
A5

头戴热成像

Multifunction Thermal Imager

使用指南

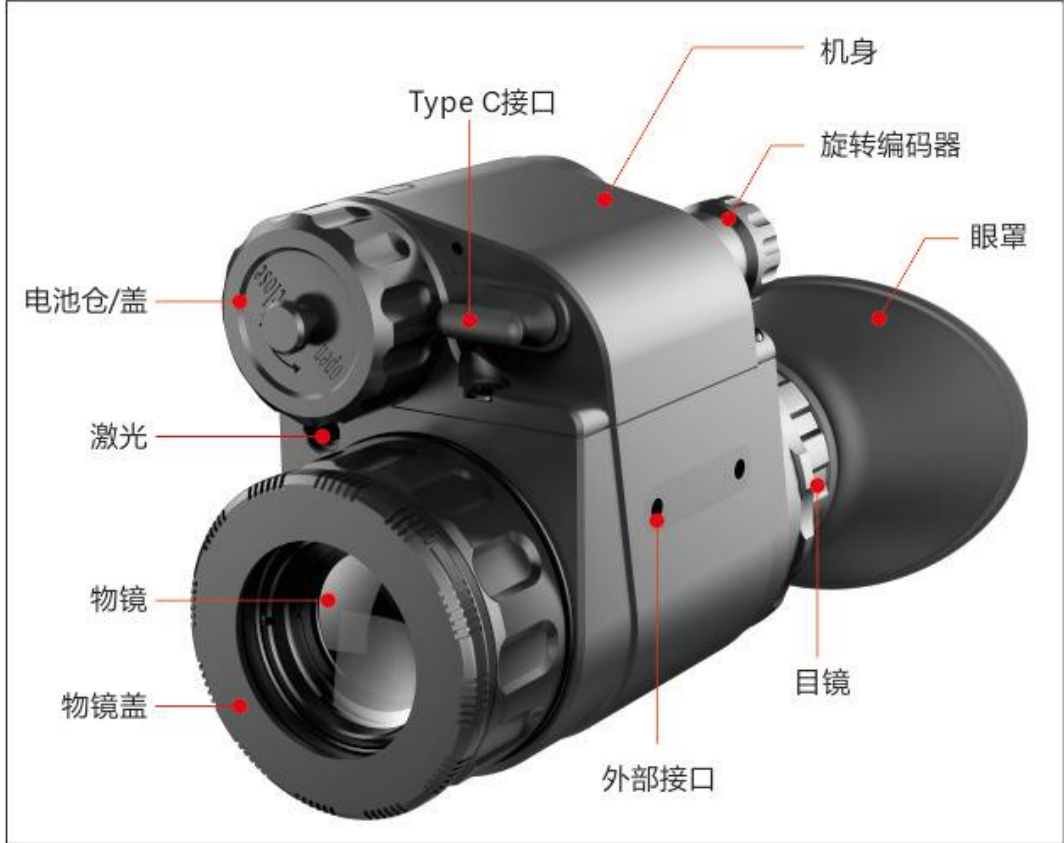
User Manual

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产品画面图标介绍



一、技术参数

产品型号	A5
探测器参数	
分辨率	384×288
像元尺寸	17μm
响应波段	8~14μm
NETD	≤60mK@25℃, f#1.0
MRTD	≤500mK@25℃, f#1.0
图像帧频	50Hz
光学参数	
镜头	19mm
调焦方式	手动
视场角	19° ×15°
无级变倍	1.0~4.0×
出瞳距离	12mm
出瞳直径	5mm
视度调节	-4D~+3D
显示屏	
类型	LCOS
分辨率	1280×960
附加功能	
电子罗盘	√
运动传感器	√
激光（650nm）	√
概率测距	√
画中画	√
色板	黑热、白热、红热、伪彩
遥控器	蓝牙遥控

物理参数	
电池	16340（推荐）/16650/CR123A
工作时间	16340——可工作 2 小时 16650——可工作 4 小时 CR123——待定
工作温度	-10℃~+50℃
功耗	<1500mW
IP 等级	IP66
重量(不含电池)	<225g
尺寸	121mm×70mm×45mm
外部接口	2*M3 螺纹安装孔（2 面）

