UNI-T®

UTi640X/UTi640XH
UTi384X/UTi384XH

X系列智能型红外热成像仪

P/N:1104011137771X

序言

尊敬的用户：

您好！感谢您选购全新的X系列智能型红外热成像仪，为了正确使用本产品，请您在使用之前仔细阅读本说明书全文，特别是“注意事项”部分的内容。

如果您已经阅读完本说明书全文，建议您将此说明书妥善保管，与热成像仪配件一同放置或者放在您随时可以查阅的地方，以便在将来的使用过程中查阅。

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公司担保本产品自购买之日起一年内，在材料和工艺上均无任何缺陷。本担保不适用于由于意外、疏忽、误用、改装、污染及非正常操作或处理引起的损坏。经销商无权以公司的名义给予其它任何担保。如在保修期内需要保修服务，请与您就近的授权服务中心联系，获得产品退还授权信息；然后将产品寄至该服务中心，并附上产品问题描述。

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注意事项

⚠ 警告

1）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，这可能会造成设备的损坏。
2）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，这可能会导致设备的损坏。
3）不要敲打，扔掷或震动仪器和配件，以免造成损坏；
4）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；
5）擦拭本设备时请遵照以下措施：
- 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；
- 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，因手上的汗迹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，使用专业镜头擦拭布小心地擦拭；

6）在使用设备时请尽量保持稳定，避免剧烈晃动；
7）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；
8）不要将电池置于高温环境或靠近高温物体；不要使电池的正负极短路；不要将电池置于潮湿环境或水中，否则会导致设备电池损坏。

⚠ 注意

1）尽量避免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。在不使用仪器时应盖上镜头盖；
2）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；
3）避免将随机的SD卡挪作他用；
4）该产品介绍所使用的商品图文信息，实际产品因批次不同，材质和细节上偶有微小差异，敬请谅解，请以收到具体实物为准；
5）操作手册中提供的实验数据为理论值，均来自优利德公司内部实验室，仅供参考；客户不可将其作为下单购物的参考依据。特此说明！如有任何疑问可联系客服，进行详细咨询。

UTi640X/UTi640XH/UTi384X/UTi384XH

目　录

1. 技术指标

型号	UTi640X	UTi384X
红外参数		
探测器类型	非制冷红外探测器	
红外分辨率	640 x 512	400 x 300
红外超分辨率	1280 x 1024	800 x 600
红外响应波段	7.5~14μm	
像元尺寸	12μm	
帧频	30Hz	
热灵敏度/NETD	<35mK	
调焦方式	手动对焦/图像对比度对焦/激光对焦/ 触摸自动对焦/连续自动	
对焦时间	<2s	
镜头识别	√（智能校准）	
测温功能		
测温范围	UTi640X：常规镜头：-20℃~1200℃； 高温镜头：1000℃~2200℃ （请选用高温型号：UTi640XH）	UTi384X：常规镜头：-20℃~1200℃； 高温镜头：1000℃~2200℃ （请选用高温型号：UTi384XH）
测温精度	-10℃-0℃，精度：±2℃；0℃-120℃，精度±1.0℃或±1.0%； 120℃~1200℃，精度±1.5℃或±1.5% （取大值，常温25℃，常规镜头） 1000℃~2200℃，精度±1.5%（取大值，常温25℃，高温镜头）	
测温分辨率	0.1℃	
测温单位	℃/℉	
测温显示	3个测温点（中心点、最高温、最低温）	
温度分析	支持点/线/圆/矩形分析工具，最多16个	
等温线	自动等温/触控等温/区间等温/上等温/下等温	
高低温追踪	√	
高低温报警	声音报警、图像报警	

颜色报警	支持，温度之上、温度之下和温度之间
测温参数	发射率、反射温度、环境温度、 相对湿度、目标距离、 露点温度、大气温度、大气透过率
温宽模式	自动/手动/一键触摸屏
区域测温修正	支持区域发射率修正
图像显示	
显示屏	5' IPS LCD触摸屏
显示分辨率	1280x720
可见光分辨率	1300万像素
色板	白热、黑热、红热、铁红、彩虹、 高对比度彩虹、熔岩;支持自定义
调色板反转	√
图像模式	热成像、可见光、融合、T-Mix、画中画、双通道
数字变倍	1X~5X
高温差均衡成像 T-Contrast	√
细节增强 T-Sharp	√
智能描边 T-Select	√
图像格式	JPG
视频格式	MP4/UIR
系统功能	
按键	电源键、激光测距键、SET键、方向键、图库键、 返回键、AI键、拍照扳机键、调焦扳机键
激光指示	√
激光测距	0.1~50m（Class 2激光，红色）
存储	本机存储128G，SD卡可拓展 （标配64G，最大可支持2TB）

