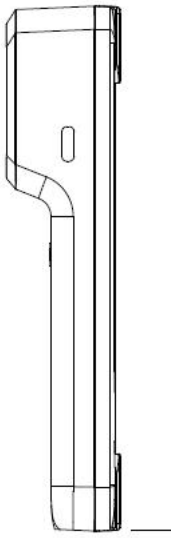
5.2 Rear View



Name	Function Description
Back clip	Stretchable, attaches to the smart device

Table 5.2 Component Introduction

5.3 Side View



Name	Function Description
USB port	Charge using a USB cable connected to a power adapter.

Table 5.3 Connector

5.4 Quick Start Guide

Please follow the below steps:
1.Charge: ● You can use a 5V 2A power adapter and a USB cable to charge the device. ● Please charge the device at room temperature.
2.Power on Press and hold the power button to turn on the device.
3. Find the target Aim the thermal camera at the object of your interest.
4. Capture image Using the mobile app, simply click the photo button to capture images, and click the video button to record videos.
5.PC software analysis Download the thermal camera client, transfer data to the PC, start the client, and import data for secondary analysis.
6.APP analysis Open the app for the thermal camera, go to the gallery, select the image, and you can proceed with the secondary analysis.

6 Software Descriptions

6.1 Brief Introduction

"IR Discovery" is a secondary analysis app designed by IRay Technology for thermal imaging devices. It is also compatible with the IX series of products. This app allows you to view images in four different modes, including infrared, visible light, dual-spectral fusion, and PIP on your smartphone screen. It offers features such as color palette switching, capturing photos and videos, and custom temperature analysis using spots, lines, and boxes.

6.2 Device Connection

(1) Long-press the power button to turn on the device and ensure that the Bluetooth function on your phone is enabled.

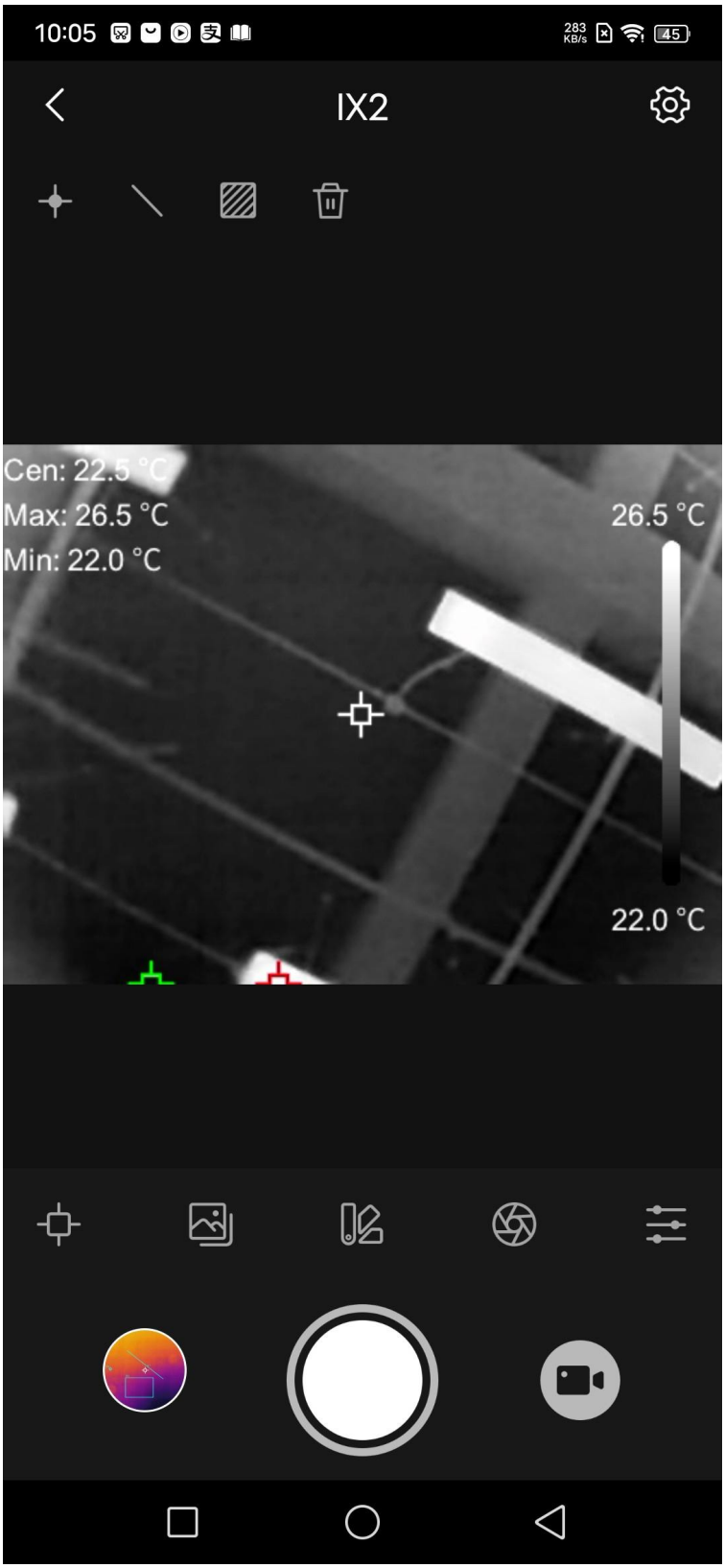
(2) Open the "IR Discovery" app.

