

特别声明 :说明书版本将会在产品技术改进后更新。

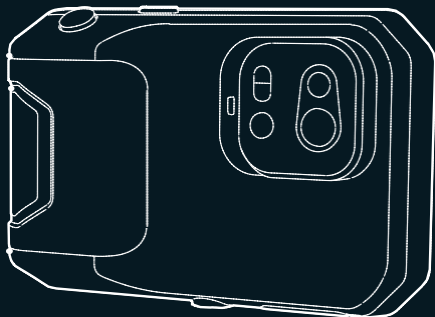
Special statement :the version of the Guide will be updated after the technical improvement of the product.

POCKET-SIZED THERMAL CAMERA

口袋红外热像仪

QUICK START GUIDE

快速操作指南



感谢您购买本产品，请在使用前阅读此说明书，阅读后请小心收藏，以备日后查阅。
图片仅供参考，产品以实物为准。

Thank you for choosing our product. Please thoroughly go through user manual before operation and keep it well for future reference. We hope that the product can meet your expectation.

FCC WARNING

This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

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.
- The rating information is located at the bottom of the unit.

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IMPORTANT

This is a general manual covering multiple thermal cameras in one product line, so some functions and descriptions in the manual may not apply to specific thermal camera.

PRECAUTIONS

Please always follow the following precautions strictly:

- Keep the device as stable as possible to prevent shaking violently.
- Do not use the device at operating temperatures not allowed nor place it in an environment at a storage temperature not allowed.
- Do not align the device with strong thermal emitters, such as the sun, lasers and spot welders.
- Do not expose the device in a dusty or moist environment. Prevent water from splashing onto the device when using it in an environment with water.
- Place the device and all its accessories into a special packing box when not using it.
- Do not block any hole on the device.
- Do not knock at, throw or vibrate the device or its accessories so as to prevent damages.
- Please do not disassemble the device so as to prevent it from being damaged possibly and you from losing warranty.
- Do not use the device in an environment exceeding its operating temperature so as to prevent possible damages.
- Do not apply dissolvable or similar liquid to the device and cables so as to prevent possible damages.

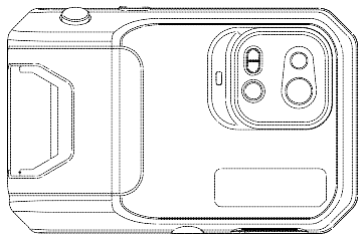
- The device is powered by a lithium-ion battery so users must follow the following precautions strictly in order to use it safely:
 - a) Never try to open or dismantle the battery.
 - b) Do not place the battery in a high temperature environment or nearby a high temperature object.
 - c) Do not short-circuit the battery.
 - d) Do not put the battery in a moist environment or in the water.
 - e) Once the liquid leaked from the battery enters eyes, flush the eyes with clear water immediately and take corresponding medical cares.
 - f) Please charge the battery as introduced in the manual and follow the charging steps and precautions. Wrong charging may heat or damage the battery or even cause injuries.
- Wipe the device as described below:
 - a) Non-optical surfaces: Use clean and soft cloth to wipe non-optical surfaces of the thermal imager when necessary.
 - b) Optical surfaces: Please avoid staining the optical surface of lens when using the thermal imager, especially avoid touching the lens with hands since the sweat on the hands may leave traces on the lens and corrode the optical coating on the lens surface. When the optical lens surface is stained, wipe it with special lens wiping paper.

Precautions for use of batteries:

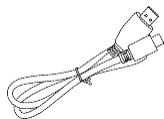
- The battery can be charged repeatedly. However, the battery is a vulnerable part. If standby time of the device is largely shortened, please replace its battery with an original one provided by the company.
- If the device operates for a long time especially at high temperatures, its surface will warm up normally. When it's hot, please stop charging it and move it to the shade. Please avoid touching hot surfaces for a long time.
- When charging the device, it's suggested to use original batteries and charge cables provided by the company.
- Battery charging time varies with temperatures and its use.

- When the battery level is low, the system will give a low battery level prompt.
- When the battery level is too low, the system will be turned off automatically.
- If the device gives no response when the power button is pressed, the battery has been run out and the device can be launched only after being charged with an original charger for more than 10 minutes.

