





UTi120Mobile

手机热像仪 Thermal Imager for Smart Phone





P/N:110401110191X

UTi12OMobile 手机热像仪使用说明书

P3-P26

UTi120Mobile Thermal Imager for Smart Phone User Manual

P28-P50



UTi120Mobile说明书

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序 言

尊敬的用户:

您好! 感谢您选购全新的UTi120Mobile红外热成像手机模组, 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, 特别是有关"安全注意事项"的部分。

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,与模组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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1. 性能指标

红外分辨率	120×90
输出帧率	≤25Hz
响应波段	8–14µm
像元尺寸	17µm
NETD	<60mK
视场角	50°(H)×38°(V)
调焦模式	免调焦
测温功能	中心点/最高温/最低温
测温范围	−20°C~400°C
测温精度	−10°C以上温度,精度±2%或±2° (取大值,环境温度25°C)
测温单位	摄氏度(℃)、华氏度(°F)
测温分辨率	0. 1°
发射率设置	0.01-1.0可调
色板	铁红、彩虹、白热、红热、黑热、 熔岩、高对比度彩虹
分析对象	点/线/矩形/圆,最多6个对象
拍照/录像	有
画中画	同时显示手机摄像头和红外画面

高低温报警 可自定义温度 可对拍摄后保存的图片进行编辑 图片编辑 操作,不支持视频的编辑功能 图像数据接口 USB UVC (Type-C) 工作温度 0至+45°C 存储温度 -20至+60°C 相对湿度 10%至85%,非冷凝 工作高度 2000米 CE, RoHS, FCC 认证 说明书、Type-C公母延长线、 配件 Type-C转Micro USB转接头 跌落 2米

实时追踪热像画面中的最高/低温点

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2. 连接说明

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高低温追踪

按照下载指南从我司官网上下载UTi120Mobile应用程序,并 完成安装。

打开APP,若未检测到设备时,则会出现如下提示界面如图1。 此时,仍可进入"相册"、"设置"页面,其余功能不可用。插入模 组,弹出提示"要在连接此USB设备时打开UTi120Mobile吗?", 点击确定连接设备(如果希望下次不弹出提示直接连接,则在点 击确定之前勾选下方"默认情况下用于该USB设备"的提示即可)。

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图3

序号	描述	序号	描述
1	温度上限	6	画中画
2	温度分布滑条	7	拍照/录像开始/录像结束
3	温度下限	8	中心点光标
4	图片	9	当前中心点温度
5	菜单栏		

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图1 检测设备的连接时会出现"Loading…"和"校准中…"的提示 如图2。

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4. 图片

打开APP之后,点击图片进入图片/视频界面如图4,可以对图 片/视频进行查看和选择等功能的操作。

4.1 选择/取消(图5)

点击"选择"按钮,会进入相应的选择状态,此时点击图片 /视频,文件会被选中,相应缩略图上会有勾选的状态,点击"取 消"按钮,则取消对应勾选状态。

当图片/视频处于选择状态时,可以对图片/视频进行分享/删 除功能,对应的图标分别为分享 🙆 、删除 回。



4.2 查看(图6)

点击图片,可以进入图片查看界面,可以对图片进行分享/ 画中画/删除/融合以及编辑等功能的操作;点击删除,提示"确 定要删除?",选择"确定",删除图片并回到图片界面。



图6

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4.3 画中画/融合(图8)

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点击画中画的图标 圖, 会在右下角出现画中画的小窗口; 点击融合的图标 🖻 . 可查看融合情况 . 拖动上方滑块 . 可以调 节可见光与红外光的融合比例(界面上与可见光融合功能相似, 功能上保持一致)。



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若不启用画中画和融合功能,点击画中画和融合的图标,即 可关闭功能。会弹出提示"UTi120Mobile 没有可见光!"