(3) Click on the device you want to connect to.

(4) A pop-up message will appear, asking, "IR Discovery" wants to join the wireless network "IX2_123456", cancel or join. Click "Join" to successfully establish the

connection.

6.3 Home Screen Introduction

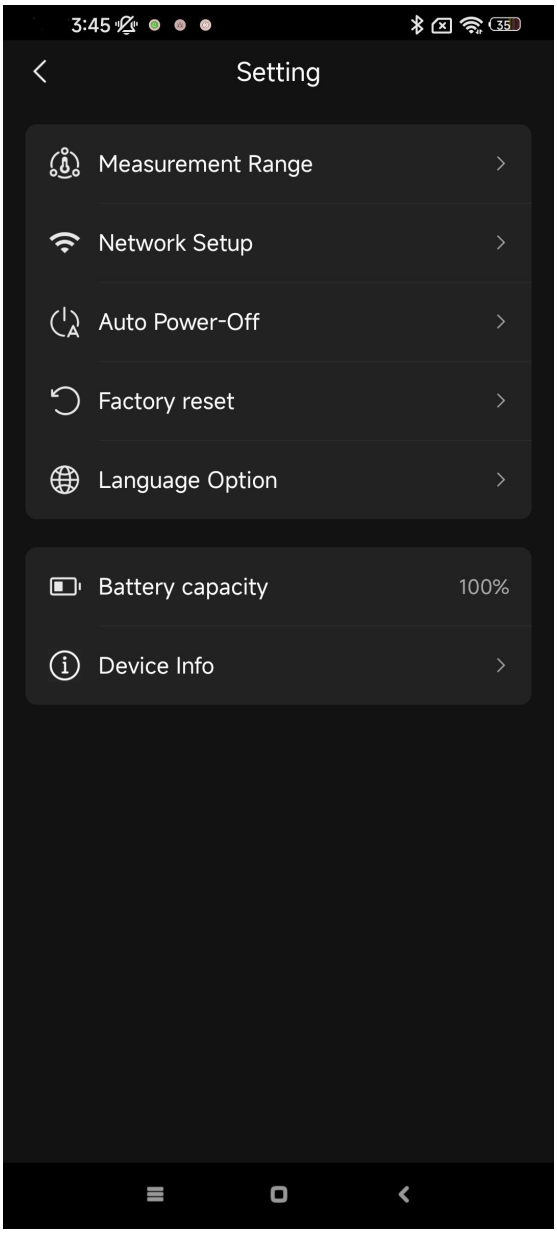


No.	Name	Description
	Return	Click *Return* to return to Device Connection Interface.
	Model	Show device models
	Settings	You can click to perform temperature range settings, network configurations, and view the remaining device battery level and product information.
	Preset Template Settings	Click to customize drawing spots, lines, or boxes or to perform deletions.
	Center spot, Max. spot, Min. spot	Click to configure the center spot and enable or disable the display of the highest and lowest temperature spots. When the respective temperature spots are enabled, real-time temperature values are displayed in the top left corner of the screen.
	Image Mode	Supports custom switching between four modes: Infrared, Visible Light, Dual-spectral Fusion, and PIP.
	Color Palettes	Supports custom switching between several color palettes modes, such as Iron, White Hot, Black Hot, Rainbow, and more.
