

**Rico 系列**  
**用户操作手册**  
**Rico Series User Guide**  
**V1.0**

合肥英睿系统技术有限公司 InfiRay Technologies Co., Ltd.

## 技术规格 Specification

Model	RL42	RH50
<b>探测器参数 Microbolometer</b>		
Type	Uncooled	
Resolution, pixels	384x288	640x512
Pixel Size, um	12	
NETD, mk	≤50	
Frame Rate, Hz	50	
<b>光学参数 Optical Characteristics</b>		
Objective Lens	F42mm /1.0	F50mm /1.2
Field of View, degrees	6.3° x 4.7°	5.3° x 4.0°
Magnification, x	4~16	2.8~11.2
E-zoom, x	4 / 8 / 12 / 16	2.8 / 5.6 / 8.4 / 11.2
Eye relief, mm	55	
Exit pupil diameter, mm	6	
Diopter Adjustment, D	-4~+4	
Detection Range, m (Target size: 1.7mx0.5m, P(n)=99%)	2197	2594
<b>显示屏 Display</b>		
Type	AMOLED	
Resolution, pixels	1024*768	
Size, inch	0.39	
<b>电池供电 Power Supply</b>		
Battery Type / Capacity / Output Voltage	Li-Ion Battery Pack IBP-1 / 3600mAh / DC3.7V	
Power Supply	3V~4.2V	
External Power Supply	5V (Type C USB)	
<b>物理参数 Operational Characteristics</b>		
Max. Operating Time (at t=22°C), h*	6	
Max. Recoil Power on Rifled Weapon, g/s <sup>2</sup>	1000	
Degree of protection, IP code	IP67	

Amount of built-in memory, Gb	32	
Operating Temperature Range, °C	-20~+50	
Laser Rangefinder	Optional	
Weight, g	820	830
Dimension, mm	250x65x58	250x61x58
<b>Characteristics of Rangefinder</b>		
Wavelength, nm	905	
Max. Measuring Range, m/y**	1000/1094	
Measurement Accuracy, m	±1	

\* The actual operating time depends on the intensity of using Wi-Fi, video recorder, laser rangefinder.

\*\* Depends on the characteristics of the object under observation and environmental conditions.

## 一、包装内容 Package Contents

- Rico 系列红外瞄准镜 Rico series Infrared Sight
- IPB-3 便携包 IPB-3 Bag
- IRM-030-205-Q1 快拆皮轨 IRM-030-205-Q1 Picatinny rail
- IBP-1 电池包 IBP-1 Battery pack
- IBC-1 电池充电器 IBC-1 Charger
- 电源适配器 Power Adapter
- 一拖二数据线 Two in One data cable
- 镜片擦拭布 Wiping Cloth

## 二、产品概述 2. Product Overview

与基于图像增强管的夜视设备不同，Rico 系列红外瞄准镜，根据红外热成像的原理，不需要外部光源，不受强光照射的影响，无论是在天气条件恶劣的白天（如雨、雪、雾、霾等）还是夜间，都可观察到隐藏在障碍物（树枝、高的草、灌木等）后面的目标。Rico 系列功能强大，扩展性高，可扩展高精度的激光测距仪，最远测量距离可到 1000 米，可广泛用于夜间狩猎、观察和地形定位、搜索和救援行动。Different with night vision devices, Rico series infrared scope, based on infrared thermal image theory, operating without external lighting, not affected by strong lights. No matter in daytime with bad weather condition (rain, snow, fog or smog) or at night, users can observe objects hiding behind

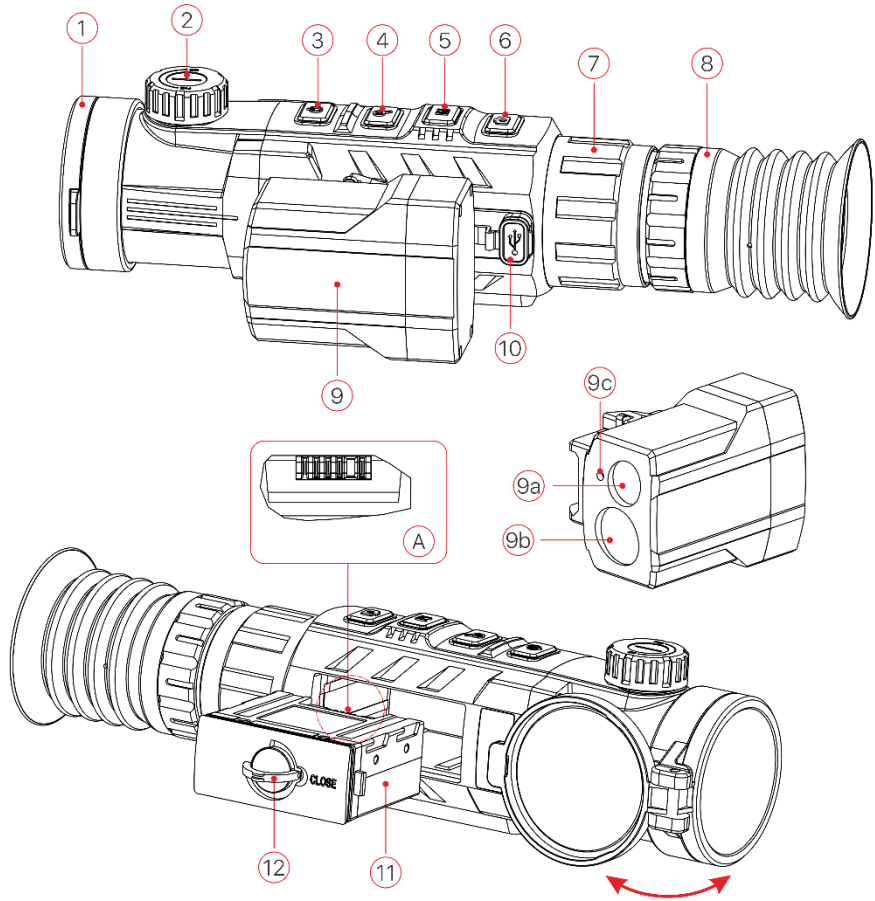
barriers (tree branches, tall grass and shrub) with Rico scope. Powerful, high scalability, optional high precision laser range finder (Maximum ranging 1000m), Rico series scope can be widely used in night hunting, observation, terrain navigation, search and rescue etc.

### 三、产品特点 3. Product feature

- 12μm 自主研发探测器 Patented 12μm sensor
- 图像质量高 High image quality
- 铝合金外壳 aluminum alloy shell
- 探测距离长达 2600 米 Maximum detection range 2600m
- 可扩展激光测距模组 Optional Laser Rangefinder
- 可充电电池包，可快速更换 Quick replacing recharging battery pack
- 高清 AMOLED 显示屏：1024\*768 HD AMOLED screen:1024\*768
- 50Hz 高帧频 High frame frequency: 50Hz
- 可存储 3 种枪型 Three save sort for rifle types
- 支持电子变倍：×1/×2/×3/×4 Digital Zoom: ×1/×2/×3/×4
- 内置 32G 存储空间，支持拍照录像 Build-in 32GB storage, supports photographing and video recording
- 内置 Wi-Fi 模组，支持 APP 应用 Build-in Wi-Fi module, supports Apps
- 内置电子罗盘和运动传感器 Build-in Digital compass and Gravity Sensor
- 多种分划类型、颜色可选 Many reticle types and color to choose
- 超清模式 Ultra-Clear Mode
- 支持 PIP、盲元校正等功能 Include PIP and pixel calibration functions
- 操作界面友好 User Friendly interfaces

### 四、产品部件及按键控制 4. Components and buttons

1. 镜头盖 Lens Cover
2. 物镜调焦环 Object Lens  
Focusing Ring
3. 电源键 Power Button
4. 上键/放大键 Up  
button/Zoom in
5. 菜单键/M 键 Menu/M  
button
6. 下键/拍照键 Down  
Button/Photographing  
Button
7. 目镜调焦环 Eye piece  
focusing ring
8. 遮光眼罩 Eye Cup
9. 激光测距组件（选配）  
Laser Rangefinder  
(Optional)



- 9a. 激光发射窗口 Laser launch port
- 9b. 激光接收窗口 Laser receive port
- 9c. 激光指示灯 Laser indicator port
10. Type C 接口 TypeC port
11. 电池包 Battery pack
12. 电池包拉环 Battery pack ring-pull
13. 电池充电盒 Battery pack jar

## 五、按键功能说明 Button function Description

按 键 Button	设备状态/当前 操作模式 Status/ Mode	短 按 Press	长 按 Hold Down

	Current operation mode		
<b>电源键 Power Button</b> 	关机状态 OFF	——	开机 Switch On
	开机状态 ON	图像校正 Calibration	关机/待机 Turn Off
	待机状态 Stand by	取消待机 Exit Stand by	——
	单次测距模式 Single Ranging Mode	显示此次测距值 Show range value	——
	高级菜单界面 Advance Manu	不保存修改并退回到上一级菜单界 Exit to Main Menu without saving	——
盲元校正界面 Pixel Calibration	添加 / 删除盲元点 Add/Delete defect pixel		
<b>↑键/放大键 ↑ button/Digital Zoom</b> 	主界面下 Home Screen	电子变倍 Digital Zoom	开启 / 关闭 PIP 功能 Turn On/Off PIP function
	菜单界面下 Main Menu	向上滚动菜单选项 Scroll up menu options	——
<b>菜单键 Menu Button</b> <b>M</b>	主界面下 Home Screen	打开快捷菜单 Enter Shortcut Menu	打开高级菜单 Enter Advance Menu
	快捷菜单界面 Shortcut Menu	调节某一功能具体参数 Adjust parameters of one function	保存并退回主界面 Save and exit to Home Screen
	高级菜单界面 Advance Menu	进入选项下一层级/确认选项参数 Enter next level/Confirm option parameters	保存并退回主界面 Save and exit to Home Screen

	盲元校正界面 Pixel Calibration	确认选择项/保存移动位置 Confirm Selection/Save pixel Position	保存并退回主界面 Save and exit to Home Screen
↓键/拍照键↓ Button/Photography 	主界面下 Home Screen	拍照 Photographing	开启/关闭录像功能 Turn ON/OFF video recording
	菜单界面下 Main Menu	向下滚动菜单选项 Scroll down	——
	录像界面 Video Recording	拍照 Photographing	保存视频 Save video
↑键 + ↓键 Up Button + Down Button	主界面下 Main Menu	——	开启/关闭测距模式 Turn ON/OFF Ranging Mode
	测距模式下 Ranging Mode	切换单次测距模式/连续 测距模式 Switch Single/Continuous Ranging Mode	——
M键 + ↓键 M button + Down Button	测距模式下 Ranging Mode	——	开启/关闭激光指示功 能 Turn ON/OFF Laser indicating

## 六、电池包使用说明 6. Battery Pack

Rico 系列使用的是可充电的锂离子电池包 IBP-1，操作时间可长达 6 小时。在首次使用前，请记得给电池包充电。There is a rechargeable lithium-ion Battery pack IBP-1, operation duration: 6 hours.