备注:

使用Type-C延长线连接模组拍摄时,由于可见光摄像头与模组摄 像头的相对距离不固定,双光融合效果不佳。因此,不建议在使 用Type-C延长线的情况下使用融合功能。



4.4 编辑

在图片查看界面,点击编辑,进入编辑界面,可以对当前图 片进行编辑操作,点击取消可取消之前操作。保存操作后,再次 进入编辑界面,点击右上角"恢复",可以把图片恢复为原始状 态。



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通过UTi120Mobile App拍摄的红外热成像图片,查看时可以 进行编辑,具体编辑项目为:

1) 旋转图片, 点击 💽 图标即可改变图片方向。

2)添加分析对象,点击 图 图标出现以下界面,界面上与添加分析 对象相似,功能上保持一致,可以对图片进行分析对象的移动/ 添加/删除等功能的操作。



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3) 画笔,点击 图图标,出现以下界面,可以对图片进行不同颜 色的标注,点击 同以撤回上一步操作,点击完成后,再次 进入该界面,点击撤回依然可以撤回上一步的操作。



5. 可见光融合

当点击图标圈,上方会出现调节融合的滑块,拖动上方滑块, 可调节可见光与红外光的融合比例。点击图标 翻出现融合调节 图标 题,保持合适距离,拖动融合调节图标,可以调节可见光 和红外光的融合效果。再次点击图标 圈,可以隐藏融合调节图 标题。



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6. 添加分析对象

点击 國 图标进入添加分析对象的界面,具体如下图所示,可 以进行点/线/面的分析对象的添加/移动/删除的操作,同时只能 存在六个分析对象。添加分析对象并拍照后,所添加的分析对象 依然可以进行删除处理。





6.1 点测温

点击 ■ 图标可以在当前画面中添加一个点测温分析对象,并 在界面右侧展开一个半透明的信息栏,用于显示分析对象的温度信 息。连续点击,可以连续添加,若拖动变换点的位置,右侧温度信 息栏中,该点的温度信息同步更新,最多可添加6个点测温分析对 象。

6.2 线测温

点击图标 ☑ 可以在当前画面中添加一个线测温分析对象,并 在界面右侧展开一个半透明的信息栏,用于显示分析对象的温度 信息。连续点击,可以连续添加,若拖动变换线的位置,右侧温 度信息栏中,该线的温度信息同步更新,最多可添加6个线测温 分析对象。

6.3 区域测温

点击 图 图标 可以在当前画面中添加一个矩形区域的分析对 象,并在界面右侧展开一个半透明的信息栏,用于显示分析对象 的温度信息。连续点击,可以连续添加,若拖动变换区域的位置, 右侧温度信息栏中,该区域的温度信息同步更新,最多可添加6个 区域测温分析对象。

点击 图 图标 可以在当前画面中添加一个圆形区域的分析对 象,并在界面右侧展开一个半透明的信息栏,用于显示分析对象 的温度信息。连续点击,可以连续添加,若拖动变换区域的位置, 右侧温度信息栏中,该区域的温度信息同步更新,最多可添加6个 区域测温分析对象。

6.4 删除选中分析对象

点击图标 🛅 可以删除单个当前选中的测温分析对象。

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7. 色板 (图9)

在主界面,通过点击图标 🕃 来打开色板选择界面,如下图 所示。本软件提供铁红、彩虹、白热、红热、黑热、熔岩、高对比 彩虹等多种不同的色板,供用户根据不同场景或喜好进行选择切换。

8. 设置(图10)

点击图标 🔯 可以进入设置界面,如下图所示。在设置界面可 以进行语言选择、温度单位选择、温度标记选择、高低温报警设 置、辐射率设置、测温距离设置以及版本信息的查看等功能的操 作。



图10

8.1 语言选择

可以根据用户需要选择语言,默认中文,目前支持中文/英文 两种语言。



8.2 温度单位

默认为摄氏度(°C),可以根据需要切换华氏度(°F)。



8.3 温度标记

可以设置最高温标记、最低温标记和中心点标记。打开这些标记点后,主界面会显示相应的标记点(最高温标记为红色标记 点,最低温标记为绿色标记点,中心点标记为中心十字光标), 若都不打开,则主界面只显示色温条,如图所示。