数据接口	Type-C USB,Micro HDMI
二维码扫描	√
拍照	√
全屏显示	√
全景拼接	√
视频录像	√
全辐射热像视频流	√
文本注释	√
语音注释	√
照明灯	√
屏幕亮度调节	√
语音操控	√
OTA升级	√
蓝牙	√
Smart Meter 仪表关联	UT197工业型数字万用表； UT251C+交流漏电流钳形表； UT219PV CAT III 1500V真有效值交直流钳形表； UT503PV 光伏绝缘电阻测试仪； UT505A手持式绝缘万用表； UT117C 高精度真有效值专业万用表； UT501E 快速绝缘电阻测试仪； UT333BT迷你温湿度计； UT353BT迷你噪音计； UT363BT迷你风速计； UT383BT迷你照度计； UT61E+数字万用表； UT202BT 蓝牙款钳形表
FTP浏览	√
WiFi 照片下载	√
WiFi 视频直播	√

手机APP	iOS, Android
PC分析软件	√
PC投屏	√
HDMI显示扩展	√
语言	简体中文、英语
供电参数	
电池类型	7.2V,5000mAh锂电池，可更换、可充电
电池工作时间	＞5h(视具体设置和使用情况，实际工作时间可能不同)
充电系统	Type-C直充/电池包独立充
充电时长	2.5h可充至90%电量（关机充电或电池包独立充电）
充电电压/电流	5V/3A 9V/3A 支持PD3.0
一般规范	
机身颜色	426U+1797C
工作温度	-20℃～55℃
存储温度	-40℃～60℃
工作湿度	10%～95%RH，非冷凝
防护等级	IP54
跌落防护	2m
认证	CE, FCC, ROHS
尺寸(长 x 宽 x 高)	140. 7 x 171. 1 x 304. 4mm
产品标配	充电器、USB线、HDMI线、挂绳、Micro SD卡、 说明书、高强度抗冲击便携箱

UTi640X/UTi640XH选配镜头参数

镜头类型	型号	焦距	视场角	空间分辨率/IFOV	最小成像距离	光圈	波长范围	镜头识别
标准镜头	UT-Z042	18mm	24°×19.3°	> 0.66mard	0.15m	F1.0	7.5~14μm	自动识别
广角镜头	UT-Z043	9.6mm	46°×37°	> 1.28mard	0.1m	F1.0	7.5~14μm	自动识别
中长焦镜头	UT-Z044	36mm	12°×9.6°	> 0.33mard	1m	F1.0	7.5~14μm	自动识别
长焦镜头	UT-Z045	62.8mm	7°×5.6°	> 0.19mard	2m	F1.3	7.5~14μm	自动识别
高温镜头	UT-Z046	18mm	24°×19.3°	> 0.66mard	0.15m	F1.0	7.5~14μm	自动识别

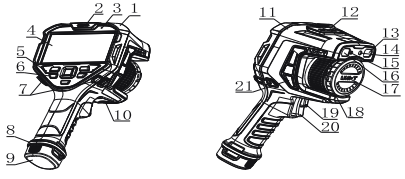
镜头类型	型号	焦距	分辨率	成像范围	光圈	波长范围	镜头识别
微距镜头	UT-Z047	18mm	40μm	距前端面20mm~38mm	F1.1	7.5~14μm	自动识别

UTi384X/UTi384XH选配镜头参数

镜头类型	型号	焦距	视场角	空间分辨率/IFOV	最小成像距离	光圈	波长范围	镜头识别
标准镜头	UT-Z048	9.6mm	27.7°× 20.6°	>1.28mard	0.1m	F1.0	7.5~14μm	自动识别
广角镜头	UT-Z049	6mm	46°×34°	>2.1mard	0.1m	F1.0	7.5~14μm	自动识别
中长焦镜头	UT-Z050	18mm	14.6°×10.9°	>0.66mard	0.15m	F1.0	7.5~14μm	自动识别
长焦镜头	UT-Z051	36mm	7.2°×5.5°	>0.33mard	1m	F1.0	7.5~14μm	自动识别
高温镜头	UT-Z052	18mm	14.6°×10.9°	>0.66mard	0.15m	F1.0	7.5~14μm	自动识别

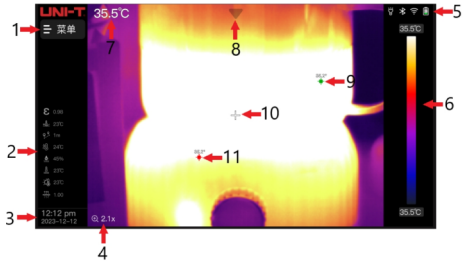
镜头类型	型号	焦距	分辨率	成像范围	光圈	波长范围	镜头识别
微距镜头	UT-Z053	18mm	50μm	距前端面24mm~42mm	F1.1	7.5~14μm	自动识别

2. 结构



项目	说明	项目	说明	项目	说明
1	后壳	8	手柄绳扣	15	激光窗口
2	扬声器	9	电池组件	16	测距窗口
3	光感应传感器	10	支架固定螺母	17	红外镜头
4	液晶显示屏	11	前壳	18	红外镜头调焦环
5	MIC拾音孔	12	USB盖\HDMI口\充电口\SD卡槽	19	对焦键
6	实体按键	13	可见光摄像头	20	拍照扳机键
7	挂绳孔	14	闪光灯	21	散热器

3. 显示说明



项目	说明	项目	说明
1	菜单	7	中心点温度
2	参数显示	8	下拉菜单
3	时间日期	9	最低温度点
4	变焦倍数	10	中心温度点
5	状态栏	11	最高温度点
6	色条		