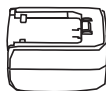
CHAPTER 1 LIST OF ITEMS



Thermal camera



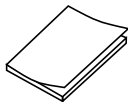
USB Cable



Power Adapter



Plug



Manual



Wrist Strap

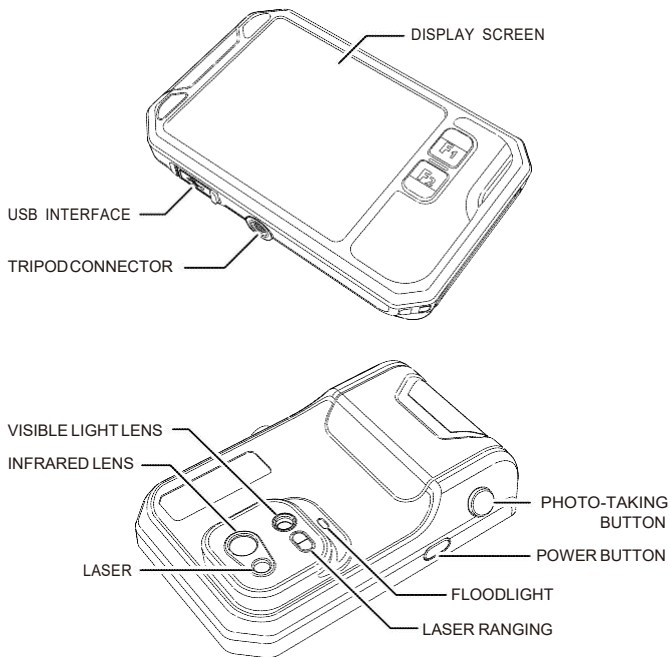


Flexible package



Download Card

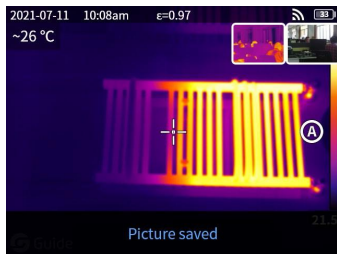
CHAPTER 2 APPEARANCE



CHAPTER 3 BASIC OPERATIONS


3.1 Photo and album

3.1.1 Photo










Press the "Shutter" button in the real-time preview interface, "Photo saved" appears and a 2s thumbnail is displayed in the top right corner.

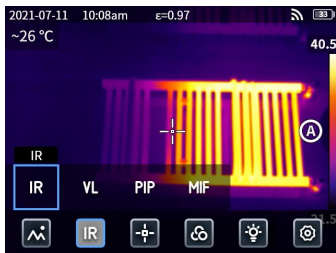
3.1.2 Photo view



1. Click the thumbnail in the top right corner for a quick view of the photo.
2. Click **•••** to open the hidden status bar, and then click  to enter the album to view the photos in local album.

3.1.3 Photo operation

1. Selecting photos: Enter the album and click "Select" to open the selection menu, and then click  to select all /deselect all the photos. Click  to upload the selected photos to the cloud service and click  to delete the photos.
2. Photo zoom: Enter the album and zoom the photo by double clicking the date of the photo or with two fingers.
3. Photo details: Enter the album and click a photo to enter the details, and then click  the top right corner to view the shooting time, date and emissivity of the photo; click  to view the visible photos; click  for intelligent calibration and manual calibration; click  to delete the photo.

3.2 Mode switchMode switch



Click  to open the hidden status bar and then click  to open the mode options:

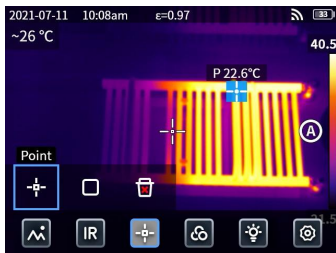
select "IR", the photo mode switches to infrared;




select "VL", the photo mode switches to visible light;

select "PIP", the photo mode switches to PIP;

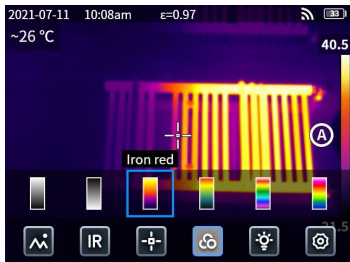
select "MIF", the photo mode switches to multispectral image fusion.