Please fully charge the battery pack before first time using.

### 电池盒充电 How to charge the battery pack:

- 将电池包的引脚（A）对准电池充电盒（13）的沟槽（B），将电池包插入到电池充电盒内；

Align the pins of battery pack (A) with the groove (B) of battery pack jar (13), insert battery pack

into the jar;

➤ 将数据线的 Type C 端口连接到电池盒的端口(C); Insect type C cable to the port in battery pack jar (C);

➤ 将数据线的另一端连接到电源适配器的 USB 端口; Connect anther port of type C cable with adapter.

➤ 将电源适配器插入 100-240V 的插座上进行电池包的充电; Plug in the adapter to 100-240V socket to charge battery pack;

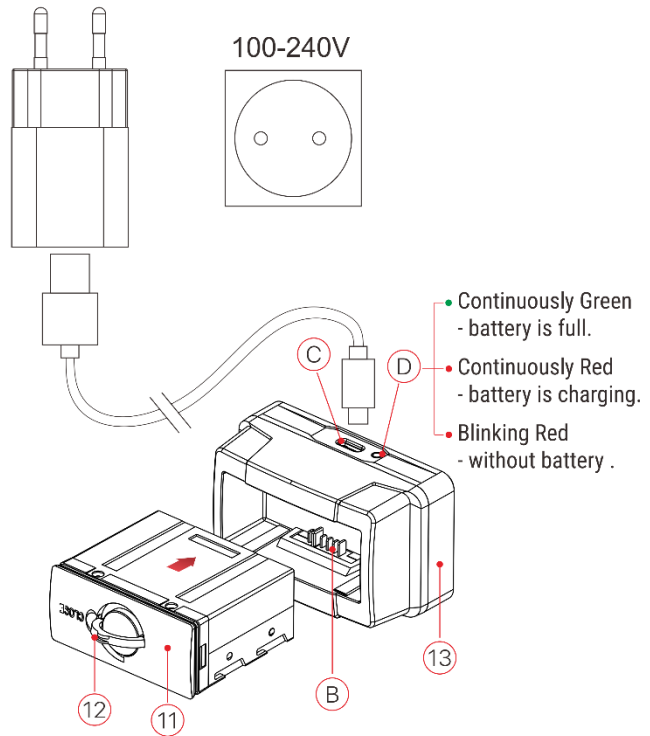
➤ 完成以上安装后, 电池盒上的 LED 指示灯 (D) 将会发光或者闪烁: Once installation complete, the LED on battery pack (D) will glow or blink;

- 当指示灯持续显示红色时, 表示电池包正在充电; When LED continuously Red, indicating the charging is progressing;

- 当指示灯变成绿色时, 表示电池包已充满; When LED turn to continuously Green, means battery fully charged;

- 当指示灯红色闪烁显示, 表示电池充电盒连接电源, 但是没有安装电池包。When LED blinking with Red color, indicates charging jar connected to power supply but no battery pack installed.

➤ 充电完成后, 取出电池包。When fully charged, plug out and take battery pack from jar



## 电池包安装 Battery pack installation

➤ 拉出电池包上的拉环 (12), 顺时针旋转使其与电池包成水平状态; Pull out the Battery pack ring-pull (12), rotate the ring clockwise until it parallel with battery pack horizontally.

➤ 将电池包的针脚对准设备上的插槽, 将电池包安装到 Rico 上; Install the battery pack by aiming the pin of battery pack to the groove of battery pack jar.

➤ 当电池包完全插入 Rico 的外壳上后, 逆时针旋转电池包上的拉环(12)锁住电池包; When the



battery pack is fully embedded into the shell of Rico, rotate the ring of battery pack anticlockwise (12) to lock the battery pack;

- 此时，拉环(12)处于垂直状态，放下拉环，拉环上的凸起指向电池包的 CLOSE 字样时，电池包安装完成； Then the ring (12) is now vertical with battery pack, flip down the ring. When the raised part of ring pointing to the sign "CLOSE" on battery pack, the installation of battery pack complete.
- Rico 系列仅支持此电池包供电。如使用其他的电池包供电可能会造成无法挽回的损失，对设备造成损害，并可能引起火灾。 Rico series only supports charging provided battery pack. Charging with unofficial battery pack may cause damage to the device and fire, lead to extensive losses.

### **安全措施 Safety Measures**





- 当电池长时间未用，需对电池包进行部分充电，而不应该完全充电或完全放电； Partial charging the battery is necessary if the battery is planned to be idled for long time. Avoid fully charged or discharged.
- 当电池从寒冷的环境带到温暖的环境后，不要立即对它进行充电，需等待 30-40 分钟进行预热； Don't charge the battery instantly while bring the battery from cold environment to warm environment. Leave 30-40 mins before charging;
- 不要在无人监管的情况下对电池进行充电； Don't leave battery unsupervised when charging;
- 禁止使用被损坏或者改造的充电器进行充电； Don't charge with broken or modified charger;
- 应在 0°C~+45°C 的温度下充电，否则会降低电池的使用寿命； Charge the battery in temperature range 0°C~+45°C, otherwise that may cause short service life of battery.
- 充电时间请勿超过 24 小时； Don't charge over 24 hours;
- 请勿将电池暴露在高温或者明火中； Avoid battery contacting high temperature or fire;
- 请勿将电池浸入水中； Keep battery away from water;
- 请勿连接超过额定电流的第三方设备； Don't charge with charger that has exceed rated current;
- 虽然电池包带有短路保护功能，但还是要避免任何导致短路的情况出现； Avoid short circuit even though short circuit protection already included in battery pack;
- 请勿随意拆卸或更改电池包；请勿敲打或摔落电池包； Don't disassemble and replace parts of

battery pack; don't hit the pack or fall it on the ground;

- 当在零下温度使用时，电池包的容量会下降，这是正常现象，并非是有缺陷；The battery capacity may decrease when operating in temperature below 0 °C, that is normal, not defect.
- 请勿在高于 50°C 温度下使用电池——可能会导致电池寿命降低；Avoid operating in temperature above 50°C, may lead to shorter battery service life.
- 请将电池包置于儿童接触不到的地方。Leave the battery pack to somewhere children can not access to.

## 七、外部供电 7.External Power Supply

Rico 系列支持外部供电，如充电宝等。Rico series can be charged with external power supply, such as power bank.

- 将外部电源连接到 Rico 系列的 Type C 端口；Plug in external power supply to the Type C port in Rico series scope;
- 设备将转到外部电源供电，并同时对内部电池包进行充电；The device will switch to external power supply meanwhile charge battery pack.
- 此时显示屏上的电池图标将会变成充电图标；The icon of battery on the screen will turn into charging icon ;
- 如果连接外部供电，但是没有安装电池包，电池图标将会变成 USB 图标；If connected with external power supply but without battery pack, the icon of battery turns into USB icon;
- 当外部电源供电断开时，Rico 系列会自动转到内部电池包供电，不会关机。While disconnect with external power supply, the Rico series will switch to internal power supply: battery pack, instead of Turn OFF the scope.

### 注意：Caution:

在低于 0°C 的环境温度下，使用充电宝对 IBP-1 电池包进行充电可能会导致电池的寿命降低。

Charging IBP-1 pack in temperature below 0°C with power bank may lead to shorter battery service life.

## 八、运行 8. Operating

### 安装皮轨 Picatinny Rail Installation

在使用 Rico 系列红外瞄准镜之前，需要先将皮轨安装到瞄准镜的底部。安装孔位有多种选择，可以根据步枪类型，调整合适的出瞳距离。

Before using the Rico series infrared scope, you need to install the Picatinny Rail on the bottom of scope. Depend on the types of rifle, there are multiple screw locations to choose. Adjust to suitable eye-relief distance.

- 选用 M5 的沉头螺钉将皮轨固定在瞄准镜的底部；Fix Picatinny rail on bottom of the scope with M5 screws;
- 将瞄准镜固定在步枪上，并调整到舒服的位置；Mount the scope on rifle and adjust to suitable location;
- 当位置调整完成后，拆卸瞄准镜，半旋开螺丝，在螺丝的螺纹上涂上一些螺纹密封胶，然后完全拧紧（不要过紧），让密封胶干燥一段时间；When the location is set, demount the scope and unscrew the screws, spread sealant on the thread of screws, then screw them back. Leave the sealant to dry.
- 待密封胶干燥后，可以将瞄准镜安装到步枪上，并进行校枪设置；While the sealant is dry, mount the scope to rifle and start set zeroing;
- 如果是第一次安装到步枪上，请按照下面**步骤 9 校枪**完成校枪操作。Follow Step 9 as below to zeroing, if that is your first time to mount on rifle.

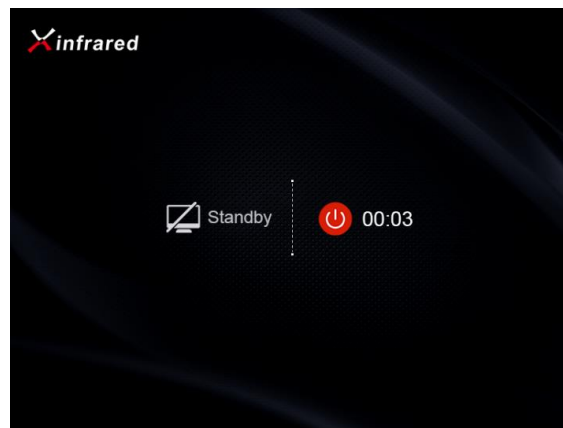
**警告！请勿将设备的镜头对准任何强光源，如激光发射装置或太阳等。这可能会损坏设备中的电子元器件。因操作不当造成的损坏不在保修范围内。Warning! Don't point the lens towards any intense light source, such as laser or solar. This may break the scope and damaged devices in that case are not covered by warranty.**

## 开机设置 Turn On

- 打开镜头盖，长按**电源键**，设备开机，等待几秒进入主界面，完成启动；Open the lid of lens, hold down the power button to turn on the scope. Wait for seconds before the scope finish starting up.
- 旋转视度调节旋钮，直至目镜中图像的图标显示清晰可见。调整完成之后，对于同一用户来说，再次使用时，无需再次进行视度调节。Rotate diopter regulation knob until images in eyepiece are clear. When next time the same user using the scope, there is no more adjustment required once the regulation was set.
- 旋转物镜调焦环，使其聚焦到被观察到的物体。Rotate the focusing ring of object lens until the object is focused and clear.
- 若要设置显示屏亮度、图像锐度、图像模式、电子变倍等功能，请参阅本手册中的快捷

菜单功能。Refer to shortcut menu instructions of this manual to set the following parameters: brightness of screen, contrast of image, image modes, digital zoom and etc.