⚠ 注意：

1. 状态栏，电池电量状态、WiFi状态、蓝牙、手电筒开启等状态；
2. 时间日期，进入菜单-设置-设备设置-日期时间设置，进入日期时间界面进行设置；
3. 下拉菜单，在主预览界面，通过手指触摸屏幕由上至下滑动进入快捷菜单。

4. 快速操作说明

1）将电池插入电池仓内；

2）长按电源开关按键 2~3S，开启热像仪；

3）进入实时红外，将热像仪对准目标. ；

4）对焦，使目标成像清晰；

5）选择拍照或者录像模式后，按拍照键保存图像或录制视频；

6）通过触摸屏或按键进行其他操作。

5. 对焦

5.1 手动对焦

手动旋转调焦环，进行手动对焦，保持观测界面图像清晰。

5.2 触屏对焦

在实时预览界面，点击屏幕进行对焦。

5.3 半自动对焦

通过按下副扳机键，开启聚焦，图像自动变清晰。

1. 在“设置”-“对焦模式”设置中，设置自动对焦的相应对焦方式（激光对焦和对比度对焦），返回实时预览界面，按“对焦键”实现自动对焦功能；
2. 当选择对比度对焦时，在实时图像界面，按“对焦键”，此时根据场景实现快速对焦；
3. 当选择激光对焦时，在回实时图像界面，按“对焦键”，此时有激光点打出，实现快速对焦。

5.4 激光对焦

该功能推荐应用于非强光照射环境下，可以较好反射光线的观测目标（如白纸、线缆、室内场景目标等），不推荐对无法反射光线、直接吸收光线或减弱光线的观测目标（如透明玻璃，天空等）。

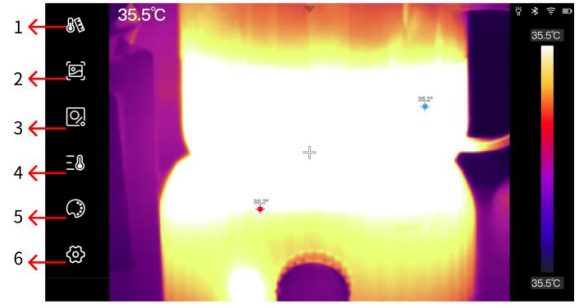
5.5 图像对比度对焦

该功能通过对比观测界面的图像的亮度、对比度参数聚焦目标，保持观测界面图像清晰。

5.6 连续对焦

1. 热像仪根据观测界面的变化自动聚焦目标，保持观测界面图像清晰，适用于热像仪静止时使用；
2. 自动聚焦过程中，无法进行手动调焦轮操作；
3. 进入“设置”-“对焦模式”，打开“连续对焦”开关，实现连续快速对焦。

6. 菜单



1. 等温线	自动等温、手动等温、触控等温、上等温、下等温、区间等温
2. 模式切换	红外、可见光、融合、T-Mix、画中画、双通道
3. 分析工具	可添加点、线、圆、矩形测温工具，可进行预设、对比、删除
4. 参数设置	可进行测温参数设置，包括发射率、反射温度、目标距离、湿度、环境温度、大气温度、大气透过率、
5. 色板	白热、黑热、红热、铁红、彩虹、高彩虹、熔岩、更多色板
6. 设置	详情如下

7. 设置

拍照模式	拍照、定时拍照、录像、冻结、视频格式、倒计时
对焦模式	对比度对焦、触控对焦、激光对焦、连续对焦
测温范围	可选择：-20~120℃/0~600℃/500~1200℃/自动量程， 1000℃~2200℃（高温镜头）
温度报警	可打开高温报警/低温报警/灯光报警开关/声音报警开关
图像处理	可打开高温差均衡成像、细节增强、超分
全图标记	可根据需求开启水印，包括：最高温值、最低温值、中心值、 日期时间、色条、温度参数，并显示在主页面
连接	WiFi:打开WiFi开关，系统自动搜索WiFi热点，在列表中选择 目标热点名称进行配对，配对完成后，即可实现网络功能
	热点：打开热点可供其余设备搜索，以实现APP传输、APP实时图像功能
	蓝牙：打开设备蓝牙开关，系统自动搜索蓝牙设备，在设备列 表中选择目标蓝牙名称进行配对，配对完成后，即可实现图片 的传输（当前支持将设备端图库中的图片传输到Android手机端 或者另一台设备端）
	FTP：启动后可以从电脑远程管理文件
报告编辑	设置PDF报表各参数，包括PDF模版、报告名称、 添加公司名称、报告人、审核人员
设备设置	语言：可选择中文、英文
	日期时间：可更改日期和时间
	单位切换：温度单位可切换℃、℉，距离单位可切换m、yd
	声音调节：可调节声音
	亮度调节：可调节亮度
	自动背光：可开启自动感光功能，屏幕亮度会随着环境亮度变化而变化
	息屏时间：可根据需求设置屏幕休眠时间
	激光测距：可开启和关闭激光测距
	按键辅助：设置机身 “...”辅助键的快捷操作，包括测温范围 切换、图像模式、参数设置、打开/关闭激光测距、打开/关闭照明灯、 下拉菜单、AI语音，设置完成后，返回实时图像画面，按辅助按 键，响应设置的操作
	存储信息：显示机身和SD卡已使用空间、未使用空间， 并可进行清空数据操作
	自动关机：可根据需求设置机器自动关机时间