	Shutter	Click to perform shutter correction(a single non-uniformity correction).
	Parameter Settings	 Click to configure emissivity, ambient temperature, and target distance.
		 Click to configure temperature unit settings: Celsius, Kelvin, Fahrenheit.
		 Click to configure distance unit settings: meters, feet.
	Gallery	Click to view captured image and video materials for secondary analysis.
	Image Capture	Click to capture images, automatically saving the current screen image to the gallery.
	Video Capture	Click to start video recording, and click again to stop recording, with the video automatically saved to the gallery.

Table 6.3 Screen Elements

6.4 Settings

The settings interface is as follows:



-  Measurement Range: low-temperature mode and high-temperature mode. It supports automatic switching of temperature modes.
-  Network Setup: Supports customizing the network name.
-  Auto Power Off: Supports customizing options for Off, 10 minutes, and 20 minutes.

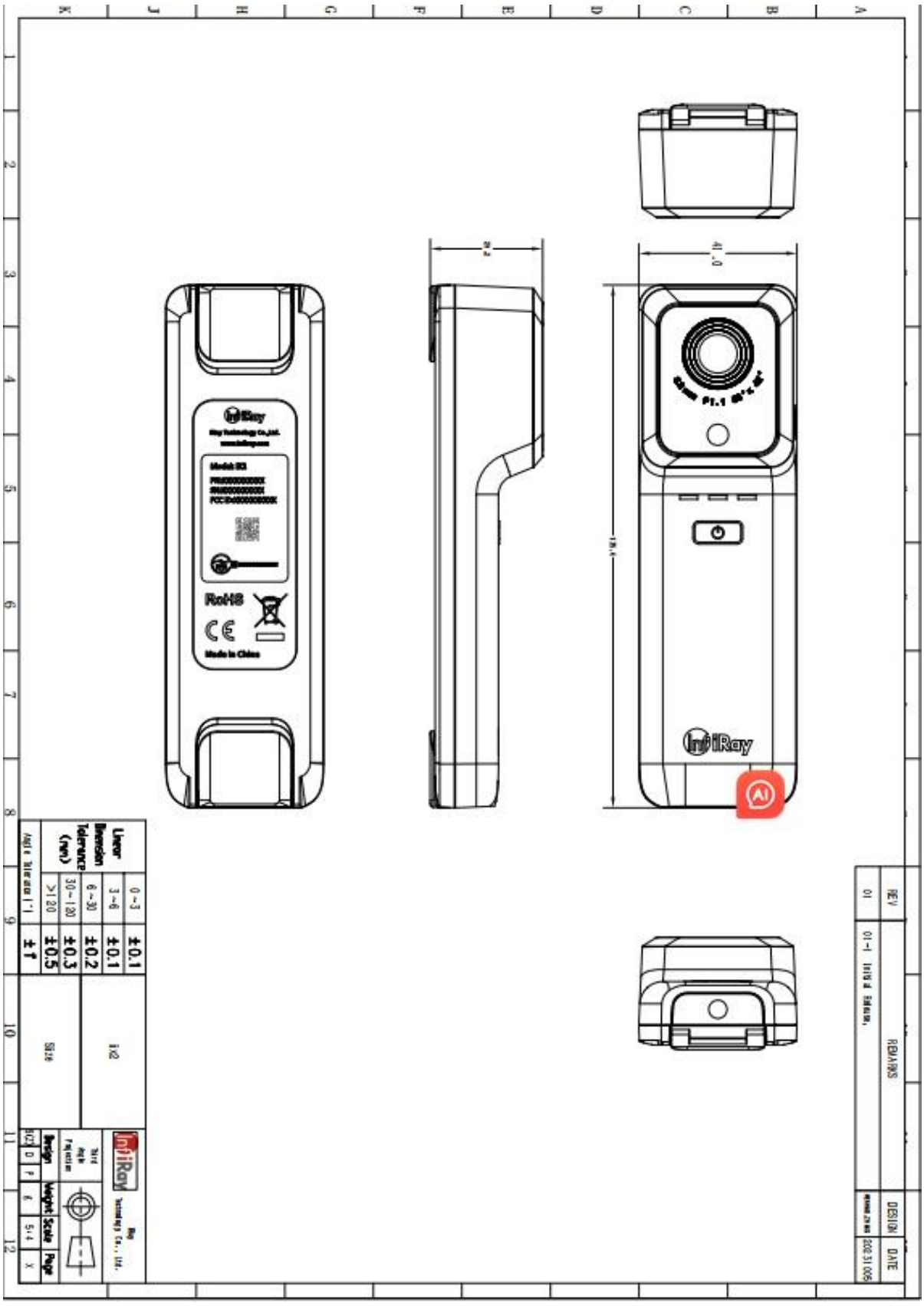
-  Factory Reset: Click to perform a factory reset, and after the factory reset, device information will be cleared.