- 使用完成后，长按**电源键** 0.5s，显示待机画面和关机倒计时，待倒计时结束后，松开按键，关闭瞄准镜；如在倒计时结束前松开 power 键，瞄准镜进入待机模式。Hold on Power Button for about 0.5 seconds, there will be prompts of standby and count down of switch off. While count down over, release Power Button to switch off the scope. If you release the button before counting down finalize, the scope will turn into standby mode.
- 待机模式下，短按**电源键**，可以唤醒设备。In standby mode, press **Power Button** to wake up the scope.



## 九、校枪 9. Zeroing

Rico 系列采用“冻结”校枪的方法校枪，应在工作温度下按照以下方法进行校枪：Rico series require zeroing in “Freeze” method, follow zeroing steps below in operating temperature:

- 将瞄准镜固定在步枪上； Mount the scope on rifle;
- 设定一个距离的目标； Set a target on the distance that already known;
- 根据第八章的开机设置的操作说明调节瞄准镜； Refer to instructions in Step 8 about turn on the scope, adjust the scope;
- 选择校枪类型（参考高级菜单功能中“分划设置-校枪类型”）Select Correction Type (Refer to “Reticle - Zeroing Profile” in Main Menu);
- 长按 **M 键** 进入高级菜单，选择校枪功能选项，短按 **M 键** 进入二级子菜单； Hold down M button to enter Advanced Menu, select “Zeroing”; press M button to enter submenu.
- 根据设定的目标距离，选择或添加新的校枪距离（参考高级菜单功能中的“校枪设置-校枪距离子菜单-设置校枪距离子菜单”）； Base on pre-set distance to target, select or add new distance for zeroing (Refer to Advanced Menu function: “Zeroing - Zeroing Range - Set Zeroing Distance “);

- 短按 **M** 键进入校枪界面（参考高级菜单功能中的“校枪设置-校枪距离子-校枪界面”），屏幕中心显示十字分划，十字分划的坐标位置显示在屏幕左上角；Press M button to enter Zeroing interface (Refer to Advanced Menu function: “Zeroing - Zeroing Range - Set Zeroing Distance “), the cross reticle will reveal in the center of screen, and the location of reticle will appear in the top left corner of screen.
- 将枪对准目标进行射击； Aim and shoot the target;
- 射击完成后，观察实际弹着点的位置，如果着弹点和瞄准点（瞄准镜十字分划的中心点）不匹配， Once shooting done, watch the location of impact; if the location of impact and aiming (The center dot of cross reticle) are not aligned:
- 保持热像仪位置不动，同时长按 ↑ 键和 ↓ 键，画面冻结，同时在屏幕左侧出现冻结标识 ; Keep the Scope still, hold down both ↑ button and ↓ button, then image freezes, meanwhile a symbol of freeze  will appear on the left of the screen.
- **短按上键或下键切换移动方向 X 轴或 Y 轴，短按 M 键确认选项，选中项图标持续闪烁；Press ↑ button or ↓ button to switch moving directions on X or Y-axis. Press M button to confirm and selected icon blinks;**
- 进入移动界面，通过短按或长按上键或下键移动分划，上键控制光标右移或上移，下键控制光标左移或下移，短按移动一个像素，长按可以使光标每次 10 个像素连续移动；On the screen, move the reticle via press or hold down ↑ button or ↓ button on X-axis or Y-axis. Press ↑ button to move reticle right or up, press ↓ button to move reticle left or down. Press once to move the reticle 1 pixel while Hold Down to move reticle 10 pixels every time.
- 移动完成后，短按 M 键保存位置，图标取消闪烁，可重新选择 X 轴或 Y 轴方向；After moving reticle, press M button to save the position, icon stop blinking. User can switch between X and Y-axis.
- 将十字分划移动到实际弹着点的位置后，长按 M 键，保存分划的最新位置，并退回到高级菜单一级界面。When reticle moved to the position of real impact, hold down M button to save the position of reticle and exit to the first level of Advanced Menu.
- 重复上述操作，直至着弹点和瞄准点一致。Repeat previous steps until the position of aiming aligned with position of impact.

**提示:** 校枪位置设置完成之后,可以通过快捷菜单中的**校枪距离**选项进行切换。Tips:  
When zeroing set, you can switch zeroing ranges in shortcut menu.

## 十、校正 10.Calibration

当图像发生劣化或者不均匀时,可以通过校正进行改善。校正可以使探测器的背景温度得以平衡,可以消除图像中的缺陷。 When image degrades or nonuniform, calibration will solve these issues. Calibration could balance the background temperature of sensor and remove the defects in images.

校正的方式有自动快门校正(A)、手动快门校正(M)和背景校正(B)三种方式。There are three modes of calibration: Shutter Calibration(A), Manual Calibration(M) and Background Calibration(B).

在**高级**菜单选项的“**校正模式**”中选择所需要的模式。Select Calibration mode in Main Menu – Calibration.

- **自动快门校正(A)**: 设备会根据软件算法自动快门校正,无需盖上镜头盖(传感器自动关闭内部快门)。设备在进行自动快门校正前,会在状态栏快门图标的后面有5s倒计时提示。倒计时期间,短按**电源键**取消此次自动快门校正。在此模式下,用户也可以通过短按**电源键**进行快门校正(即手动快门校正)。Auto Shutter Calibration (A): the device calibrate shutter automatically, without covering lens lid (sensor shut down the inner shutter). Before automatic calibration begins, there will be a prompt of 5 seconds count down beside the icon of shutter. Press M Button to cancel the calibration during the countdown. In the auto calibration mode, users can press Power Button to calibrate shutter manually.
- **手动快门校正(M)**: 在主界面下,短按电源键进行手动快门校正,无需盖上镜头盖(传感器自动关闭内部快门)。Manual Shutter Calibration (M): Press **Power Button** in Main Menu to calibrate shutter manually, without covering the lens lid.
- **背景校正(B)**: 盖上镜头盖,短按**电源键**,主界面出现文字提示——**校正前盖上镜头盖 (cover lens during calibration)**,2s后进行校正。校正完成后,打开镜头盖。**Background Calibration (B)**: Cover the lens with lid, press **Power Button** to calibrate. There is a prompt as “cover lens during calibration” appear on the screen, then the scope start calibrate after 2 seconds. Remove the lid from lens when calibration finished.

## 十一、电子变倍 10.Digital Zoom

Rico 系列支持通过 2 倍、3 倍、4 倍的电子变倍快速放大图像，以增加视放大率。Rico series support 2 times, 3 times, 4 times digital zoom as function to provide visual amplification.

在主界面下，循环短按 **↑** 键进行视放大率的放大倍数的切换，并于顶部状态栏实时显示。In Main Menu, press **↑** button in loop to switch magnification times and the status reveal on the top status bar.

RL42 系列 1-4 倍的放大分别对应着 4×，8×，12×，16×，RH50 系列分别对应着 2.8×，5.6×，8.4×，11.2×。For RL42, 1-4 times magnification means: 4×，8×，12×，16×; for RH50, means 2.8×，5.6×，8.4×，11.2×.

## 十二、拍照录像 Photographing and Video Recording

Rico 系列红外热像瞄准镜，内置 32GB 存储空间，支持拍照录像功能。图像和视频的文件将会以时间命名，所以建议在使用拍照录像功能前，通过在 APP 的设置选项中，完成系统时间和日期的同步，具体操作可以通过公司网站下载 APP 的操作说明。

Rico Series infrared thermal imaging scope built-in 32GB storage to provide photographing and video recording functions. All photos and videos will be named as current time. So, we suggest synchronize time and date via App before photographing and video recording. For more details about App, refer to instructions in InfiRay official website.

### 拍照 Photographing

- 主界面下，短按**拍照键**，进行拍照，画面出现卡顿，并在左上角闪现拍照图标，拍照结束后，图标消失；Press **Photograph Button** in Main Menu to take photo graphs. The image will be 'frozen' and an icon of camera appear on the top left corner of the screen. The icon will disappear while photographing finalized.
- 所拍摄的图片将会被保存在内置的存储空间中。All photos are saved in the build-in storage.

### 录像 Video Recording

- 主界面下，长按**拍照键**，进行录像；Hold down **Photography Button** in Main Menu to record video.
- 屏幕左上角出现录像图标以及录制时间提示框，时间格式为 HH:MM:SS(小时:分钟:秒)；An icon of video recording and recording time duration appear on the top left corner of screen, the format of time is HH:MM:SS (Hours: Minutes: Seconds);
- 录制过程中，时间提示框左侧的红点将会持续闪烁；When video recording in progress, the

red dot on time duration prompt will be flashing continuously;

- 录制过程中，短按**拍照键**可以进行拍照操作；When video recording in progress, press **Photography Button** to take photographs;
- 长按**拍照键**，停止并保存视频录制；Hold down **Photography Button** to save recordings and exit video recording progress;
- 所拍摄的视频和照片会被保存在内置的存储空间里。All videos and photos are saved in the build-in storage.

**提示： Tips:**

- 在视频录制过程中依然可以对菜单进行操作；You can still manipulate the Menu while recording;
- 拍摄的照片和录制的视频会以 IMG\_HHMMSS\_XXX.jpg（照片）、VID\_HHMMSS\_XXX.mp4（视频）的格式保存在内置的存储卡上，HHMMSS-小时分钟秒；XXX -三位多媒体文件的流水码；Photos and videos will be saved as following formats in built-in storage: IMG\_HHMMSS\_XXX.jpg(Photo) 、 VID\_HHMMSS\_XXX.mp4(Video). HHMMSS means hours/minutes/seconds and XXX means three digits serial numbers.
- 多媒体文件的流水码不可重置。Can't reset the serial numbers of media files.