	恢复出厂设置：将机器恢复到最初始状态，请谨慎操作。
	关于：显示设备信息
	软件更新：检查设备版本更新状态，支持OTA升级和本地升级

8. 下拉菜单

下拉菜单可进行各种快捷操作，如：WiFi、蓝牙、音量、亮度等一系列操作。

9. 安装选配镜头

1. 按逆时针方向旋转镜头，将镜头取下；
2. 选择所需镜头，将镜头上的开锁图标与设备上标识线对齐，插入镜头，顺时针方向旋转镜头，听到“咔”声，表示镜头安装成功。

⚠ 注意：

使用时注意轻拿轻放，避免直接碰撞，造成镜头损伤；不使用时，请将扩展镜头放置于安全箱内，妥善保存。

10. 测温参数

发射率：指被测物体与相同温度的绝对黑体比率，是衡量物体辐射量的一个重要指标，范围介于0.00—1.00之间。

反射温度：指被测物体周边有其他热源辐射能量。

目标距离：指热成像仪与被测物体之间的间距。

环境温度：指热成像仪与被测物体所处的外部环境温度。

相对湿度：指被测物体的辐射量在传输过程中空气中水分含量。

大气温度：指热成像仪和被测物体之间的路径上的空气温度。

露点温度：指空气在水汽含量和气压都不改变的条件下，冷却到饱和时的温度，与环境温度和湿度有关。

⚠ 注意：

1. 以上参数是否设置准确对最终温度测量结果有不同程度的影响。
2. 推荐值：一般情况下，如果你不确定这些值，建议如下：
   发射率：0.95（-20℃~120℃和0℃~600℃两个档位）；
   1.00（500℃~1200℃档位以及使用高温镜头测温）
   环境温度：25℃
   相对湿度：55%RH
   反射温度：25℃
   大气温度：25℃
   大气投过率：1.00
   目标距离：

广角镜头	0.5m
标准镜头	0.6m
中长焦镜头	1.0m
长焦镜头	2.0m
高温镜头	0.6m

3. 测温精度：
   -10℃-0℃，精度：±2.0℃；0℃-120℃，精度±1.0℃或±1.0%；120℃~1200℃，精度±1.5℃或±1.5%（取大值，常温25℃，标准镜头、广角镜头、中长焦镜头、长焦镜头）；1000℃~2200℃，精度±1.5%（取大值，常温25℃，高温镜头）

11.手机App

第一步

iOS设备请在APP Store 搜索"Thermal Link Pro"下载或扫码获取。
Android设备请登录优利德官网下载"Thermal Link Pro"或扫码获取。

苹果版（iOS）下载　　安卓版　（Android）官网下载

第二步

- 在设备设置中开启设备WiFi热点；
- 手机搜索设备热点名称
  选择该热点，输入密码12345678连接，
- WiFi连接成功后进入软件APP，即可实时屏幕传输、远程查看/下载图片等功能。

注：为保证WiFi信号数据稳定传输，请尽量保证连接距离在10m范围内，且无障碍物阻隔。

12. 常见发射率表

材质	发射率	材质	发射率
木	0.85	黑纸	0.86
水	0.96	聚碳酸	0.8
砖	0.75	混凝土	0.97
不锈钢	0.14	氧化铜	0.78
胶带	0.96	铸铁	0.81
铝板	0.09	锈	0.8
铜板	0.06	石膏	0.75
黑铝	0.95	油漆	0.9
人体皮肤	0.98	橡胶	0.95
沥青	0.96	土壤	0.93
PVC塑料	0.93		

＊ 本说明书内容若有变更，恕不另行通知 ＊

优利德

优利德科技(中国)股份有限公司

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http://www.uni-trend.com.cn

PREFACE

Thank you for purchasing the new Expert Thermal Imager. In order to use this product safely and correctly, please read this manual thoroughly, especially the Cautions part.

After reading this manual, it is recommended to keep the manual at an easily accessible place, preferably close to the device, for future reference.

LIMITED WARRANTY AND LIABILITY

Uni-Trend guarantees that the product is free from any defect in material and workmanship within one year from the purchase date. This warranty does not apply to damages caused by accident, negligence, misuse, modification, contamination and improper handling. The dealer shall not be entitled to give any other warranty on behalf of Uni-Trend. If you need warranty service within the warranty period, please contact your seller directly.

This warranty is the only compensation you can obtain. Uni-Trend will not be responsible for any special, indirect, incidental or subsequent damage or loss caused by any reason or speculation. As some areas or countries do not allow limitations on implied warranties and incidental or subsequent damage, the above limitation of liability and stipulation may not apply to you.