二、操作功能

开关机、外设以及菜单等相关功能均通过操作旋转编码器实现，所有操作界面均可通过长按编码器 3s 退出操作。

2.1 开/关机

- ▶ 关机状态下，长按编码器 3s 开机，显示开机 logo。
- ▶ 开机状态下，镜头竖直朝下长按编码器 3s 关机。

2.2 图像电子变倍

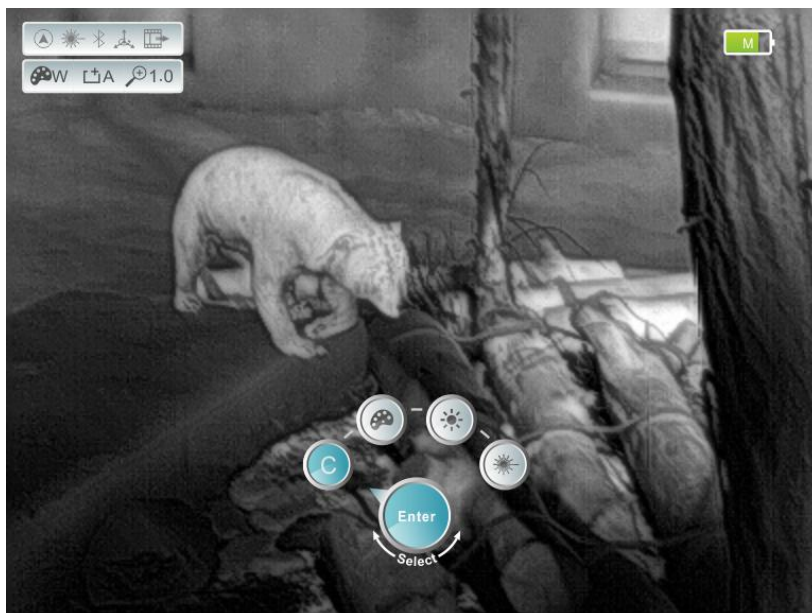
- ▶ 无菜单时，顺时旋转编码器图像放大，逆时旋转编码器图像缩小，放大倍数 1.0 ~ 4.0；
- ▶ 慢速旋转编码器时变倍以 0.1 步进，快速旋转则以×1.0，×2.0，×3.0，×4.0 整数倍放大；
- ▶ 左上角图标显示当前放大倍数；

2.3 快捷菜单

无菜单时，短按编码器进入快捷菜单，旋转编码器进行切换功能，短按确定选项；若 30s 内无操作，则自动退出快捷菜单，或者长按编码器 3s 退出。

- ◆ 图像校正：镜头竖直朝下时短按编码器进行背景校正，镜头朝其他方向进行快门校正。
- ◆ 图像模式：W(白热)、B(黑热)、R(红热)、C(伪彩)四种模式。

- ◆ 亮度：屏幕亮度调节，可进行 1-9 等级调节。
- ◆ 激光：开启/关闭激光指示。



快捷菜单

2.4 高级菜单

无菜单时，长按旋转编码器 3s 进入高级菜单(长按时镜头不可朝下，镜头朝下为关机)，从左向右依次为 Device(设备)、Function(功能)、Reticle(分划)、Calibration(校准)、Setting(设置)五大功能项。



高级菜单

操作：

- ▶ 进入高级菜单之后，短按旋转编码器进行各功能项之间的切换；
- ▶ 旋转编码器进行各选择项之间的切换，短按则锁定选择项或进行参数调节；
- ▶ 锁定选择项之后，旋转编码器进行调节参数，短按则执行选择并解锁选择项；
- ▶ 若 30s 内无操作，则自动退出高级菜单，或长按旋转编码器 3s 也可退出高级菜单。。

高级菜单功能详解

				Factory reset 恢复出厂设置
				Sleep mode 待机模式
	Helmet mode 头盔模式			Sharpness 锐度调节
Bluetooth 蓝牙	Video out 视频输出	Type 校准类型	Laser 激光校准	Contrast 对比度调节
Compass 罗盘	Range Finder 概率测距	Color 分划颜色	Reticle 十字校准	Brightness 亮度调节
Msensor 运动传感器	PIP 画中画	Pattern 分划样式	Compass 罗盘校准	NUC mode 校正类型
Device 设备	Function 功能	Reticle 分划	Calibratio 校准	Setting 设置