**注意： Caution:**

- 视频录制的文件最大持续时间为 5 分钟，当时间超过 5 分钟，视频将被自动记录到下一个新的文件中；The maximum duration of a video file is 5 minutes. Once the duration exceeds 5 minutes, footage will be saved to a new file.
- 文件的数量受设备存储容量的限制，所以建议定期清理内存，或将其中的照片和视频转移到其他存储介质上，以释放设备的内存空间。The number of files is limited by the volume of storage. Remember to clean up the storage or move media files into other devices to release spaces for new files.

### **内存访问 Access to build-in storage**

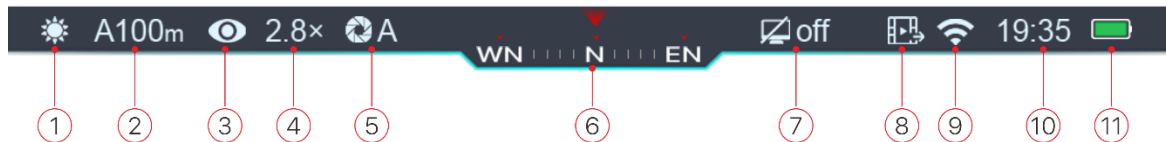
- 当设备开机且连接到电脑时，设备会被计算机识别为闪存卡，用于访问设备内存，进行图片和视频拷贝。While the scope is turned ON and connect to PC, it will be recognized as SD card for copy photos and videos in the build-in storage.
- 通过数据线将设备连接到电脑上；Connect scope and PC with data cable;
- 让设备开机运行；Turn on the scope;
- 双击电脑桌面上“我的电脑”-找到名称为“Infiray”的设备，并双击打开 -双击打开名称



为“Internal Storage”的设备，访问内存；Double click the ‘This PC’ icon on your Windows OS, find and double click the device named “Infiray” to access to built-in storage.

- 打开内存后出现以时间命名的不同文件夹，命名方式是 xxxx(年)xx(月)xx(日); In the storage, there are some folders named with different names. They are named as xxxx(Year)xx(Month)xx(Day);
- 文件夹里存储的是当天拍摄的照片和录制的视频，照片是以 IMG\_HHMMSS\_XXX.jpg 的格式，视频以 VID\_HHMMSS\_XXX.mp4(视频)保存到内置的存储卡上；HHMMSS-小时分钟秒；XXX -三位通用文件的流水码。What’s inside the folders are photos and videos with the labelled date. Photos are in IMG\_HHMMSS\_XXX.jpg format while videos in VID\_HHMMSS\_XXX.mp4 format. All these media files are saved in built-in storage. The HHMMSS means hours/minutes/seconds and XXX are three digits serial numbers.
- 选择需要的文件或者文件夹进行拷贝或删除。Select file or folder to copy or delete.

### 十三、状态栏 13. Status Bar



状态栏位于显示屏顶部，显示瞄准镜当前的操作状态，从左到右依次为：Status bar in the top of screen, demonstrates the status of scope. From left to right are:

1. 当前图像模式 (☀️: 白热模式; 🌑: 黑热模式; 🔥: 红热模式; 🐦: 目标凸显模式; 🌈: 伪彩模式) Current image mode (☀️: White Hot; 🌑: Black Hot; 🔥: Red Hot; 🐦: Target Highlighting mode; 🌈: Pseudo color mode)
2. 当前校枪类型和校枪距离 (如 A100m) Current zeroing type and distance (such as A100m)
3. 超清模式状态 (👁️: 超清模式关; 👁️: 超清模式开) Ultra-clear mode(👁️: Ultra-clear OFF; 👁️: Ultra-clear ON);
4. 当前放大倍率 (如 2.8X) Current zoom in ratio (such as 2.8X)
5. 校正模式 (在自动快门校正模式 A 下，在自动校正前 5 秒，会显示一个倒计时图标代替字母 A 显示于校正图标后面🕒00:05) Calibration Mode (in automatic shutter calibration mode (A), while 5 seconds before calibration, there will be an icon of countdown replaced letter ‘A’ right behind the icon of calibration, as 🕒00:05)
6. 罗盘 (罗盘未开启时不显示) Compass (will not reveal when this function switched OFF)
7. 待机设置 (出厂默认 off) Standby setting (default OFF)

8. 视频输出状态(视频输出选择关闭时,不显示图标)Video output status (icon will not reveal while video output OFF)

9. Wi-Fi 状态 (🚫: Wi-Fi 关闭; 📶: Wi-Fi 开启并已连接) Wi-Fi Status (🚫: Wi-Fi OFF; 📶: Wi-Fi ON and Connected)

10. 时钟 (需下载 InfiRay Outdoor 的应用 APP, 在 APP 中设置时间) Clock (set clock in the App "InfiRay Outdoor")

11. 电池包电量状态 (当图标内部显示为绿色🟢时, 表示电量高于 40%, 电量比较充足; 显示为黄色🟡时, 表示电量低于 40%; 显示为红色🔴时, 表示电池电量不足, 请及时充电; 当图标中间出现闪电标识⚡, 表示正在为电池包充电; 当使用外部电源供电时, 此图标将显示为🔌)

Battery status (When the icon is in green color, as 🟢, indicates its capacity is more than 40%; when the icon is in yellow color, as 🟡, indicates its capacity is less than 40%; when the icon is in red color, as 🔴, indicates its capacity is low, please charge instantly; when there is a flash icon in the icon, as ⚡, indicates it is charging; when using external power supply, the icon reveals as 🔌);

#### 十四、快捷菜单 14. Shortcut Menu

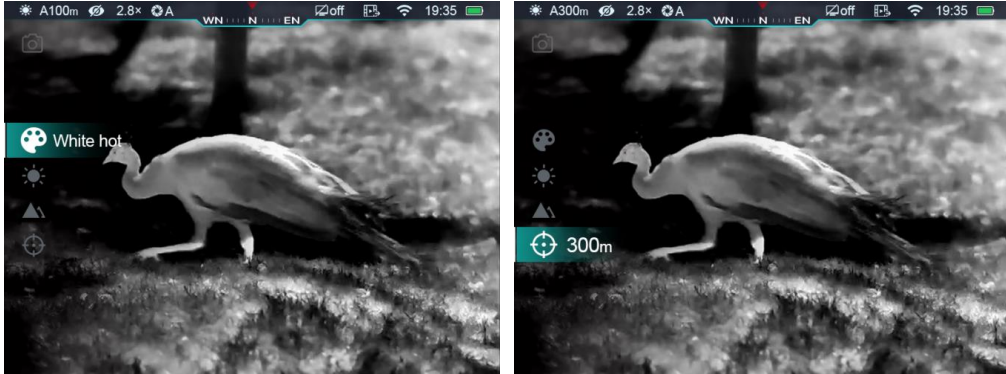
快捷菜单是为了对一些常用功能的基本设置进行快速调节, 包括图像模式、屏幕亮度、图像锐度、校枪距离四项功能。For setting commonly used modes easier, shortcut menu includes: image mode, screen brightness, image sharpness and zeroing range.

- 主界面下, 短按 **M 键**, 进入快捷菜单; Press M button in Main Menu to enter Shortcut Menu;
- 短按 **↑ 键**、**↓ 键**对如下功能选项进行选择切换; Press **↑ button and ↓ button** to switch options in following modes;
  - 图像模式: 短按 **M 键**对图像模式进行循环调节, 依次是白热、黑热、红热、伪彩、目标凸显五种模式; Image Mode: press M button to switch image modes in loop, as White Hot, Black Hot, Red Hot, Pseudo Color and Target Highlighting;
  - 屏幕亮度: 短按 **M 键**更改屏幕亮度从 1-5 级; Screen Brightness: Press M button to change brightness, level 1 – 5;
  - 图像锐度: 短按 **M 键**更改图像锐度从 1-5 级; Image Sharpness: Press M button to change sharpness, level 1 – 5;
  - 校枪距离: 短按 **M 键**快速切换保存在当前校枪类型下的校枪距离信息 (如选择枪型 A 时, 此快捷选择, 只切换保存在 A 下的距离值) Zeroing range: Press M button to switch zeroing range info in current zeroing mode (if select Rifle A, in this mode, you can only

switch saved range values of Rifle A)

- 长按 **M 键** 保存修改并退回主界面。Hold down M button to save and exit to Main Menu.

**提示:** 在快捷菜单下, 如 5s 内无操作, 设备会自动保存当前修改并退回主界面。Tips: in shortcut menu, scope will automatically save and exit to Main Menu while idled 5 seconds.