CAUTIONS

⚠ WARNINGS

1. Use or store the device in permitted operating or storage temperature to avoid damage.
2. Do not aim the device at strong heat sources, such as sun, laser device, spot-welder, etc.
3. Do not knock, toss, or shake the device and accessories.
4. Do not use solvents or similar liquids on the product or cables.
5. Please refer the following instructions to wipe the device:
- Non-optical surface: If necessary, use a clean and soft cloth to wipe the non-optical surface of the thermal imager.
- Optical surface: Avoid staining the optical surface of the lens when using the thermal imager, and especially avoid touching the lens with hands, as it can leave traces on the lens glass and may corrode(erode) the optical coating layer on the glass surface. When optical surface is stained, wipe it carefully with a dedicated lens paper.
6. Keep it stable when using the device.
7. Do not disassemble the device to avoid product damage and loss of warranty rights.
8. Do not place battery in high temperature environment or close to the high temperature targets. Do not cause the battery polarity short circuit. Do not place battery into damp condition or water.

⚠ NOTES

1) Do not expose the device to dust or moisture. Do not splash water to the device when you're using it. Cover the lens when the device is not in use;
2) Place the device and all accessories into a dedicated packaging box when the device is not in use,;
3) Do not use the included SD card for other purposes;
4) Due to different batches, the materials and details of actual products may be slightly different from the graphic information. Please refer to the actual goods received.
5) The experimental data provided in this manual are theoretical values obtained from Uni-Trend's internal laboratories and are for reference only. Customers should not use this data as a basis for placing orders. If you have any questions, please contact customer service for detailed consultation.

Content

1. Specifications

Model No.	UTi640X	UTi384X
IR Parameters		
Detector Type	Uncooled infrared detectors	
IR Resolution	640 x 512	400 x 300
IR Super Resolution	1280 x 1024	800 x 600
IR Spectral Range	7.5~14μm	
Pixel Size	12μm	
Frame Rate	30Hz	
Thermal Sensitivity/NETD	<35mK	
Focus	Manual/Image Contrast/Laser/Auto/Continuous Auto	
Focus Time	<2s	
Lens Recognition	√ (Intelligent calibration)	
Temperature Measurements		
Temperature Range	Conventional Lens: -20℃~1200℃ High-Temperature Lens:1000℃~2200℃(Model: UTi640XH)	Conventional Lens: -20℃~1200℃ High-Temperature Lens:1000℃~2200℃(Model: UTi384XH)
Accuracy	-10℃-0℃, Accuracy: ±2℃; 0℃-120℃, Accuracy: ±1.0℃ or ±1.0%; 120℃~1200℃, Accuracy: ±1.5℃ or ±1.5% (whichever is greater, room temperature of 25℃, conventional lens) 1000℃~1200℃, Accuracy: ±1.5% (whichever is greater, room temperature of 25℃, High-temperature Lens)	
Resolution	0.1℃	
Unit	℃/℉	
Temperature Display	3 temperature spots (Center spot, HI spot, LO spot)	
On Screen Analyzer	Tools of Point/Line/Circle/Rectangle, At most 16.	
Isotherm	Auto/ Touch Screen /Interval/Upward/Downward	
HI/LO Temperature Tracking	√	
HI/LO Temperature Alert	Audible & LCD Animation	

Color Alert	Above/below the temperature and between the temperatures
Measurement Parameters	Emissivity, Reflection Temperature, Ambient Temperature, Relative Humidity, Distance, Dew Point Temperature, Atmospheric Temperature, Atmospheric Transmittance.
Temperature Scale Mode	Auto/Manual/Screen Touch
Area Temperature Correction	Support Area Emissivity Correction
Image Display	
Display Screen	5” IPS LCD Touch Display Screen
Display Resolution	1280x 720
Digital Camera Resolution	13MP
Palettes	White Hot, Black Hot, Red Hot, Ironbow, Rainbow, Rainbow HC, Lava; User-defined.
Palettes Inversion	√
Image Modes	Thermal, Visual Image, T-Mix, Fusion, PIP, Dual Channels
Digital Zoom	1X~5X
T-Contrast	√
T-Sharp	√
T-Select	√
Image Format	JPG
Video Format	MP4/UIR
System Functions	
Button	POWER, Laser Ranging, SET, Arrow, Gallery, Return, AI, Photo Trigger, Focus Trigger.
Laser Pointer	√
Laser Ranging	0.1~50m (Class 2 laser, red)
Storage	Built-in 128GB, external 64GB SD card (up to 2TB)
Data Interface	Type-C USB,Micro HDMI
QR Code Scanning	√

Photo Capturing	√
Full-Image Display	√
Panorama Stitching	√
Video Recording	√
Full-Radiometric Video Streaming	√
Text Annotation	√
Voice Annotation	√
LED Light	√
Screen Brightness Adjustment	√
Voice Control	√
OTA Upgrade	√
Bluetooth	√
Smart Meters	UT197 Industrial Digital Multimeter UT251C+ AC Leakage Current Clamp UT219PV CAT III 1500V Professional AC/DC Clamp Meter UT503PV Insulation Tester UT505A Handheld Insulation Resistance Tester UT117C High-Precision True RMS Digital Multimeter UT501E Fast Insulation Tester UT333BT Mini Temperature Humidity Meter UT353BT Mini Sound Level Meter UT363BT Mini Anemometer UT383BT Mini Light Meter UT61E+ Digital Multimeter UT202BT Smart Clamp Meter
FTP Browsing	√
Wi-Fi Download Photo	√
Wi-Fi Live Streaming	√
Mobile APP	iOS, Android