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8.4 高低温报警

可以设置高温报警的边界温度值和低温报警的边界温度值。 设置成功后,当高温超过设置的温度预警最大值时,会出现红色 正三角的报警标志;低温低于温度预警最小值时,会出现绿色倒 三角的报警标志。







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9. 拍照/录像功能切换

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左/右滑动拍照键,可实现拍照/录像的切换,照片与录像都 会自动保存到图片中。





11. 画中画

点击主界面图标,APP将打开手机摄像头,并且显示在画中 画的小窗口,再次点击图标,可取消画中画。当双击小窗口任意 地方时,可见光和红外光的显示框对调,再次双击小窗口,则还 原到刚打开画中画时的状态。

12. 转换镜头

点击 **10** 图标,将转换手机的前/后置摄像头,红外光部分进 行镜像切换。可同时转换手机可见光前后置摄像头,并对红外热 成像图像进行镜像切换。

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13. 自动/手动打快门

1) 使用过程中, App会根据测温需要自动打快门;

2) 点击十字光标时,可以进行手动打快门。

14. 注意事项

- 请勿使用有溶解性的液体擦拭设备,这可能导致设备损坏。
- 在使用设备时请尽量保持稳定,避免剧烈晃动。
- 请勿暴力拆卸产品,以免造成不可逆的损坏。
- 请避免坚硬物品刮擦设备镜头,以免对镜头造成损伤。
- 请勿将产品镜头指向高强度能量源(包括太阳、激光发射设备 以及这些设备的反射源),否则可能对产品的测温精度产生影
 响,并可能损害或永久损坏产品的红外探测器。
- 请在不使用时, 将产品装入塑胶保护盒中。

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Preface

Thank you for purchasing this brand new UTi120Mobile Smart Phone Thermal Camera. In order to use this product safely and correctly, please read this manual thoroughly, especially the safety notes.

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 or 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.

Uni-Trend will not be responsible for any special, indirect, incidental or subsequent damage or loss caused by using this device.

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1. Specifications

IR resolution	120×90
Output frame rate	≪25Hz
Response wave band	8-14µm
Pixel size	17µm
NETD	60mK
Field of view (FOV)	50°(H)×38°(V)
Focusing mode	Focus-free
Measurement functions	Central point/highest temperature/ lowest temperature
Measurement range	-20°C 400°C
Accuracy	Temperature −10°C, ±2% or ±2°C (whichever is greater, ambient temperature: 25°C)
Unit	Celsius (°C), Fahrenheit (°F)
Measurement resolution	0. 1°C
Emissivity	0.01-1.0 (adjustable)
Palette	Iron Red, Rainbow, Gray Scale, Red Hot, Black White, Lava, High-Contrast Rainbow
Analysis objects	Point, line, rectangle, circle (can add up to 6 figures)

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Take photos/videos	\checkmark
PiP (Picture-in-Picture)	Simultaneous display of mobile phone camera image and infrared image
High/low temperature tracking	Real-time tracking of the highest/lowest temperature in the thermal image
High/low temperature alarm	The temperature is customizable.
Photo editing	Saved photos can be edited. Video editing is not supported.
Image data interface	USB_UVC (Type-C)
Operating temperature	0 +45°C
Storage temperature	-20 +60°C
Relative humidity	10% 85%, non-condensing
Operating altitude	2000m
Certifications	CE, RoHS, FCC
Accessories	User manual, Type-C male to female extension cable, Micro USB to Type-C interface adapter
Drop proof	2m

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2. Connection

Open the APP. If the device is not detected, the following interface will appear as shown in Figure 1. At this time, users can still enter the "Photos" and "Setting" pages, but other functions are unavailable. Insert the product into a smart phone, a prompt "Open UT120Mobile to process the UNIT ApplicationI Device?" will pop up. Click OK to connect to the device (if users want to connect directly without a prompt next time, check the box below "Always open UT120Mobile after connecting to the UNIT Application Device" before clicking OK).



The words "Loading..." and "Calibrating..." will appear when detecting the device as shown in Figure 2.



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3. Display

The initial state of the device after startup is shown in Figure 3 below. The palette is Iron Red by default, and the main page is divided into the following sections.