3.3 Object analysis



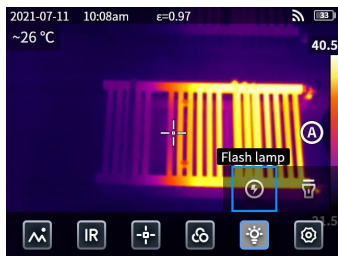
Click  to open the hidden status bar, and then click  to add a point analysis object and click  to add a rectangular analysis object. Long press the rectangular analysis object to set the maximum temperature, the minimum temperature, the average temperature, the area and the center of the object and to delete the object.


3.4 Pseudo color



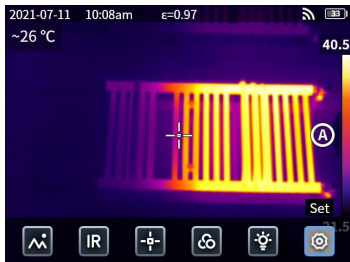
Click **•••** to open the hidden status bar and then click  to open the pseudo color menu to switch different pseudo colors.


3.5 Light





Click **•••** to open the hidden status bar and then click  to select the flashlight or floodlight separately or simultaneously.

3.6 Settings



Click **•••** to open the hidden status bar and then click  to enter the settings menu.

3.7 F1/F2 accessibility buttons

1. Enter the settings menu and select F1/F2 to set the commonly used functions.
2. If F1/F2 is set as laser ranging, turn on the “Laser ranging” in the settings menu and back to the real-time preview interface and click F1/F2, the device will emit a red laser dot and display the distance measured in the center of the screen.
3. If F1/F2 is set as intelligent calibration, turn on the “Save and calibrate intelligently (O)” in the settings menu and back to the real-time preview interface and press the shooting button to freeze the photo, then click  for intelligent calibration and click  for manual calibration.

3.8 Cloud service

When you are in a severe environment and cannot discover and report the faults in a timely manner or you need more professional engineer to help you analyze the problem, you can upload your photos to the cloud server at any time and other engineers can download the photos to analyze the problem.

Steps:

1. Enter the settings menu.
2. Select “Cloud service” and connect to wifi, you need to register an account for the first time (mobile phone number or e-mail).
3. Login in to the cloud server after registration with the prompts.
4. Enter the album and select “Cloud album”, you can synchronize local photos.
5. You can open the infrared analysis software and login in your cloud account in a PC to download the photos to for analysis and feedback.

CHAPTER 4 OTHERS

Emissivity of common objects

| Material | Emissivity |
|-----------------|------------|
| Wood | 0.85 |
| Water | 0.96 |
| Brick | 0.75 |
| Stainless steel | 0.14 |
| Adhesive tape | 0.96 |
| Aluminum plate | 0.09 |
| Copper plate | 0.06 |
| Dark aluminum | 0.95 |
| Human skin | 0.98 |
| Asphalt | 0.96 |
| PVC material | 0.93 |

| Material | Emissivity |
|---------------|------------|
| Black paper | 0.86 |
| Polycarbonate | 0.8 |
| Concrete | 0.97 |
| Copper oxide | 0.78 |
| Cast iron | 0.81 |
| Rust | 0.8 |
| Gypsum | 0.75 |
| Paint | 0.9 |
| Rubber | 0.95 |
| Soil | 0.93 |

CHAPTER 5 ANALYSIS OF COMMON PROBLEMS

| Symptom | Cause | Measure |
|---------------------------------------|---|--|
| Boot failure | Low battery | Reuse battery after charging |
| | Plug of external power source is not inserted properly | Pull the plug and reinsert it in proper place |
| | Battery life expires | Replace with new battery |
| IR image is not clear | Lens have misted up or been polluted | Clean lens with specialized equipment |
| Visible light image is not clear | Surrounding environment is too dark | Provide lighting |
| | There is vapor in front of visible light or the visible light is polluted | Clean the front-end of visible light with specialized equipment |
| Temperature measurement is inaccurate | Set the relevant parameters for temperature measurement incorrectly. | Change parameter setting or restore the default parameters. |
| | Temperature measurement starts immediately after start-up | To ensure temperature measurement accuracy, we recommend you to start temperature measurement 5-10 minutes after start-up |
| | Long time no calibration | To ensure accurate temperature measurement result, we recommend you to send back the thermal imager for calibration once a year. |