PC Analysis Software	√
PC Projection	√
HDMI Extension	√
Languages	Simplified Chinese, English
Power Supply Parameters	
Battery	7.2V/5000mAh Rechargeable & Detachable Li-ion battery
Battery Operating Time	>5h(Battery life is subject to the actual settings and usage)
Charging System	Charge device via Type-C cable; Charge battery pack separately;
Charging Time	2.5 hours to 90% of full charge (Charge in power-off state, or charge battery pack separately)
Charge Voltage/Current	5V/3A 9V/3A support PD3.0
General Specifications	
Product Color	426U+1797C
Working Temperature	-20℃～55℃
Storage Temperature	-40℃～60℃
Working Humidity	10%～95%RH，non-condensing
IP Rating	IP54
Drop Proof	2m
Certificate	CE, FCC, RoHS
Dimension (L×W×H)	140. 7 x 171. 1 x 304. 4mm
Accessories	Charger, USB Cable, HDMI Cable, Wrist Strap, Micro SD Card, User Manual, High Impact-Resistance Carrying Case.

UTi640X/UTi640XH Lens Parameters

Lens	Model No.	Focal Length	Field of View (FOV)	Spatial Resolution/IFOV	Minimum Imaging Distance	Aperture	Wavelength Range	Lens Recognition
Wide-Angle Lens	UT-Z042	18mm	24°×19.3°	> 0.66mard	0.15m	F1.0	7.5~14μm	Automatic Recognition
Standard Lens	UT-Z043	9.6mm	46°×37°	> 1.28mard	0.1m	F1.0	7.5~14μm	Automatic Recognition
Medium-tele Lens	UT-Z044	36mm	12°×9.6°	> 0.33mard	1m	F1.0	7.5~14μm	Automatic Recognition
Tele Lens	UT-Z045	62.8mm	7°×5.6°	> 0.19mard	2m	F1.3	7.5~14μm	Automatic Recognition
High-Temperature Lens	UT-Z046	18mm	24°×19.3°	> 0.66mard	0.15m	F1.0	7.5~14μm	Automatic Recognition

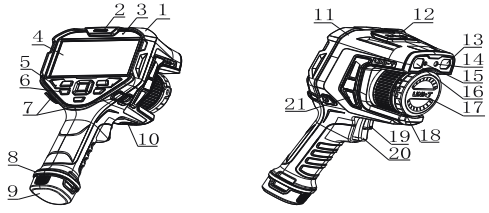
Lens	Model No.	Focal Length	Resolution	Imaging Distance	Aperture	Wavelength Range	Lens Recognition
Macro Lens	UT-Z047	18mm	40μm	20mm~38mm	F1.1	7.5~14μm	Automatic Recognition

UTi384X/UTi384XH Lens Parameters

Lens	Model No.	Focal Length	Field of View (FOV)	Spatial Resolution/IFOV	Minimum Imaging Distance	Aperture	Wavelength Range	Lens Recognition
Wide-Angle Lens	UT-Z048	9.6mm	27.7°× 20.6°	>1.28mard	0.1m	F1.0	7.5~14μm	Automatic Recognition
Standard Lens	UT-Z049	6mm	46°×34°	>2.1mard	0.1m	F1.0	7.5~14μm	Automatic Recognition
Medium-tele Lens	UT-Z050	18mm	14.6°×10.9°	>0.66mard	0.15m	F1.0	7.5~14μm	Automatic Recognition
Tele Lens	UT-Z051	36mm	7.2°×5.5°	>0.33mard	1m	F1.0	7.5~14μm	Automatic Recognition
High-Temperature Lens	UT-Z052	18mm	14.6°×10.9°	>0.66mard	0.15m	F1.0	7.5~14μm	Automatic Recognition

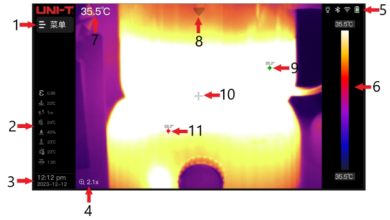
Lens	Model No.	Focal Length	Resolution	Imaging Distance	Aperture	Wavelength Range	Lens Recognition
Macro Lens	UT-Z053	18mm	50μm	24mm~42mm	F1.1	7.5~14μm	Automatic Recognition

2. Structures



Item	Description	Item	Description	Item	Description
1	Rear Case	8	Housing Strap Fastener	15	Laser Pointer
2	Speaker	9	Battery Pack	16	RangeFinder
3	Light Sensor	10	Tripod Mount Nut	17	Infrared Camera
4	LCD Touch Screen	11	Front Case	18	Focusing Ring
5	MIC Hole	12	USB Cover/HDMI Interface/Charging Interface/SD Card Slot	19	Focus Trigger
6	Functional Buttons	13	Digital Camera	20	Photo Trigger
7	Wrist Strap Hole	14	LED Light	21	Radiator

3. Display



Item	Description	Item	Description
1	Menu	7	Center Spot Temperature
2	Parameters	8	Drop-Down Menu
3	Date & Time	9	LO Spot
4	Magnification Times	10	Center Spot
5	Battery Status	11	HI Spot
6	Temperature Bar		

Notes:

1. Status Bar: Battery Status, Wi-Fi Status, Bluetooth ON/OFF, Flashlight ON/OFF, etc.
2. Date & Time: Enter Menu-Settings-Device Settings-Date & Time Settings, to enter the detailed interface to set the date and time.
3. Drop-Down Menu: In the main preview interface, touch the screen to swipe down from the top of the screen to call out a shortcut menu.