No.	Description
1	Upper temperature limit
2	Temperature distribution slider
3	Lower temperature limit
4	Photos
5	Menu bar
6	PiP
7	Start taking photos/videos/finish taking videos
8	Center point cursor
9	Temperature of the current center point

4. Photos

After opening the APP, click on Photos (No.4 in Figure 3) to enter the photos/videos interface as shown in Figure 4. and users can view and select these photos/videos.

4.1 Select/Cancel (Figure 5)

Click "Select" and then click a photo/video, the photo/video will be selected, and there will be a checked checkbox on the corresponding thumbnail. Click "Cancel", and the checkbox will disappear. When a photo/video is selected, it can be shared or deleted, and the icons are Share @ and Delete in respectively.





Figure 5

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4.2 View (Figure 6)

Click on a photo to enter the viewing interface, and users can perform functions such as Share/PiP/Delete/Blending/Edit. Click "Delete", and it will prompt "Delete this file?" Select "YES" to delete the photo and return to the photo interface.



Figure 6

Click on a video to enter the viewing interface, and users can perform functions such as Play/Share/Delete. Click on the screen, and the icon will appear. Users can Pause/Fast Forward/Rewind the video by using this icon or dragging the progress bar below.



Figure 7

4.3 PiP/Blending (Figure 8)

Click the icon III, a small PiP window will appear in the lower right corner. Users can also click on the icon IIII to check the blending situation, and drag the upper slider to adjust the blending ratio of visible light and infrared light.



Figure 8

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Clicking the PiP and blending icons can turn of f these two functions, and a prompt "No visible light" will pop up.

Remarks: When using a Type-C extension cable to connect to the product, the relative distance between the visible light camera and the product camera is unfixed and the blending effect is not good. Therefore, it is not recommended to perform the blending function when using a Type-C extension cable.



4.4 Edit

Click "Edit" in the photo viewing interface to enter the editing interface. Users can edit the current photo, and click "Cancel" to cancel the previous operation. After saving the editing operation, enter the editing interface again and click "Restore" in the upper right corner to restore the photo to its original state.

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The infrared thermal imaging photos taken by UTi120Mobile App can be edited while viewing.

The specific editing operations are as follows:

1) Rotate the photo: click the icon I to change the photo direction.

 Add an analysis object: click the icon I to display the following interface. These analysis objects can be moved/added/deleted.



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3) Brush: click the icon , the following interface will appear. Users can mark a photo in different colors. Click in to withdraw the previous operation, after clicking "Finish", enter the interface again, click can still withdraw the previous operation.



5. Visible Light Blending

When users click the icon a slider for adjusting blending will appear at the top. Dragging the slider can adjust the blending ratio of visible light and infrared light. Click the icon a an at the blending icon will appear. Drag the icon, and it will display the blending situation of the relevant position. Click a gain, the blending icon will disappear.



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6. Add Analysis Objects

Click the icon I to enter the interface for adding analysis objects, as shown in the figure below. Users can add/move/delete analysis objects (point/line/area), and only six objects can exist at the same timeAfter adding an analysis object and taking a photo, the added object can still be deleted.



No.	Description
1	Add a line
2	Add a rectangle
3	Add a circle
4	Add a point
5	Delete the selected analysis object
6	Temperature analysis area

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6.1 Point

Clicking the icon ada a point temperature analysis object and expand a semi-transparent information bar on the right side of the interface to display the temperature information of theanalysis objects. Click once to add one point. If users drag a point to change its position, the temperature information of the point will be updated synchronously, and up to 6 point analysis objects can be added.

6.2 Line

Clicking the icon ac an add a line temperature analysis object and expand a semi-transparent information bar on the right side of the interface to display the temperature information of the analysis objects. Click once to add one line. If users drag a line to change its position, the temperature information of the line will be updated synchronously, and up to 6 line analysis objects can be added.