重要说明

本手册为通用手册，涵盖一个产品线中的多款热像仪，这意味着某些功能和说明并不适用于您特定型号的热像仪。

⚠ 注意事项

在任何时候都请严格遵守下列注意事项：

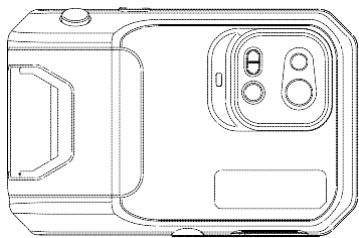
- 在使用设备时请尽量保持稳定，避免剧烈晃动。
- 不要在超出设备许可的工作温度或储存温度环境中使用或存放仪器。
- 不要将设备直接对准很高强度的热辐射源，例如太阳、激光器、点焊机等。
- 不要将设备暴露在灰尘或潮湿的环境中。在有水的环境中使用时，应避免水溅到仪器上。
- 当不使用本设备时，请将仪器和所有配件放置在专用包装箱内。
- 不要堵塞设备上的孔。
- 不要敲打、扔掷或震动仪器和配件，以免造成损坏。
- 请勿自行拆卸本机，这有可能造成设备损坏，并丧失保修权利。
- 请不要在超过设备使用工作温度的环境下使用该设备，这可能会造成设备的损坏。
- 不要将有溶解性或类似的液体用于设备、线缆，这可能会导致设备的损坏。
- 本设备使用锂离子电池，为了安全使用电池，必须严格遵守下列事项：
 - a) 在任何时候都不要尝试打开或拆解电池。
 - b) 不要将电池置于高温环境或靠近高温物体。
 - c) 不要使电池的正负极短路。
 - d) 不要将电池置于潮湿环境或水中。
 - e) 一旦电池发生泄露导致液体进入人眼，应该立刻用清水冲洗眼睛，且进行医学护理。
 - f) 请按照本手册中说明的方法为电池充电，并请遵照充电步骤和注意事项。错误的充电会导致电池变热，损坏甚至造成人体受伤。

- 擦拭本设备时请遵照以下措施：
 - a) 非光学表面 :在必要时可以使用干净柔软的布擦拭热像仪的非光学表面。
 - b) 光学表面 :使用热像仪时请避免弄脏镜头的光学表面 ,特别要避免用手触碰镜头 ,因手上的汗渍会在镜头玻璃上留下痕迹且可能会腐蚀玻璃表面的光学镀膜层 ,当光学镜头表面受到污染时 ,使用专业镜头纸小心的擦拭。

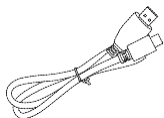
电池使用注意事项:

- 电池可以反复充电 ,但电池属于易损耗品 ,如发现设备的待机时间大幅度降低 ,请使用本公司提供的原装电池进行更换。
- 设备长时间工作 ,尤其在高温环境下 ,可能出现表面发热的情况 ,这属于正常现象 ,感觉发烫时 ,请停止充电同时将设备移至阴凉处 ,请避免长时间接触发烫的设备表面。
- 为设备充电时 ,建议您仅使用本公司提供的原装电池 ,充电线。
- 电池充电时间会随温度条件和电池使用状况而变化。
- 当电池电量较低时 ,系统会弹出低电提示。
- 当电池电量过低时 ,系统会自动关机。
- 若按下电源键 ,设备没有任何反应 ,表明电池电量已耗尽 ,需要使用原装充电器充电 10%以上才可以启动设备。