4. Quick Operations Instruction

1) Install the battery into the battery holder.
2) Long-press POWER button for 2~3s to power on the thermal imager.
3) Enter real-time infrared mode, and aim the thermal imager at the target.
4) Focusing the target until the image get clear.
5) In Photo or Video mode, tap the trigger to save images or record videos.
6) Touch the screen or press the button to enable other functions.

5. Focus

5.1 Manual Focus

Rotate the focusing ring until the images get clear.

5.2 TouchScreen Focus

In the real-time preview interface, touch the screen to foucs on the target.

5.3 Semi-Auto Focus

Press the Focusing Trigger to focus the image until it is clear.

①. Enter “Settings”-“Focus Mode”, set the focus mode of Auto Focus (Laser/Contrast), back to the real-time preview interface, and press the Focus Trigger to enable the Auto Focus function.

②. When in the Contrast Focus mode, press Focus Trigger to quickly focus the real-time images as per the scene requirements.

③. When in the Laser Focus mode, press Focus Trigger to emit a laser point for quickly focusing the real-time images.

5.4 Laser Focus

This function is recommended for use in non-strong light environments, and for observing targets that reflect light well (e.g. blank paper, cables, indoor scene targets, etc.). But not recommended for observing targets that cannot reflect light, or directly absorb or weaken light (e.g. transparent glass, the sky, etc.).

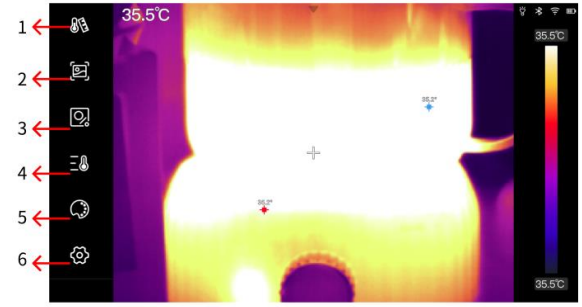
5.5 Image Contrast Focus

Enable this function to focus on the targets by comparing the brightness & contrast parameters of the real-time viewing images, keep the images clear.

5.6 Continuous Auto Focus

1. The thermal imager automatically focuses on the target as per the real-time image change, and keeps real-time images clear, which suitable for use when device stays still.
2. Manually adjust the focusing ring is forbidden during the process of Auto Focus.
3. Enter “Settings”-“Focus Mode”, and enable Continuous Auto Focus to realize quickly continuous focus.

6. Menu



1. Isotherm	Auto/ Manual/ TouchScreen /Interval/Upward/Downward
2. Image Modes	Thermal, Visual Image, T-Mix, Fusion, PIP, Dual Channels
3. On Screen Analyzer	Temperature tools of point, line, circle and rectangle can be added, which can be preset, contrasted and deleted
4. Parameter Settings	Set the temperature measurement parameters, including emissivity, reflection temperature, target distance, humidity, ambient temperature, atmospheric temperature and atmospheric transmittance.
5. Palettes	White Hot, Black Hot, Red Hot, Ironbow, Rainbow, Rainbow HC, Lava, and User-defined.
6. Settings	Details are shown below

7. Settings

Capture Mode	Photo Capturing, Time-Lapse, Video Record, Freeze, Video Format, Countdown.
Focus Mode	Contrast/TouchScreen/Laser/Continuous Auto Focus
Temperature Measurement Range	Selectable: -20~120℃/0~600℃/500~1200℃/Auto Range 1000℃~2200℃ (High-temperature Lens)
Temperature Alert	HI/LO temperature alert, LED Alarm, and Audible Alarm
Image Processing	T-Contrast/T-Sharp/Super Resolution
Full-view Display	Enable watermark as needed, including ax temperature value, in temperature value, center value, date & time, temperature bar and measurement parameters, displayed on the main interface.
Connection	WiFi: Turn Wi-Fi on, system will automatically search WiFi for pairing. After pairing, the device can access to network normally.
	Hotspot: Open personal hotspots for connecting by other mobile devices to realize real-time images transmission.
	Bluetooth: Turn Bluetooth on, system will automatically search Bluetooth devices for pairing. After pairing, the device can transfer images successfully. (Currently, only support transferring images from device's gallery to an Android devices or another device.)
	FTP: Start FTP to remotely control files from your computer.
Report Editing	Set parameters in PDF report, including PDF template, report name, company name, lecturer, and approver.
System Settings	Languages: Chinese/English
	Date & Time: The date and time of device can be modified.
	Unit Switch: Temperature Units: ℃/℉; Distance Units: m/yd.
	Audio: Volume adjust
	Brightness: Adjust the brightness of screen.
	Auto Backlight: Enable auto light sensing function, and the brightness of screen will change with the ambient brightness.
	Auto Screen OFF: Set the screen-off time as per needed.
	Laser Ranging: Switch on/off laser ranging
	Button Assist: Set the quick operations of the "..." assist button, including temperature range switching, image mode, parameter setting, laser on/off, flashlight on/off, drop-down menu, AI voice. After the setting is completed, back to the real-time image interface and press the assist button to respond to the setting.