6.3 Area

Clicking the icon a can add a rectangle temperature analysis object and expand a semi-transparent information bar on the right side of the interface to display the temperature information of the analysis objects. Click once to add one rectangle. If users drag a rectangle to change its position, the temperature information of the rectangle will be updated synchronously, and up to 6 rectangle analysis objects can be added. Clicking the icon a can add a circle temperature analysis object and expand a semi-transparent information bar on the right side of the interface to display the temperature information of the analysis objects. Click once to add one circle. If users drag a circle to change its position, the temperature information of the circle will be updated synchronously, and up to 6 circle analysis objects can be added. UTi120Mobile User Manual

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6.4 Delete Selected Analysis Objects

Clicking the icon in can delete the selected temperature analysis object.

7. Palette (Figure 9)

In the main interface, click the icon S to open the palette selection interface, as shown in the figure below. This APP provides Iron Red, Rainbow, Gray Scale, Red Hot, Black White, Lava, High-Contrast Rainbow palettes for users to choose according to diferent scenes or preferences.

8. Setting (Figure 10)

Click the icon I to enter the setting interface, as shown in the figure below. In the setting interface, users can perform functions such as selecting language/temperature unit/temperature mark, setting high and low temperature alarm/emissivity/measurement distance, and viewing version information.



Figure 10

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8.1 Language

Users can select the language according to their needs. The APP currently supports Chinese (default) and English.



8.2 Temperature Unit

The default temperature unit is Celsius (°C), and users can switch to Fahrenheit (°F) as needed.



8.3 Temperature Mark

Users can set Max Temp Mark, Min Temp Mark and Center Mark. After turning on these marks, the main interface will display the corresponding marks (Max Temp Mark: red, Min Temp Mark: green, Center Mark: a central cross cursor). If the marks are not turned on, the main interface will only display the temperature distribution slider, as shown in the figure.





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8.4 Temperature Alarm

Users can set Temperature Alarm Max and Temperature Alarm Min. After setting, when the temperature exceeds the Temperature Alarm Max, a red triangle will appear. When the temperature is lower than the Temperature Alarm Min, a green inverted triangle will appear.



If the Temperature Alarm is turned on, but the corresponding temperature value is not set, a prompt "The temperature setting is wrong. Please check!" will pop up.



8.5 Emissivity

The default value of emissivity is 0.95. Users can adjust the temperature measurement parameters according to the different measured objects to improve the measurement accuracy.



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8.6 Distance

The default distance is 0.6m. Users can adjust it according to their requirements.



8.7 Help

Open the product instruction manual.



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8.8 About

It includes the APP Version and the Model Version.



9. Switch Photo/Video Function

Slide the camera button left/right to switch between taking photos/ videos. Both photos and videos will be automatically saved in the Photo.





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10. Start/End Taking Photos/Videos

Slide the camera button left/right to enter the recording mode. Click the recording button to start recording, and the recording duration will be displayed on the top. Click the button again to end the recording.



11. PiP

Click the icon on the main interface, the APP will open the phone camera and display a small PIP window. Click the icon again to cancel the PiP. When double-clicking anywhere in the small window, the visible light and infrared light display windows will be interchanged, and double -clicking the small window again will restore the state.

12. Switch Camera

Click the icon III to switch the front/rear camera of the mobile phone, and the infrared light image will be mirrored. The front and rear visible light cameras of the mobile phone can be switched at the same time, and the infrared thermal image can be mirrored.

13. Auto/Manual Call Shutter

 The App will automatically call the shutter according to the temperature measurement needs when operating;

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2) Clicking the cross cursor can manually call the shutter.

14. Notes

- The App will automatically call the shutter according to the temperature measurement needs when operating;
- Do not use soluble liquids on the device, as this may cause device damage.
- When using the device, please try to keep it stable and avoid violent shaking.
- Please do not violently disassemble the product to avoid irreversible damage.
- · Please avoid hard objects scratching the device lens.
- Please do not point the product lens at high-intensity energy sources (including the sun, laser emission equipment and the reflection sources of these equipment), otherwise it may affect the measurement accuracy, and damage the infrared detector of the product.
- Please put the product into the plastic box when it is not used.

15. FCC Compliance statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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