2.5 远程遥控（暂未开通）

A5 具备蓝牙功能，可与专用蓝牙遥控器配套使用，也可用智能手机代替遥控器。蓝牙连接方法如下：

- ① 在 A5 上开启蓝牙，此时蓝牙图标闪烁；
- ② 1 分钟内打开蓝牙遥控器（或手机 APP），遥控器（或手机 APP）自动连接本体，连接成功后本体蓝牙图标常亮；如果 1 分钟内未有遥控设备连接，自动关闭蓝牙，蓝牙图标为灰色；
- ③ 当遥控器（或 APP）超出与本体的连接距离或直接关闭电源，本体会在 30 秒内自动关闭蓝牙。

2.6 电池

- ▶ 更换电池前，建议先关机产品；
- ▶ 电池电量图标显示在界面右上侧，分 4 个等级；
- ▶ 当电池图标变成红色时，表示电量低于 25%，请及时更换电池或连接外部电源；
- ▶ 逆时针旋转打开电池仓盖，更换电池，注意机身电池正负极标示，正确安装电池。

2.7 产品清洁保养

- ▶ 禁止使用对机身有腐蚀或划伤光学玻璃器件的清洁产品；
- ▶ 机身可用柔软布料等蘸取一定的酒精擦拭；
- ▶ 光学玻璃器件，如目镜镜片和物镜镜片，请先吹去灰尘，再使用木炭笔或脱脂棉签蘸取非甲基化酒精进行轻微擦拭；