	Storage: Display the used and unused space of the device and SD card, and allows clearing data.
	Auto Power Off: Set the auto-power-off time as per needed.
	Factory Reset: Restore the device to factory settings, please exercise caution.
	About: Display the information about device.
	Software Update: Check device version, and support OTA upgrade and local upgrade.

8. Drop-Down Menu

The drop-down menu calls out a set of shortcut options, such as WiFi, Bluetooth, volume, brightness, etc.

9. Optional Lens Install

a. Rotate the lens counterclockwise to remove it;
b. Select the needed lens, align the unlock icon of lens with the identification line of device, insert the lens, rotate the lens clockwise, and hear a "click" sound, indicating that the lens is successfully installed.

Note: Be careful to handle it when using it to avoid direct collision and lens damage; when not in use, please place the extended lens into a safe box and store it properly.

10. Measurement Parameters

Emissivity: It refers to the ratio of the measured object to the absolute black body with same temperature. It is an important indicator for measuring the radiation of an object, ranging from 0.00 to 1.00.

Reflected Temperature: It refers to the radiation energy of other heat sources around the measured object.

Target Distance: It refers to the distance between the thermal imager and the measured object.

Ambient Temperature: It refers to the external environment temperature where the thermal imager and the measured object are located.

Relative Humidity: It refers to the moisture content in the air during the transmission of the radiation from measured object.

Atmospheric Temperature: It refers to the air temperature on the path between the thermal imager and the measured object.

Dew Point Temperature: It refers to the temperature when the air is cooled to saturation under the condition that the water vapor content and air pressure do not change, which is related to the ambient temperature and humidity.

Notes:

1. The accurate setting of the above parameters is beneficial to the final temperature measurement results.
2. Recommended values: In general, if you have no idea about these values, please see followings:

   Emissivity: 0.95 (Two temperature scales: -20℃~120℃ and 0℃~600℃); 1.00 (500℃~1200℃ and use high-temperature lens)
   Ambient Temperature: 25℃
   Relative Humidity: 55%RH
   Reflected Temperature: 25℃
   Atmospheric Temperature: 25℃
   Atmospheric Transmittance: 1.00
   Target Distance:

Wide-Angle Lens	0.5m
Standard Lens	0.6m
Medium-tele Lens	1.0m
Tele Lens	2.0m
High-temperature Lens	0.6m

3. Temperature Measurement Accuracy:

   -10℃~0℃, accuracy: ±2.0℃; 0℃-120℃, accuracy: ±1.0℃ or ±1.0%; 120℃~1200℃, accuracy: ±1.5℃ or ±1.5% (whichever is greater, room temperature of 25℃, standard lens, wide-angle lens, medium-tele lens, tele lens)
   1000℃~200℃, Accuracy:±1.5% (whichever is greater, room temperature of 25℃, High-temperature Lens)

11. Mobile App

Step 1

For iOS, download "Thermal Link Pro" on Apple APP Store or scan the following code. For Android, download"Thermal Link Pro" in UNI-T's official website or scan the following code.

iOS Android

Step 2

- Turn on Wi-Fi hotspot on thermal device.
- Search Wi-Fi name on mobile device.
- Enter password 12345678 to connect Wi-Fi.
- Access APP to get functions of real-time image transmission, remote viewing and images download, etc.

Note: To ensure stable data transmission, please try to maintain the connection within a range of 10m and ensure there are no obstacles blocking the signal.

12. Emissivity Table

Materials	Emissivity	Materials	Emissivity
Wood	0.85	Black Paper	0.86
Water	0.96	Polycarbonate	0.8
Brick	0.75	Concrete	0.97
Stainless Steel	0.14	Copper Oxide	0.78
Adhesive Tape	0.96	Cast Iron	0.81
Aluminum Plate	0.09	Rust	0.8
Copper Plate	0.06	Plaster	0.75
Black Aluminum	0.95	Paint	0.9
Human Skin	0.98	Rubber	0.95
Asphalt	0.96	Soil	0.93
PVC Plastic	0.93		

UNI-T
UNI-TREND TECHNOLOGY (CHINA) CO., LTD.
No.6, Gong Ye Bei 1st Road,
Songshan Lake National High-Tech Industrial
Development Zone, Dongguan City,
Guangdong Province, China

彩盒 菲林做货要求

序号	项目	内容	备注
1	尺寸	110*150mm	
2	材质	封面128双铜+内页80g双铜	
3	颜色	四色	
4	外观要求	完整清晰、版面整洁，无斑墨、残损、毛边、刀线错位等缺陷。	
5	装订方式	骑马钉	
6	表面处理		
7	其它	无	
版本		REV. 0	

DWH 设 计	宣浩	MODEL 机型： UTi640X	Part NO. 物料编号： 110401113771X
CHK 审核		UNI-T 优利德科技(中国)股份有限公司 UNI-TREND TECHNOLOGY (CHINA) CO., LTD.	
APPRO. 批准			