-  Language Option: 13 languages such as English, Russian, Polish, etc.

-  Battery Capacity: Display of remaining battery capacity.

-  Device Information: You can view the device model, PN, SN, and firmware version number.

7 Structural Drawings



8 Download Software and Update Firmware

8.1 Download IR Discovery for Android and iOS

1.For iOS:Open the App Store, search for "IR DISCOVERRY" to obtain the app.

2.For Android: scan the QR code to download.

8.2 Download PC Software

1.Log in to the IRay official website: www.infiray.com, go to *Support -> Product Support Center*, select *IndustrialThermal Cameras* in the Quick Search, choose *Handheld Thermal Camera*, locate the *IX Series*, find the corresponding model, click to enter the *Client*, and you can download the PC client “IR Discovery.exe”, then follow the instructions to install IR Discovery.

2. After installation, there is no need to restart your computer. You can preview images and videos captured by the device, perform secondary analysis of infrared images, and generate test reports.

8.3 Update Firmware

If the device requires a firmware update:

1. Download the latest firmware within the "IR Discovery" app, and proceed with the update once the device is successfully connected.

2. Call the customer service hotline at +86-400-883-0800, and follow the guidance of FAE to perform the update.

9 Cleaning Thermal Camera

9.1 Cleaning Camera Housing, Cables and Other Items

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

CAUTION

Never apply solutions or similar liquids to the camera, cables or other parts directly to avoid damage to the equipment.

9.2 Cleaning Infrared Lens

Cleaning Infrared Lens	
Liquids	One of the following liquids can be used. 1.Commercial lens cleaning liquid with more than 30% is opropyl alcohol. 2.96% ethyl alcohol(C_2H_5OH).
Cleaning Tools	Absorbent cotton
Cleaning Procedure	Please follow this procedure 1.Soak the absorbent cotton in the liquid. 2. Squeeze the absorbent cotton to squeeze out the excess cleaning solution. 3. Gently wipe the lens with absorbent cotton, which can be used only once, do not reuse.

CAUTION

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

Worth comes from Service

Customer Service:

+86-400-883-0800

24H Hotline:

+86-400-998-3088

Customized Services

Visit official website http://www.infiray.com for more information