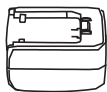
第一章·物品清单



热像仪



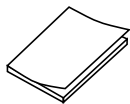
USB 数据线



适配器



插头



说明书



软包

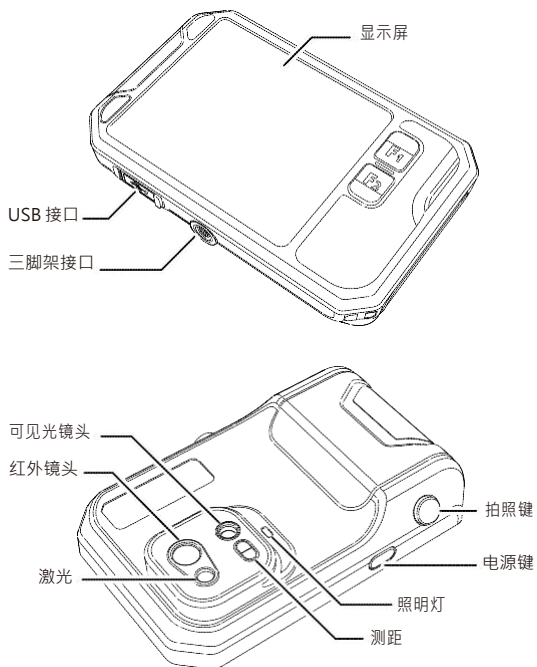


腕带



资料下载卡

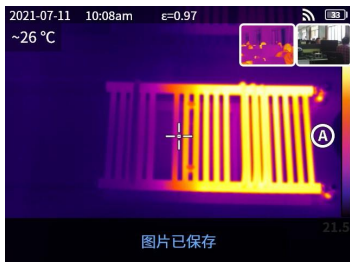
第二章·产品外观



第三章 · 基本操作



3.1 拍照和图库

3.1.1 拍照










在实时预览界面下，按下拍照键，提示图片已保存，同时右上角显示 2s 图片缩略图。

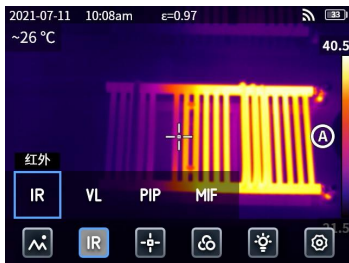
3.1.2 图片查看

1. 拍照后，点击右上角的图片缩略图，可快速查看图片。
2. 点击  按钮，打开隐藏的状态栏，再点击  进入图库，在本地相册中可查看拍摄的图片。

3.1.3 图片操作

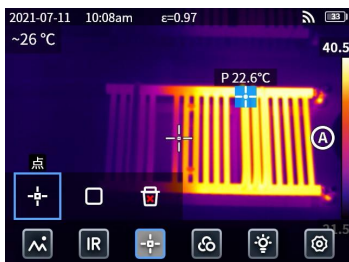
1. 图片的选择：进入相册，点击“选择”按钮，打开选择菜单，点击  按钮，可对图片进行全选/取消全选操作；当图片被选中后，通过点击  图片将上传云服务，通过点击  删除图片。
2. 图片的缩放：进入相册，双击图片的日期或通过两指对图片进行缩放，可实现图片的缩小和放大功能。
3. 图片的详情页：进入相册，点击图片进入图片的详情页，点击右上角的  可查看图片的拍摄时间、日期、发射率等信息；点击图片的  查看图片对应的可见光图片；点击  可对图片进行智能标定和手动标定；点击  可删除图片。

3.2 模式切换



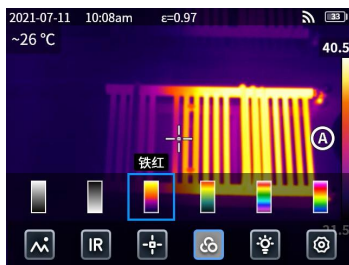
点击 **☰** 按钮，打开隐藏的状态栏，再点击“IR”打开模式选项：选择“IR”，图像模式切换为红外。选择“VL”，图像模式切换为可见光。选择“PIP”，图像模式切换为画中画。选择“MIF”，图像模式切换为融合。

3.3 分析对象



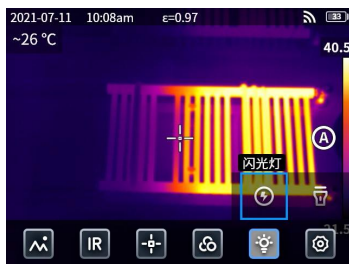
点击 **☰** 按钮，打开隐藏的状态栏，再点击 **☰** 通过点击 **+** 可添加点分析对象，通过点击 **+** 可添加矩形分析对象，长按矩形分析对象，可对设置矩形分析对象的最高温、最低温、平均温、面积、居中和删除。