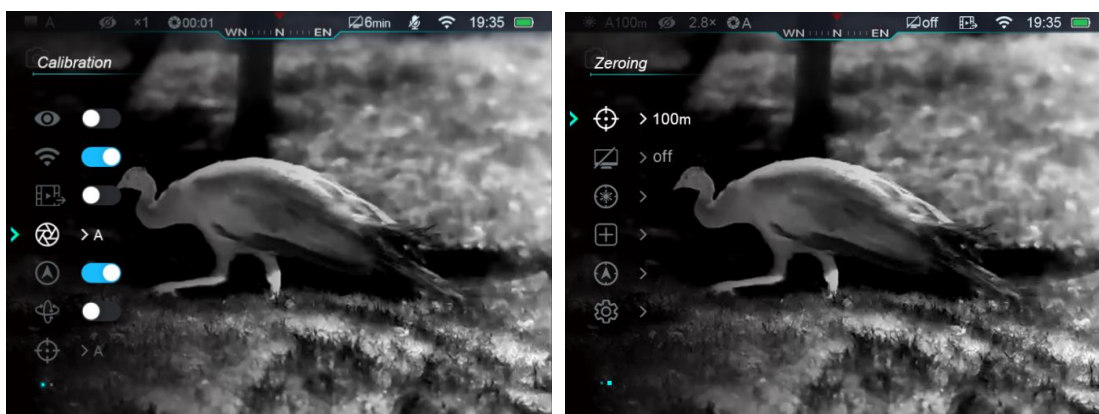


## 十五、高级菜单 15. Advanced Menu



- 主界面下, 长按 **M 键**, 进入高级菜单; Press **M button** in Main Menu to enter Advanced Menu
- 短按 **↑ 键**、**↓ 键** 切换菜单选项; Press **↑ button and ↓ button** to switch options;
- 主菜单的功能选项是周期性循环的: 当箭头 **>** 达到第一页的最后一个菜单选项, 就会接着从第二页的第一个菜单选项开始。在箭头 **>** 位于第一页的第一个选项, 短按 **↑ 键** 可以直接跳到第二页的最后一个菜单选项。Options in **Main Menu** are in loop: following the last option in first page, is the first option in second page. Press **↑ button** in the first option in first page will switch to the last option in second page.
- 短按 **M 键** 对当前菜单选项下的参数进行修改, 或进入菜单下一层级; Press **M button** to modify parameters in current menu or enter next level menu;
- 在二级、三级菜单下, 短按 **↑ 键**、**↓ 键** 选择参数或者功能; 短按 **M 键** 确认选择, 图标闪烁保存修改并返回到上一级菜单, 或者进入下一级菜单; In second and third level menu, press **↑ button and ↓ button** to select parameters or functions; press M button to confirm selection. Icon blinks indicates saving and exit to previous menu or enter submenu;
- 在所有菜单界面下, 短按 **电源键**, 不保存修改直接退回上一级菜单, 或退回到主界面; 长按 **M 键**, 保存修改并直接退回到主界面 (校枪界面除外); Press **Power Button** in all menu interfaces to exit to previous menu without saving, or back to Home Screen; Hold on **M button** to save and exit to main screen (except zeroing).
- 在所有菜单界面下, 15s 无按键操作, 设备将不保存修改, 自动退回到主界面。In all menu,



while idled 15 seconds, the scope will exit to Main Menu without saving.

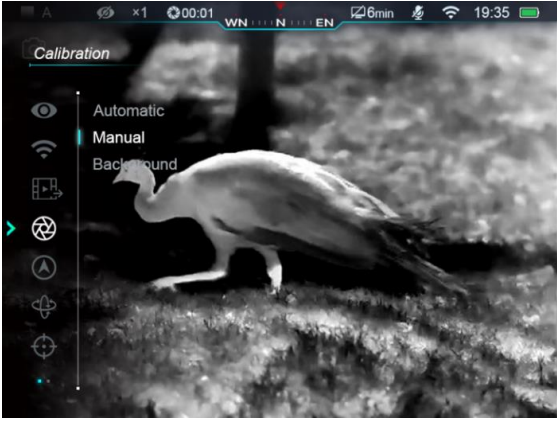




- 在瞄准镜持续工作期间，从高级菜单退出时，光标保留在退出前的位置。当瞄准镜重新启动时，首次进入高级菜单时，光标位于第一个菜单选项上。When scope is operating, exited from Advanced Menu, the cursor will remain on the previous position. After rebooting the scope, the first time in Advanced Menu, the cursor will be placed on the first option.




## 主菜单选项和描述 Main Menu Options and Descriptions

<p>超清模式 Ultra-Clear</p> 	<p>开启/关闭超清模式 Turn ON/OFF Ultra-Clear mode</p> <ul style="list-style-type: none"> <li>● 长按 M 键进入高级菜单界面； Hold down M button to enter Advanced Menu;</li> <li>● 选择“超清模式”选项（开机后首次进入主菜单时，光标默认在此选项上）； Select ‘Ultra-clear’ (cursor will remain on this option when first time in Main Menu);</li> <li>● 短按 M 键开启或关闭超清模式，并伴随着快门校正的咔嚓声； Press M button to Turn ON or OFF this mode, along with the sound of shutter calibration;</li> <li>● 开启/关闭时，状态栏中会有相应的图标变化，图标上无斜线表示开启状态，有斜线表示闭合状态。 When Turn ON/OFF, the icon changes either. When there is a slash on icon, means it is OFF; otherwise, without slash, means ON.</li> </ul>
<p>Wi-Fi</p> 	<p>选择 Wi-Fi 状态 Select Wi-Fi status</p> <ul style="list-style-type: none"> <li>● 长按 M 键进入高级菜单界面； Hold down M button to enter Advanced Menu;</li> <li>● 通过上键、下键，选择“Wi-Fi”功能选项； Select “Wi-Fi” function via pressing ↑ button and ↓ button;</li> <li>● 短按 M 键开启/关闭 Wi-Fi 功能； Press M button to turn ON/OFF Wi-Fi;</li> <li>● 开启/关闭时，状态栏中会有相应的图标变化，图标上无斜线表示开启状态，</li> </ul>

	<p>有斜线表示闭合状态。When Turn ON/OFF, the icon changes either. When there is a slash on icon, means it is OFF, otherwise, without slash, means ON.</p>
<p>视频输出 Video Output</p> 	<p>开启/关闭视频输出功能 Turn ON/OFF video output</p> <ul style="list-style-type: none"> <li>● 长按 M 键进入高级菜单界面； Hold down M button to enter Advanced Menu</li> <li>● 通过短按上键（11）或下键（10），选择“视频输出”功能选项； Select ‘Video Output’ via pressing ↑ button and ↓ button;</li> <li>● 短按 M 键（12）开启/关闭模拟视频输出功能； Press M button to switch ON/OFF video output;</li> <li>● 开启时顶部状态栏会出现视频输出的图标。 While output of video begins, an icon will reveal in the top status bar.</li> </ul>
<p>校正模式 Calibration</p> 	<p>选择校正的模式 Select calibration mode</p> <p>Rico 系列提供三种校正模式：自动快门校正（A）、手动快门校正（M）和背景校正（B）。 Rico series has three calibration modes: Automatic(A), Manual (M) and Background (B).</p> <ul style="list-style-type: none"> <li>● 选择“校正模式”功能选项； Select ‘Calibration’;</li> <li>● 短按 M 键（12）进入校正功能的二级菜单； Press M button to submenu of calibration;</li> <li>● 短按上键、下键，在以下三种模式之中选择一个： Press ↑ button and ↓ button to select one mode from the following three modes: <ul style="list-style-type: none"> <li>- 自动快门校正（Automatic）：自动快门校正是由软件算法决定的，使用过程中会自动进行校正。 Automatic shutter calibration (Automatic): controlled by programs, will calibrate automatically.</li> <li>- 手动快门校正（Manual）：手动快门校正是由用户根据观察到的图像效果来进行校正的。 Manual shutter calibration (Manual): users can calibrate when they want, based on the imaging quality.</li> <li>- 背景校正(Background): 背景校正需要在校正前盖上镜头盖。 Background Calibration (Background) need to seal the lens with lid.</li> </ul> </li> <li>● 短按 M 键确认选择，状态栏中的图标也会随之变化。 Press M button to confirm, while the icon in the status bar changes either.</li> </ul>

		
<p>电子罗盘 Compass</p> 	<p>开启/关闭电子罗盘功能 Turn ON/OFF Compass function</p> <ul style="list-style-type: none"> <li>● 选择“电子罗盘”功能选项; Select “Compass”</li> <li>● 短按 M 键 (12) 开启/关闭电子罗盘功能; Press <b>M button</b> to Turn ON/OFF compass;</li> <li>● 罗盘开启后, 显示于顶部状态栏的中间位置。When compass is turned on, it will reveals in the center of top status bar.</li> </ul>	
<p>运动传感器 Gravity Sensor</p> 	<p>开启/关闭运动传感器功能 Turn ON/OFF gravity sensor</p> <ul style="list-style-type: none"> <li>● 选择“运动传感器”功能选项; Select “Gravity Sensor” function;</li> <li>● 短按 M 键(12)开启/关闭运动传感器; Press <b>M button</b> (12) to Turn ON/OFF gravity sensor;</li> <li>● 开启后, 会在显示屏两侧出现相关功能; Both left and right sides of screen will layout relevant functions when turned on;</li> <li>● 左侧弧形标尺代表倾斜角, 右侧垂直标尺代表俯仰角。The scale plate on the left means tilt angle, and the right one represents pitch angle.</li> </ul>	
<p>分划设置 Reticle</p> 	<p>设置校枪类型、分划类型以及分划颜色。 Setting zeroing profile, reticle type and color.</p> <ul style="list-style-type: none"> <li>● 选择“分划设置”选项; Select ‘Reticle’;</li> <li>● 短按 M 键进入分划设置二级菜单, 进行如下设置: Press M button to enter submenu, set as below:</li> </ul>	
	<p>校枪类型</p>	<p>选择校枪类型 Select <b>Zeroing Profile</b></p>

	<p><b>Zeroing Profile</b></p>	<ul style="list-style-type: none"> <li>● 短按 M 键进入“分划设置”的二级菜单 <b>Press M button to enter submenu</b></li> <li>● 选择“校枪类型”功能选项，并短按 M 键进入校枪类型的次级菜单； <b>Select 'Zeroing Profile' and press M button to enter submenu;</b></li> <li>● 短按上键、下键在三种校枪类型（A、B、C）中选择一个； <b>Select one of Profile A/B/C via pressing ↑ button and ↓ button;</b></li> <li>● 短按 M 键确认选择。 <b>Press M button to confirm.</b></li> </ul> 
	<p><b>分划类型</b> <b>Reticle Type</b></p>	<p>选择分划类型 <b>Select Reticle type</b></p> <ul style="list-style-type: none"> <li>● 短按 M 键进入“分划设置”的二级菜单 <b>Press M button to enter submenu of Reticle Type</b></li> <li>● 选择“分划类型”选项，并短按 M 键进入分划类型的次级菜单； <b>Select “Reticle Type” then press M button to enter submenu;</b></li> <li>● 短按上键、下键在 7 种分划类型中选择一个； <b>Select one of seven reticle types via pressing ↑ button and ↓ button;</b></li> <li>● 十字分划的类型也会随着光标的移动而发生变化； <b>Reticle type changes while reticle moves.</b></li> <li>● 短按 M 键确认选择。 <b>Press M button to confirm.</b></li> </ul>