三、故障排除

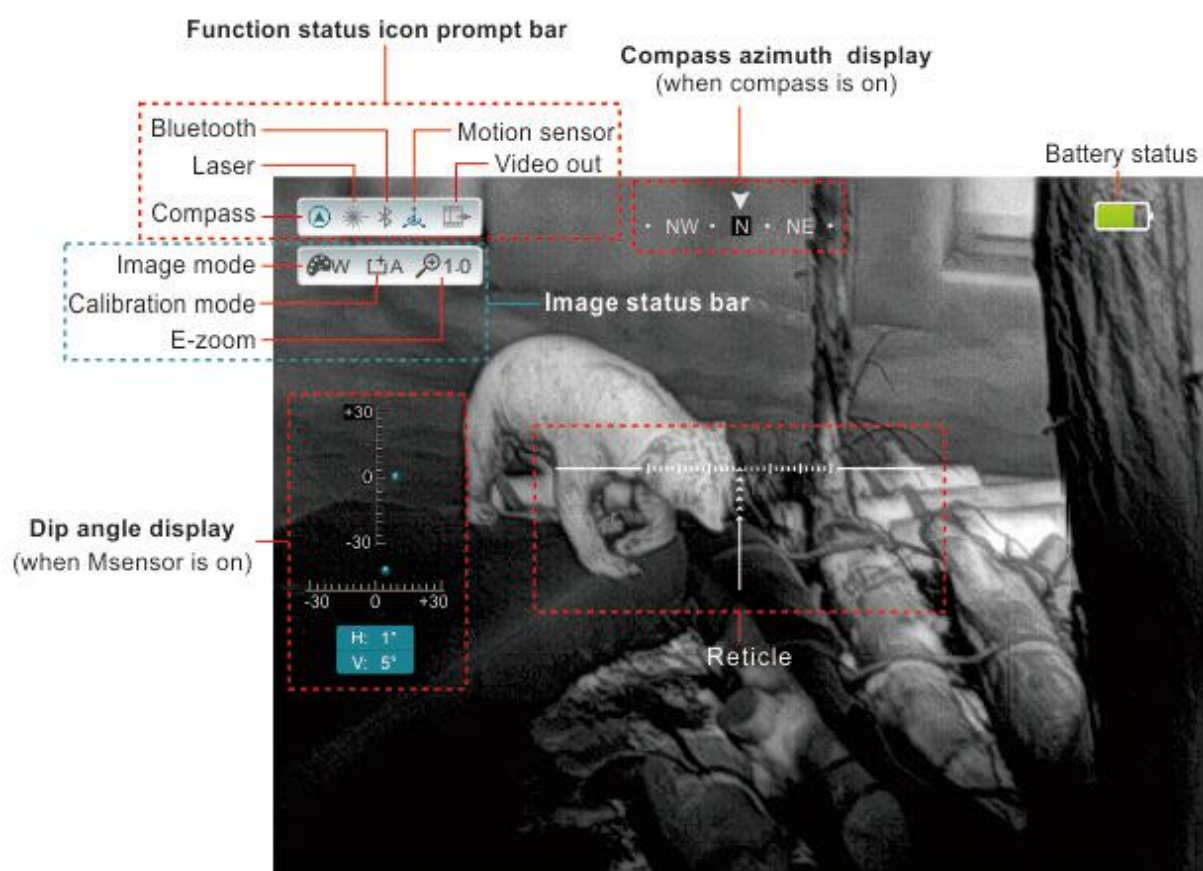
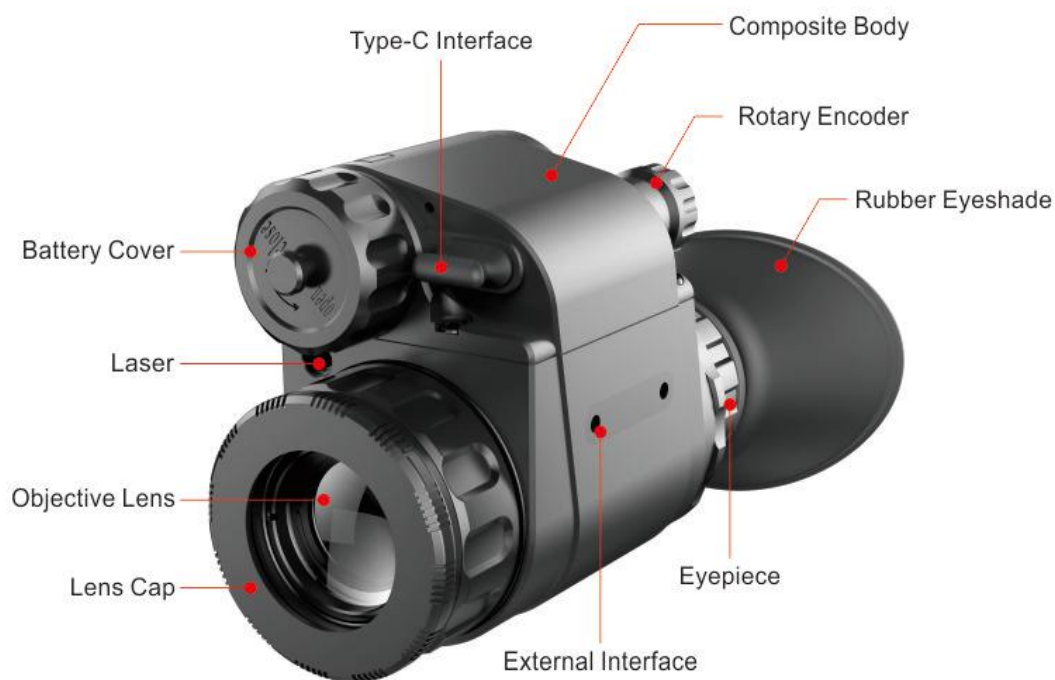
故障描述	可能原因	排除方法
图像模糊	物镜焦距不符合	调节物镜焦距，直到图像清晰
	长时间未图像校正	进行图像校正
视觉模糊	视距不符合	调节目镜视距，直到图像清晰
无模拟视频输出	模拟视频未打开	打开模拟视频输出
	数据线不支持数据传输	更换数据线
无法开机	电池安装错误或电量不足	检查电池安装或电池电量
	外接供电电压不足	检查外接电源供电电压
无法关机	镜头未竖直朝下	镜头朝下长按关机

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Product Components



1. Features

Model	A5
Detector Parameter	
Resolution	384×288
Pixel Size	17μm
Response Spectra	8~14μm
NETD	≤60mK@25℃, f#1.0
MRTD	≤500mK@25℃, f#1.0
Frame Rate	50Hz
Optical Parameter	
Objective Lens	19mm
Focus Mode	Manual
Field of View	19°×15°
Digital Zoom	1.0~4.0×
Eye Relief	12mm
Exit Pupil	5mm
Diopter Adjustment	-4D~+3D
Display	
Type	LCOS
Resolution	1280×960
Function	
Digital Compass	√
Motion Sensor	√
Laser Pointer (650nm)	√
Rangefinder	√
PIP	√
Palette	Black hot/White hot/Red hot/Pseudo Color
Remote Control	Bluetooth