3.4 伪彩



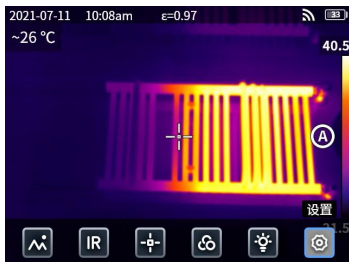
点击...按钮，打开隐藏的状态栏，再点击 ，打开伪彩菜单栏，切换不同的伪彩。

3.5 灯光





点击...按钮，打开隐藏的状态栏，再点击 ，可选择打开闪光灯或照明灯，也可同时打开闪光灯和照明灯。

3.6 设置



点击  按钮，打开隐藏的状态栏，再点击 ，进入设置菜单，在设置菜单中可进行设备的一些设置。

3.7 F1/F2 辅助按键

1. 进入设置菜单，选择 F1/F2 设置为常用的功能。
2. 若将 F1/F2 设置为激光测距，同时打开设置菜单中“激光测距”的开关，返回实时预览界面下，按下 F1/F2 按键，设备会打出激光红点的同时在屏幕中央显示测到的距离。
3. 若将 F1/F2 设置为智能标定，同时打开设置菜单中“保存并智能标定(O)”的开关，返回实时预览界面下，按下拍照键，将会冻结画面，此时选择  进行智能标定，选择  进行手动标定。

3.8 云服务

当您处于恶劣环境下不能及时有效的发现并反馈故障现象或者需要更专业的工程师帮您分析问题时，您可以随时随地将拍摄的图片上传到云服务器端，其他工程师通过账号登录下载图片进行分析反馈。

操作步骤： 1.

进入设置菜单。

2. 选择“云服务”功能，连接 wifi，首次登录需要注册账号，本机支持手机号或者邮箱注册。

3. 按页面提示注册完成以后，登录云服务器。

4. 进入图库菜单，选择“云相册”，即可同步本地图片。

5. 此时用户可以至 PC 端，打开红外分析软件登陆云账户，即可下载图片，进行分析、反馈。

第四章 - 其他

常见物体发射率

| 材质 | 发射率 |
|--------|------|
| 木 | 0.85 |
| 水 | 0.96 |
| 砖 | 0.75 |
| 不锈钢 | 0.14 |
| 胶带 | 0.96 |
| 铝板 | 0.09 |
| 铜板 | 0.06 |
| 黑铝 | 0.95 |
| 人体皮肤 | 0.98 |
| 沥青 | 0.96 |
| PVC 塑料 | 0.93 |

| 材质 | 发射率 |
|-----|------|
| 黑纸 | 0.86 |
| 聚碳酸 | 0.8 |
| 混凝土 | 0.97 |
| 氧化铜 | 0.78 |
| 铸铁 | 0.81 |
| 锈 | 0.8 |
| 石膏 | 0.75 |
| 油漆 | 0.9 |
| 橡胶 | 0.95 |
| 土壤 | 0.93 |

第五章·常见问题分析

| 症状 | 原因 | 措施 |
|----------|--------------|--------------------------------------|
| 无法开机 | 电池电量不足 | 重新充电后再使用电池 |
| | 外接电源的插头没插到位 | 拔出电源插头·重新插入并推到位 |
| | 电池寿命已到 | 更换新电池 |
| 红外图像不清晰 | 镜头蒙上水汽或被污染 | 使用专业设备清洁镜头 |
| 可见光图像不清晰 | 环境太暗 | 采取适当照明措施 |
| | 可见光前端有水汽或被污染 | 使用专业设备清洁可见光前端 |
| 测温不准 | 与测温相关的参数设置不对 | 更改参数设置·或直接恢复默认参数值 |
| | 开机立刻测温 | 为保证测温精度·我们建议您打开热像仪之后·等待 5~10 分钟再开始测温 |
| | 长时间没有校准 | 为获取精确的测温结果·我们建议您每年将热像仪送回校准一次 |