		
	<p>分划颜色</p> <p><b>Reticle Color</b></p>	<ul style="list-style-type: none"> <li>● 短按 M 键进入“分划颜色”的二级菜单 <b>Press M button to enter submenu of Reticle Color</b></li> <li>● 选择“分划颜色”选项，并短按 M 键进入分划颜色的次级菜单； Select ‘Reticle Color’ then <b>press M button</b> to enter submenu of reticle color;</li> <li>● 短按上键、下键在 4 种分划颜色中选择一个，从上到下分别是黑白、白黑、红色、绿色； <b>Press ↑ button and ↓ button</b> to choose one of four reticle colors, from top to bottom are Black/White, White/Black, Red and Green.</li> <li>● 十字分划的颜色也会随着光标的移动而发生变化； <b>Reticle color changes while reticle moves.</b></li> <li>● 短按 M 键确认选择。 <b>Press M button to confirm.</b></li> </ul> 
<p>校枪</p> <p><b>Zeroing</b></p> 	<p>在校枪之前先要设置校枪类型以及校枪距离。 <b>Set zeroing profile and range before zeroing.</b></p> <p>Rico 系列支持用户在 1-999 米的任何距离进行校枪。 <b>Rico series support zeroing in ranges 1-999 meters.</b></p>	



- 选择主菜单中的“校枪”功能选项； Select “Zeroing” in Main Menu;
- 短按 M 键进入校枪功能的二级菜单，显示校枪距离，默认是 100m、200m、300m； Press **M button** to enter submenu of zeroing, reveal zeroing ranges, default values are 100m, 200m, 300m;
- 根据目标设置的距离，短按上键、下键选择校枪距离； Press **↑ and ↓ button** to select zeroing ranges, based on the ranges of target;
- 短按 M 键，确认校枪距离，并进入校枪距离的子菜单； Press **M button** to confirm zeroing ranges then enter submenu of zeroing ranges;


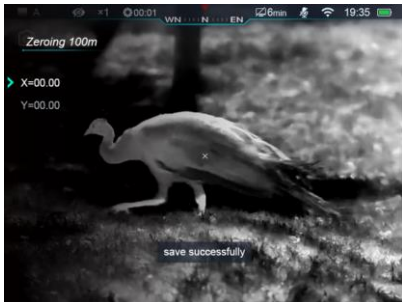





## 校枪

### Zeroing



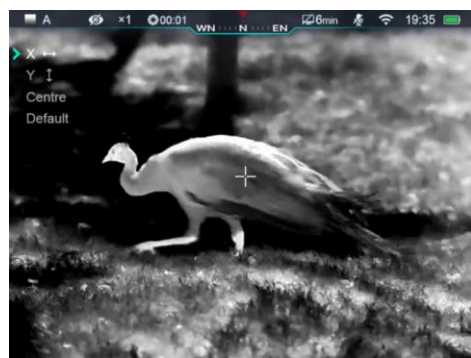
- 短按 M 键，进入校枪界面，分划默认变成小十字光标，左上角显示分划所在的 X 轴、Y 轴坐标； Press M button to enter zeroing menu, reticle changes to cross cursor. The top left reveals the X and Y coordinates;
- 将瞄准镜的十字分划中心瞄准目标距离的靶心并射击，射击完成后，观察实际弹着点的位置； Aim the center of reticle with target's bull's-eye. Shot and observe the real impact location;
- 保持瞄准镜的位置不动，同时长按 ↑ 键和 ↓ 键，画面冻结，同时在屏幕上出现冻结标识； Keep the scope still, hold down **↑ and ↓ button** simultaneously, image freeze and icon of freeze reveals on the screen.
- 短按上键或下键切换移动方向 X 轴或 Y 轴，短按 M 键确认选项，选中项图标持续闪烁； Press **↑ or ↓ button** to switch moving directions: X or Y-axis. Press M button to confirm, selected icon blinks;
- 进入移动界面，通过短按或长按上键或下键移动分划，上键控制光标右移或上移，下键控制光标左移或下移，短按

		<p>移动一个像素，长按可以使光标每次 10 个像素连续移动； Press or Hold Down <b>↑</b> and <b>↓</b> button to move cursor, press <b>↑</b> button to move cursor right or up and <b>↓</b> button to move left or down. Press once, the reticle moved one pixel while hold down once to move reticle 10 pixels.</p> <ul style="list-style-type: none"> <li>● 移动完成后，短按 <b>M</b> 键保存位置，图标取消闪烁，可重新选择 X 轴或 Y 轴方向；When reticle in the right position, press <b>M</b> button to save its position, icon stops blinking. Users can switch X or Y-axis again;</li> <li>● 将十字分划移动到实际弹着点位置，长按 <b>M</b> 键，保存分划位置并退回到主菜单一级界面；Move cursor to the real impact location, hold down <b>M</b> button to save the position of reticle and exit to Main Menu;</li> </ul>  
	<p>校枪距离设置 Setting Zeroing Range</p>	<ul style="list-style-type: none"> <li>● 选择“校枪距离设置”选项；Select '<b>Zeroing Range</b>';</li> <li>● 短按 <b>M</b> 键激活校枪距离重置功能；Press <b>M</b> button to enable resetting zeroing range;</li> <li>● 短按上键、下键对每个数字的数值进行设置，短按 <b>M</b> 键，进行数字切换；Press <b>↑</b> and <b>↓</b> button to set every digits of range values, press <b>M</b> button to switch</li> </ul>

		<p>among numbers;</p> <ul style="list-style-type: none"> <li>● 设置完成后，长按 <b>M</b> 键保存并退出，光标返回到校枪功能选项，同时校枪距离也会随之变化。While finished setting, hold down <b>M button</b> to save and exit to zeroing settings, while ranges changed either.</li> </ul> 
<p>待机设置 Standby</p> 		<p>设置待机的时间和状态 Set standby time and status</p> <ul style="list-style-type: none"> <li>● 选择“待机设置”选项； Select “Standby settings”;</li> <li>● 短按 <b>M</b> 键进入待机设置的子菜单，分别有 2min/4min/6min/off 四个选项； Press <b>M button</b> to enter standby settings, four options: 2min/4min/6min/off;</li> <li>● 短按上键、下键进行选择； Press <b>↑ button and ↓ button</b> to select option;</li> <li>● 短按 <b>M</b> 键确认选择，并显示于顶部状态栏； Press <b>M button</b> to confirm selection and reveal in the top status bar;</li> <li>● Off 表示关闭待机功能； OFF means turn off standby mode;</li> </ul> <p><b>注意： Caution:</b></p> <p>当设备处于如下状态时，待机自动激活：向上&gt;70° 向下&gt;70°，向左&gt;30° 向右&gt;30°； Device will wake up from standby mode when: tilt up &gt;70°，tilt down &gt;70°，tilt left &gt;30°，tilt right &gt;30°；</p> <p>当设备处于射击状态时，不待机 Scope will not standby while mounted rifle shots fire.</p>
<p>测距光标校准 Rangefinder</p> 		<p>当激光所指向的目标位置与屏幕光标位置不一致时，可以通过此功能对激光测距组件的光标位置进行校正（需搭配激光测距组件使用）。When the pointed position of laser on target is not aligned with the position of reticle on the screen, users can zeroing the pointed position of laser in this mode (Rangefinder module</p>

required).

- 选择“测距光标校准”功能选项； Select “Rangefinder”;
- 短按 M 键进入测距光标校准界面，激光指示灯自动开启； Press M button to enter rangefinder zeroing menu, meanwhile the laser switched on.
- 屏幕左上角出现如图所示的内容提示。 Prompt appear on the top left of screen, as show in the picture:
  - X 表示 X 轴方向即横向； X means X-axis, horizontal;
  - Y 表示 Y 轴方向即纵向； Y means Y-axis, vertical;
  - center 表示光标回归屏幕中心； center means cursor return to center of the screen;
  - default 表示光标回到出厂设置。 Default means cursor reset to default.
- 短按上键、下键进行选项切换；短按 M 键进行确认选项； Press ↑ and ↓ button to switch between options; press M button to confirm;
- 选择 X 轴或 Y 轴方向校准时，选中项图标会持续闪烁，通过上键或下键对光标进行移动，短按一次移动一个像素，长按一次移动 10 个像素； The highlighted icon will blink while zeroing in X or Y-axis; Press ↑ and ↓ button to move the cursor, press once moves one pixel, hold down once to move 10 pixels;
- 移动完成后，短按 M 键保存并退出，图标停止闪烁； When cursor moved to right position, press M button to save and exit, the icon stop blinking;
- 当选择 center/default 时，短按 M 键，光标回归 center /default 原始位置； Press M button when selecting center/default, the cursor reset to center/default position.



盲元校正

**Pixels Defect**

瞄准镜在使用过程中，可能会出现有缺陷的像素，如图像上可见的不变亮度的亮点或暗点，此时需借助盲元校正功能删除这些又缺陷的像素。Some defect

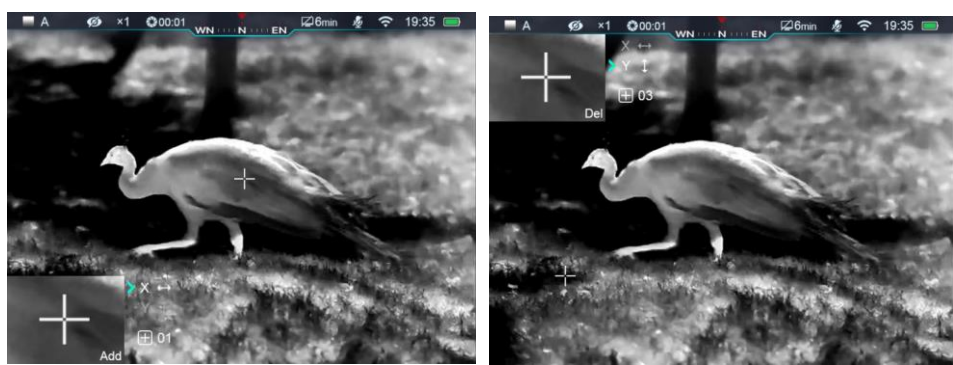
## Correction



pixels may reveal on the screen after long period of operation. Defect pixels are pixels that do not change brightness compare with others, they are either brighter or darker than surrounding pixels. The pixels defect correction function will remove these bad pixels.