Physical Parameter	
Battery	16340(Recommend)/16650/ CR123
Max. Battery Life	16340——up to 2 hours 16650——up to 4 hours CR123——TBD
Operating Temperature	-10℃~+50℃
Power Consumption	<1700mW
IP Rating	IP67
Weight (without battery)	<225g
Dimension	121mm×70mm×45mm
External Interface	2*M3 threaded holes (two sides)

2. Operation Functions

The related function such as switch, peripheral, menu and other functions can be implemented through operating the rotary encoder. And all the operations can exit through pressing the encoder for 3 seconds.

2.1 Switching on/off

- ▶ The product will be switched on and display start up logo after pressing encoder for 3 seconds.
- ▶ Switching off the encoder by putting the lens straight down and pressing the encoder for 3 seconds.

2.2 Electronic Magnification

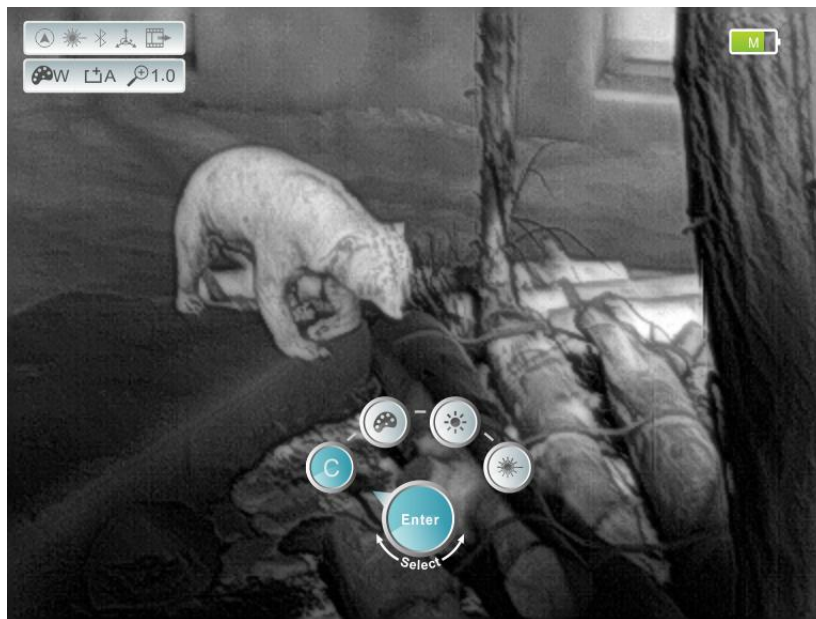
- ▶ When there is no menu, rotating the encoder can zoom image. The image will be zoomed in with clockwise rotation and zoomed out with anticlockwise rotation between 1.0 and 4.0;
- ▶ Slowly rotating the encoder, the magnification is adjusted with a step of 0.1 and rapid rotation is amplified by x 1.0, x 2.0, x 3.0 and x 4.0;
- ▶ The current magnification is displayed on the upper left icon;

2.3 Context Menu

When there is no menu, short press the encoder to call up the context menu. The four functions clockwise are

image correction, image mode, brightness and laser. Rotating encoder can achieve switch function and short press encode can start up the executive function. If there is no operation within 30 seconds, it will exit the context menu automatically. Or it will exit after pressing the encoder for 3 seconds.

- ◆ Image correction: Short press the encoder to perform the background correction while the lens is facing down and other orientations to perform shutter correction.
- ◆ Image mode: W(white hot)、B(black hot)、R(red hot)、C(pseudo color).
- ◆ Brightness: Screen brightness adjustment. There are 1~9 levels can be adjusted.
- ◆ Laser: Turn on/off the laser designation.



Context menu

2.4 Advanced Menu

When there is no menu, long press the rotary encoder for 3 seconds to call up the advanced menu (when long press the encoder, don't let lens vertically down, otherwise A5 will be shutdown). The advanced menu includes five functions which are Device, Function, Reticle, Calibration and Setting. Each function contains several options and corresponding options item pop out when select a certain function.