- 选择“盲元校正”功能选项； Select “Pixel Correction”;
- 短按 M 键进入盲元校正界面，同时自动开启 PIP 功能，默认位置左下角； Press **M button** to enter correction interface, it will turn on the Picture in Picture (PIP) function, default location: left bottom;
- 在 PIP 的右侧分别显示光标的移动方向：X 轴方向、Y 轴方向，以及盲元校正的数量； On the right of PIP, there are some prompts showing the direction of cursor in X-axis, Y-axis and number of corrected pixels;
- 短按上键/下键切换移动方向，短按 M 键确认选项，选中项图标闪烁； Press **↑** and **↓** button to switch directions, press **M button** to confirm, the highlighted icon will be blinking;
- 然后短按或长按上键/下键对光标进行移动，上键控制光标右移或上移，下键控制光标左移或下移，短按移动一个像素，长按可以使光标每次 10 个像素连续移动； Press or Hold Down **↑** and **↓** button to move cursor, press **↑** button to move cursor right or up and **↓** button to move left or down. Press once, the reticle moved one pixel while hold down once to move reticle 10 pixels.
- 移动完成后，短按 M 键保存并退出此方向的移动，图标取消闪烁，可重新选择 X 轴或 Y 轴方向； When reticle in the right position, press **M button** to save its position, icon stops blinking. Users can switch between X or Y-axis again;
- 重复上述操作可对光标进行重复移动，直到将光标移动到盲元位置； Repeat previous operation until cursor moved to the position of bad pixel;
- 短按电源键，添加盲元，PIP 中闪现 Add 字样，添加成功； Press **Power Button** to mark defect pixel, a prompt ‘Add’ will blink in PIP to indicate pixel is successfully marked.
- 同一位置，再次短按电源键，撤销该处的盲元校正，PIP 中闪现 Del 字样； For those marked pixels, press power button again to cancel marking defect pixels, a ‘Del’ prompt will blink in PIP.

- 每次添加或删除盲元时，盲元数量也会随之发生变化；The amount of defect pixels increases each time marking or cancel marking pixels;
- 当光标移动到 PIP 附近时，PIP 及右侧内容将自动移到左上角；The PIP and its relevant information will move to top left of the screen when cursor moved to bottom left.
- 校正完成后，长按 M 键，出现提示框，询问是否保存此次校正，选择 Yes 确认保存并退出；选择 No，取消保存并退出。Once correction finished, a prompt reveals when hold down **M button**, asking whether save or not. Select 'Yes' to save and exit, select 'No' to exit without saving.



罗盘校准  
Compass  
Calibration



- 对电子罗盘进行校准 To calibrate digital compass
- 选择“罗盘校准”功能选项；Select 'Compass Calibration';
  - 短按 M 键进入罗盘校准界面，出现校准提示；Press M button to enter calibration menu with prompt of calibration;
  - 将瞄准镜沿着提示轨迹进行运动；Follow the prompt to move the scope as the noticed track goes;
  - 15s 后默认校准结束并退出；After 15 seconds idle, device will exit without saving;



常规设置

设置测量单位、恢复出厂设置、查询设备信息等 Setting Units, Factory Reset, Info

General

Settings



and etc.



单位设置

Units of Measure



选择测量单位 Select "units of measure"

- 短按 M 键键入“常规设置”的二级菜单; Press M button to enter submenu of General Setting;
- 选择“单位设置”选项, 短按 M 键进入单位设置的二级菜单; Select 'Units of Measure', press M button to its submenu;
- 短按上键、下键选择需要的测量单位, 短按 M 键进行确认选择并保存; Press ↑ and ↓ button to select measuring units, press M button to confirm and save.

恢复出厂设置

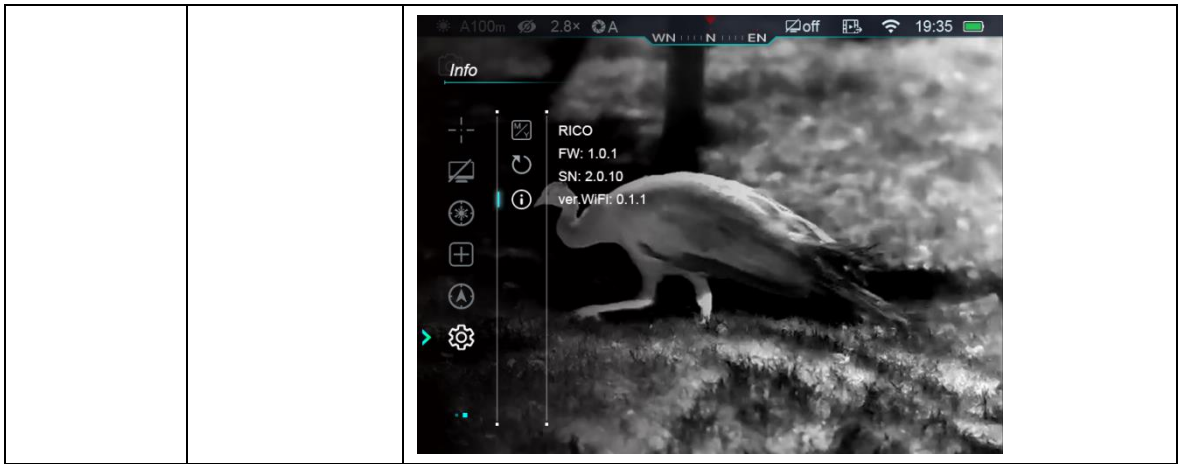
Factory Reset

恢复到出厂时的默认设置 Reset to Factory settings

- 短按 M 键键入“常规设置”的二级菜单; Press M button to enter submenu of General Setting;
- 选择“恢复出厂设置”选项, 短按 M 键进入恢复出厂设置的二级菜单; Select "Factory Reset", press M button to enter submenu of this option;
- 短按上键、下键选择 Yes、No; Yes 表示确认恢复到出厂设置, No 表示取消; Press ↑ and ↓ button to select Yes or No. "Yes" means reset to factory settings.
- 短按 M 键确认选项; Press M button to confirm selection;
- 当选择 Yes 时, 瞄准镜会自动重新启动; The scope will reboot when selected 'Yes';
- 当选择 No 时, 操作取消并返回到上一级菜单。Select 'No'

		<p>will cancel all previous operations and exit to upper menu.</p> <p>选择恢复出厂设置后，如下功能将会恢复至默认状态：The scope will reset to following default status when selected 'Factory Reset':</p> <ul style="list-style-type: none"> <li>- 图像模式：白热； Image mode: White Hot;</li> <li>- 校枪距离：A100 Zeroing Range: A100</li> <li>- 超清模式：关； Ultra-Clear mode: OFF;</li> <li>- 电子变倍：1倍放大； Digital Zoom: x1;</li> <li>- 快门校正模式：自动快门校正； Shutter Calibration: Automatic;</li> <li>- 罗盘：关； Digital Compass: OFF</li> <li>- 待机：关； Standby: OFF</li> <li>- 模拟视频：关 Analog Video: OFF</li> <li>- Wifi：关 Wifi: OFF</li> <li>- 运动传感器：关 Gravity Sensor: OFF</li> </ul> 
	<p>版本信息</p> <p>Info</p> 	<p>查询设备信息 Show device information</p> <ul style="list-style-type: none"> <li>● 短按 M 键进入“常规设置”的二级菜单； Press <b>M button</b> to enter Submenu of 'General Settings'</li> <li>● 选择“版本信息”选项； Select 'Info';</li> <li>● 短按 M 键进入显示当前瞄准镜的相关信息：产品型号、软硬件版本号、PN 码、SN 码等信息； Press <b>M button</b> will reveal relevant information of scope: product model, version info of Hardware and Software, PN code and SN code;</li> </ul>





## 十六、激光指示和测距（需搭配激光测距模组使用） 16.Laser designation and ranging (Rangefinder Module required)

Rico 系列支持扩展激光测距模组（选配），进行激光指示以及测距，测量距离可远至 1000 米。  
Rico series supports rangefinder module (optional) for laser designation and ranging. The maximum ranging distance is 1000m.

### 激光测距 Laser Ranging

- 在主界面下，同时长按 **↑键+↓键**，开启激光测距功能； Hold down both **↑ button and ↓ button** simultaneously to turn on laser ranging.
- 屏幕中心显示测距指示图标，右上角显示测距值 **---m**，在测距值左侧显示测距模式。当测距值超出 1000 米的可测量距离，显示 MAX； There is ranging indicator in the center of screen, ranging value in the top right corner as **---m**, ranging mode on the left of ranging value. When ranging targets that further than 1000m, ranging value will be "MAX";
- Rico 系列支持两种测距模式：单次测距（SGL）和连续测距（CONT）。同时短按 **↑键+↓键**，可进行连续测距/单次测距的切换； Rico series have two ranging modes: Single time ranging (SGL) and Continuous ranging (CONT). Press **↑ button and ↓ button** simultaneously can switch between CONT/SGL.
- 测距模式开启时，默认为单次测距，测距值左侧显示 SGL，短按**电源键**显示此距离下的单次测距值；单侧测距模式下，快门校正功能不可用； Once switched on ranging mode, the default mode is Single time ranging, the status 'SGL' will reveal on the left of ranging value, press **Power button** to show a new ranging value; in SGL mode, the shutter calibration is not available.
- 连续测距模式下，测距值左侧显示 CONT，右上角的测距值会根据指示的目标实时变化；连续测距模式下，快门校正功能可以使用； In Continuous ranging (CONT) mode, the status 'CONT' will reveal on the left of ranging value. The ranging value changes as target varies. The shutter calibration is available in CONT mode.
- 同时长按 **↑键+↓键**，退出激光测距功能。 Hold down **↑ button and ↓ button** simultaneously to exit laser ranging.



### 激光指示 Laser indicator

- 在测距模式下，同时长按 **↓ 键 + M 键**，可以开启/关闭激光指示功能，激光指示灯开启/关闭；  
In ranging mode, hold down **↓ button and M button** simultaneously to switch ON/OFF the laser indicator.

### 注意： Caution:

- 激光功能将受限于不同国家和地区的法律规定；Laser functioning may be limited refer to law of some countries and regions.
- 开启测距模式时，将不自动开启激光指示功能；Once ranging mode is active, laser indicator will not be activated automatically;
- 可以在主菜单的“常规设置”的二级菜单里设置测距单位 Set ranging units in the submenu of 'General Setting' in Main Menu.

### 激光测距操作特性 Tips of Laser Ranging

- 测量精度和最大距离取决于目标表面的反射比、发射光束落在目标表面的角度和环境条件。反射率还受到目标表面纹理、颜色、尺寸和形状的影响。一个有光泽或明亮颜色的表面通常比一个深色表面反射更多。The accuracy and maximum measuring distance depend on: the reflectivity on the surface of object, the angle laser impact on surface of target and environment. Other elements that may affect reflectivity are surface textures, color, size and shape of the object. Usually, a glossy and bright surface presents higher reflectivity than darker surface.
- 测量精度也会受到光照条件、雾、霾、雨、雪等因素的影响。在光照条件下或太阳照射下，测距性能会下降。Accuracy influenced by illumination, fog, smog, rain, snow and etc. Lower accuracy in light or sunshine condition.