Advanced menu

Operation:

- ▶ After entering the advanced menu, short press the rotary encoder to switch among functions.
- ▶ After a certain function item is selected, rotating the encoder to switch among the option items and a short press locks the certain option or adjusts the parameters.
- ▶ After locking a option item, rotating the encoder to adjust the parameters and short press performs the option and unlocks the option item.
- ▶ If there is no operation within 30 seconds, the advanced menu will exit automatically. Or long press rotary encoder for 3 seconds can also exit the advanced menu.

Function items	Option items	Function	Operation
Device	Bluetooth	ON/OFF	Support bluetooth remote control.
	Compass	ON/OFF	The field of view is automatically updated according to the geomagnetic direction.
	Msensor	ON/OFF	Measuring the pitch angle and horizon angle of the product relative to the ground.
Function	Helmet Mode	ON/OFF	—
	Video Out	ON/OFF	Video outputs through the attached type-c data cable.

	Rangefinder	ON/OFF	Align the ranging line to the top (or bottom) of the target and press to record position 1. Then align the ranging line to the bottom (or top) of the target and press to record position 2.
	PIP	ON/OFF	When the reticle is turned off, capturing the center of image and magnify to twice. When the reticle is turned on, capturing the center image of reticle and magnify to twice.
Reticle	Type	Four optional calibration gun types	After the cursor selects a certain option item, pressing the encoder to lock the item and rotating the encoder to adjust the parameters. Then pressing the encoder to unlock the item after parameters adjustment is finished.
	Color	Three optional reticle colors : W(white)、B(black)、C(colors)	
	Pattern	Four optional reticle styles. “OFF” —Turning off the reticle.	
Calibration	Laser	Laser calibration	After entering the calibration interface, short pressing encoder to switch X/Y orientation. Rotating the encoder to move calibration reticle and then long pressing the encoder to exits the calibration interface.
	Reticle	Reticle center calibration	
	Compass	Compass calibration	After entering the compass calibration interface, wave the A5 to make the "infinity" turn according to the icon, to the prompt icon automatically disappear and complete the calibration.
Setting	Factory Reset	Restore factory settings	After the cursor selects this option, short pressing the encoder and the inquiry dialog box is popped up. Selecting "Yes"

			to execute, and selecting "No" to cancel.
	Sleep Mode	Turn on/off the sleep mode. The standby time can be 5min, 15min or 30min.	When the cursor selects a certain option, short pressing the encoder to lock the option and rotating the encoder to adjust the parameters. Then pressing the encoder to unlock.
	Sharpness	Image sharpness adjustment between 1 and 9 level.	
	Contrast	Image contrast adjustment between 1 and 9 level.	
	Brightness	Image brightness adjustment between 1 and 9 level.	
	NUC Mode	Automatic correction (A) and manual correction (M)	When the cursor selects this option, short pressing the encoder to switch between A and M.

2.5 Battery Replacement

- ▶ It is necessary to power off before replacing the batteries;
- ▶ The battery power icon is displayed on the upper right side of the interface and there are four levels of power.
- ▶ When the battery icon turns to red, it means that the power is less than 25% and please replace the battery or connect to external power.;

2.6 Product Cleaning and Maintenance

- ▶ It is prohibited to clean the product body with the cleaning product which is corroded or scratched to optical glass.
- ▶ The product body can be scrubbed with soft cloth dipping certain amount of alcohol.
- ▶ Optical glass devices such as eyepiece lens and objective lens, dust should be blown first, and then use charcoal pen or fat-free cotton dipping non-methylated alcohol to wipe slightly.

3. General Trouble Shooting

Trouble description	Probable reason	Trouble shooting
Image blurring	The focal length of objective lens does not match.	Adjusting the focal length of objective lens until the image becomes clear.
	Long time no image correction.	Performing image correction.
Blurred vision	Eye relief does not match	Adjusting the Eye relief until the image becomes clear.
No analog video output	Analog video is not open	Open analog video output.
	The data cable does not match.	Replace data cable.
Fail to start up	Wrong battery installation or low power.	Check the battery installation and battery power.
	Insufficient external supply voltage.	Check the voltage of external power supply.
Fail to shutdown	The lens is not facing down.	Long pressing shutdown when the lens faces down.