- 测量小尺寸目标的射程比测量大尺寸目标要困难得多。That is much harder to range small size targets than large size ones.


## 十七、Wi-Fi 功能 17. Wi-Fi

Rico 系列内置 Wi-Fi 模组，设备可以通过 Wi-Fi 与外部设备(电脑、智能手机)进行无线连接。Rico series include Wi-Fi module to connect with external devices (PC, smart phone) wirelessly.

- 通过主菜单操作,开启设备上的 Wi-Fi(具体操作详尽主菜单功能操作)Switch on Wi-Fi on Main Menu (More details refer to Main Menu Operations)。
- 在外部设备上查找名称为“Rico\_XXXXXX”的 Wi-Fi，其中 XXXXXX 是 6 位由数字和字母组成的流水码。Search for Wi-Fi signal named “Rico\_XXXXXX” on external devices, XXXXXX is six digits serial number that consist of numbers and letters.
- 选择该 Wi-Fi，输入密码并连接，初始密码为 12345678；Select is Wi-Fi signal, enter Password to connect, default password is 12345678;
- Wi-Fi 连接成功后,可以通过 APP 对设备进行操控 When Wi-Fi successfully connected, users can manipulate the device via App.

### 设置 Wi-Fi 名称和密码 Set Wi-Fi name and password

Rico 系列支持用户在 APP 里修改设备 Wifi 的名称和密码。  
Users can change Wi-Fi name and password of Rico series scopes via App.

- 在 APP 里，找到“设置”图标，点击并进入设置界面；Access the setting menu in App by clicking the 'gear' icon ;
- 在文本框中，输入并提交新的 Wifi 的名称（ssid）和密码；Input and submit new Wi-Fi name (ssid) and password;
- 提交完成后，需要重启设备才能生效。All settings will take effect after reboot of scope.

**注意！**恢复出厂设置后，Wi-Fi 的名称和密码也会被恢复到出厂默认的设置。Caution! The Wi-Fi name and password will reset to default when the device reset to factory setting.

## 十八、画中画（PIP）功能 18. Picture in Picture (PIP)

图片建议换成英文界面



画中画功能，就是在主图像的上方同时显示一个的单独“小窗口”，小窗口显示的是选取主图中以十字分划为中心的某一区域被 2 倍放大的部分图像。The Picture in Picture (PIP) is a small screen in the top of main screen. The small screen shows enlarged  $\times 2$  images of main screen regions which center on reticle.

- 在主界面下，长按上键，开启/关闭 PIP 功能；Hold down **↑ button** in Main Menu to switch ON/OFF PIP.
- 当短按上键，主界面图像被放大之后，PIP 小窗口中的图像也会被同步 2 倍放大；例如，主界面中的图像放大倍率为  $4\times$ ， $8\times$ ， $12\times$ ， $16\times$ ，PIP 小窗口显示的图像对应的放大倍率值应该是  $8\times$ ， $16\times$ ， $24\times$ ， $32\times$ 。Press **↑ button** to enlarge main screen image, PIP image will be enlarged  $2\times$  synchronously. For instance, the amplification factors of main screen are  $4\times, 8\times, 12\times, 16\times$ , meanwhile corresponding amplification factors of PIP are  $8\times, 16\times, 24\times, 32\times$ .



## 十九、产品更新及 APP 说明 19. Updates and Apps

为了完善产品使用性能，设备的软件程序、性能参数、使用说明等会持续更新，用户可自行去官网（[www.xinfrared.com](http://www.xinfrared.com)）进行下载与更新。In order to improve the performance of Rico scope, the firmware, parameters and product instructions will be updated continuously. Users can download and update relevant files from official website: [www.xinfrared.com](http://www.xinfrared.com).

Rico 系列热成像仪支持 APP 技术，可以通过 Wi-Fi 连接到智能手机或平板电脑，进行图像的实时传输、控制操作以及程序更新。When connected with smart phone or tablet PC, the following functions will be implemented via App: real time images synchronization, manipulating the scope and firmware update.

关于 Infiray Outdoor 的使用说明也可以去官网（[www.xinfrared.com](http://www.xinfrared.com)）进行下载。You may find instructions of Infiray Outdoor in official website: [www.xinfrared.com](http://www.xinfrared.com).

**注意:**用户可以通过 Infray Outdoor 应用程序检测并更新产品的固件程序 Tips: Search and update firmware of devices via App Infray Outdoor.

- 用户可以去官网 ([www.xinfrared.com](http://www.xinfrared.com)) 或者在应用商店里搜索 Infray Outdoor 进行 APP 的下载与安装, 或者扫描下方二维码进行免费下载。You can get Infray Outdoor App in official website: [www.xinfrared.com](http://www.xinfrared.com); or search “Infray Outdoor” in App store to download App; or scan the following QR code to download.



- 安装完成后, 打开 Infray Outdoor 应用程序; When installation completed, open App Infray Outdoor;
- 如果您的设备已连接到手机移动设备上, 请打开移动设备上的移动数据网络。当设备连接到互联网后, 会自动跳出更新提示, 点击 “Now” 进行下载更新, 或者 “Later” 稍后更新; If your scope is already connected with mobile device, please switch on the mobile data in mobile device. When scope connected to internet, there will be a prompt to advice update. Click ‘Now’ to download updates or click ‘Later’ to update later;
- 如果您的设备没有连接到您的手机移动设备上, 但是它已经在 “我的设备” 部分但是曾经连接到 APP, 并且移动设备已联网, 您可以使用 Wi-Fi 先下载更新, 下载完成后, 然后将设备连接移动设备进行更新; If your device has not connected to your mobile device, but linked to App before (recorded); you can download the update files via Wi-Fi and connect the scope with mobile device to update the scope.
- 待更新下载安装完成后, 设备将重新启动, 并进入工作状态。Wait for update to complete, the device will root and ready to operate.

## 二十、技术检查 20. Technical Inspection

建议在每次使用前对设备进行一次技术检查。We suggest inspect the device every time before

using it.

- 设备的外观(外壳无裂纹)。Appearance: no crack on the shell;
- 镜片及目镜状况(无裂纹、油污、污垢或其他沉淀物) Status of object lens and eye piece (No crack, oil stain, dirt or other stains);
- 可充电电池的状态(应提前完成充电)和电气接触(不应存在盐或氧化)。Status of rechargeable battery (charged before using) and electrical contact (No salt or oxidation).

## 二十一、产品维护 21. Maintenance

产品维护应至少每年进行两次，并包括以下内容。The scope should maintenance twice per year at least, including:

- 用一块棉布擦拭金属和塑料部件的外部表面，清除灰尘和污垢，擦拭过程中可能会用到硅脂。Wipe the metal and plastic external surface of the scope, wipe out dust and dirt. May use silicone grease during the cleaning process.
- 使用不油腻的有机溶剂清洁电池的电接点和电池槽。Clean electric contacts and battery jar with no greasy organic solvent.
- 检查目镜和镜头的玻璃表面。如有必要，清除镜片上的灰尘和沙子(最好使用非接触式方法)。光学表面的清洁应该使用专业的擦拭工具和溶剂来完成。Check the surface of object lens and eye piece. If necessary, clean the dirt and sand on the lens (better avoid direct contact). Use specific wiping tools and solvents to clean the surface of lens.

## 二十二、故障排除 22.Trouble shooting

下面这张表列出了操作设备时可能出现的所有问题。按照列表中的建议进行检查和修理。如果出现了表中没有列出的故障，或者无法自己修复缺陷，应该将设备返厂或者供货商进行检修。The following table lists all potential issues of the device. Inspect and fix your device based on the suggestions in the table. If there are any issues that not included in the table or users can not fix it themselves, users should contact sellers for overhaul.

故障 Fault	可能的原因 Probable Cause	解决办法 Solution
热像仪无法启动 Can't switch on the scope	电池没电 out of battery	充电 charge the battery
不能进行外部电源供电	USB 线损坏 USB cable broken	更换 USB 线

Can't charge the scope with external power supply	外部电源电量不足 external power supply out of battery	如有必要，检查外部电源 check external power supply if needed
图像不清晰、出现竖线或者背景不均匀 image not clear, not balanced, with strings	需要校正 needs calibration	根据说明书中的第 10 节进行图像校正 Refer to part 10 Calibration of this manual to calibrate
图像太黑 image too dark	屏幕亮度低 brightness too low	调节屏幕亮度 adjust brightness of screen
图像质量差或者探测距离缩短 image quality too low or short detection range	这些问题可能由于在恶劣天气条件下(雪、雨、雾等)使用造成的。May due to weather condition, such as snow, rain, fog etc.	
无法与智能手机或者电脑连接 Can't connect with smart phone and tablet PC	Wi-Fi 密码不正确 Wrong Wi-Fi password	输入正确的密码 input correct password
	设备所在的范围内，Wi-Fi 网络太多，可能会造成干扰 Too many Wi-Fi signals around device	为了确保稳定的 Wi-Fi 运行，可以将设备转移到 Wi-Fi 网络较少的区域，或者转移到没有 Wi-Fi 网络的区域。 Move device to area with no or low Wi-Fi signals
Wi-Fi 信号消失或者被中断. Wi-Fi signal disappear or interrupted	设备不在 Wi-Fi 覆盖范围内。设备和接收器之间有障碍物(如混凝土墙)。Device not covered by Wi-Fi signal or there is barrier between device and receiver (such as concrete wall).	将设备重新安置到能直接看到 Wi-Fi 信号的地方。Replace the device until Wi-Fi signal is stable.
当在低温条件下使用时，环境的成像质量比在正温度条件下差。Compare with room temperature, the quality of image in low temperature is quite poor.	在零上的温度条件下，被观察的物体(环境和背景)由于导热系数不同而升温不同，从而产生高温反差，因此图像质量将会更高。 在低温条件下，被观察到的物体(背景)通常会冷却到大致相同的温度，这是因为温度对比度大大降低，图像质量(细节)较差，这是热成像设备的一个特点。When temperature is above 0 Celsius, the object and background have different thermal conductivity which lead to large temperature difference. Image quality is higher in this case. In low	



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	<p>temperature, object and background have similar temperature, that lead to small temperature difference, then poor image quality. This is a feature of thermal imaging device.</p>
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