DJI Thermal Analysis Tool

User Guide v1.2

2020.05

Searching for Keywords

Search for keywords such as “battery” and “install” to find a topic. If you are using Adobe Acrobat Reader to read this document, press Ctrl+F on Windows or Command+F on Mac to begin a search.

Navigating to a Topic

View a complete list of topics in the table of contents. Click on a topic to navigate to that section.

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Introduction

The DJI Thermal Analysis Tool can be used to analyze and process thermal images. By identifying the temperature information of critical areas of the target, the software can be used to analyze objects across many industrial applications. Major incidents can be prevented or addressed quickly by using the software to detect and pinpoint temperature abnormalities in equipment in routine inspections.

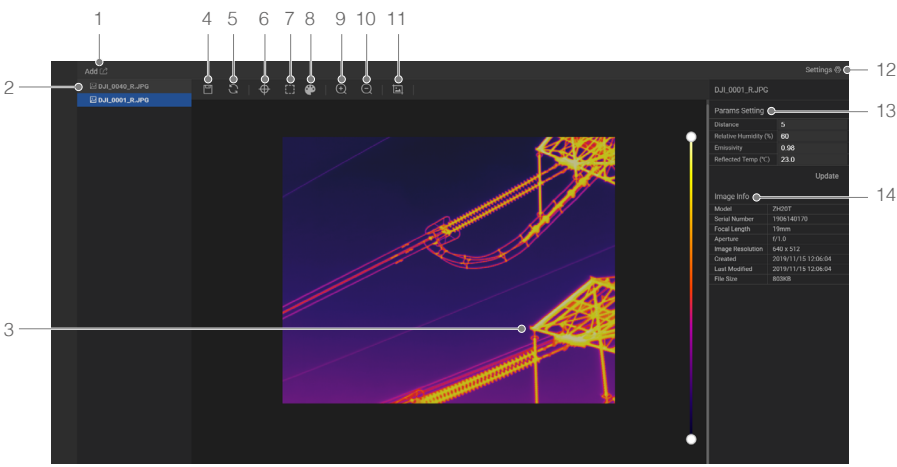
Operating System Requirements

Recommended:
Windows7
Windows10 or above

Supported Device

Zenmuse H20T, Zenmuse XT S

Usage



1. Add

   Tap to add thermal images to be analyzed. (Supported format: R-JPEG)

   Add Folder

   Import all the photos in the directory into the software with “Add Folder”. Right-click the folder to “Open Folder” or “Remove Folder”.

   Add Photo

   Import a single photo with “Add Photo” (or by dragging it into the software). Right-click the photo to “Open Folder” or “Remove Folder”.

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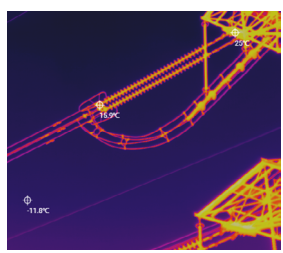
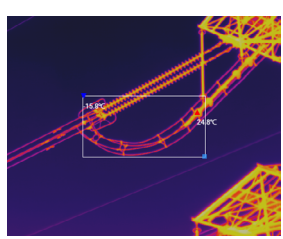
2. Tree-structured Directory
   Display the added photos in multiple levels.
3. Workspace
   Tap the photo in the directory to load it into the workspace.
4. Save
   Tap to save data such as spots and areas of temperature measurement, or specific palette settings to the R-JPEG images. This information is only visible when using DJI Thermal Analysis Tool, you cannot see this data when viewing these images in another software.

⚠ Saving photos will overwrite the original ones, please make a backup if needed.

5. Reset
   Tap to clear measurement information such as “Spot Meter” or “Area Measurement” and reset the palette to White Hot, so you can redo measurements and analyses.
6. Spot Meter
   Tap , then left-click the point that needs to be measured in the image, the temperature of that point will be shown. Drag the point to change where to measure, right-click to delete the point.



7. Area Measurement
   Tap to measure the highest and lowest temperatures of a rectangular area. Left-click and drag to select the measurement area, tap the rectangle and drag to change the measurement area, right-click the area to delete.



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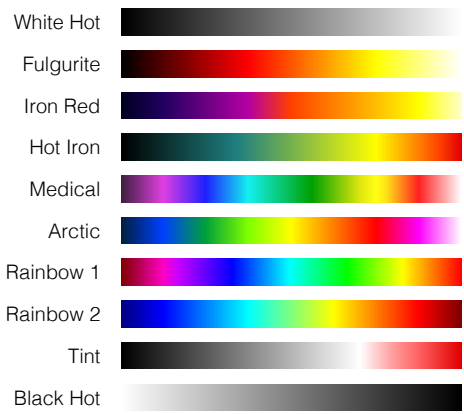
8. Palette

Tap to select palette to show the thermal image by different pseudo colors. The Chroma bar on the right side of the working zone can be used to adjust the color scale of the pseudo color.

Palette Color Description

The Zenmuse XT S offers a variety of palette options. Distinct colors are used to show temperature differences in the thermal image, which are related to grayscale intensity. The temperature range of the image is mapped to 256 colors and displayed in the 8-bit JPEG format.

The following table shows all palette options.



Palette	Description
White Hot	The most commonly used pseudo color, using white for high temperatures and black for low temperatures, which is a natural association for people.
Fulgurite	Dark red represents low temperatures and white represents high temperatures. The warm tone of this palette aligns with people's association with hot temperatures.
Iron Red	This palette displays nuanced differences in heat signatures, quickly displaying anomalies and human bodies. Hotter objects appear as light warm colors and colder objects appear as dark cool colors.
Hot Iron	Red represents high temperatures, and cool colors represent low temperatures. It is able to identify hot targets quickly, while showing the details of cool targets.
Medical	This palette shows nuanced differences in temperatures, and is therefore ideal for scenarios with small temperature changes. In environments with low contrast, it is still able to detect objects and slight temperature changes. It is mainly used in the medical field for human body temperatures.
Arctic	Uses the same palette as Medical, except switching the purple for a cool blue to better reflect temperature changes.

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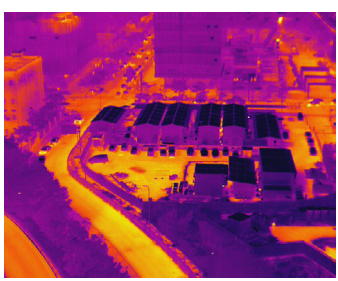
Rainbow 1	Similar to Medical, it reduces the warm color ratio and increases the cold color ratio for high temperature targets to better show the details of cool targets.
Rainbow 2	The color transition is reduced, the warm and cold colors are moderately proportioned, which can show the details of high and low temperature targets at the same time.
Tint	Uses black and white for low temperatures and bright red for high temperatures, it is able to detect high temperature targets quickly. Mainly used for high-contrast environments, ideal for quickly and accurately identifying high temperature targets at night.
Black Hot	The opposite to White Hot, using black for warmer objects and white for cooler objects. The heat distribution of high temperature targets can be better observed when outdoors.

Different palettes applied to the same example image are shown below.

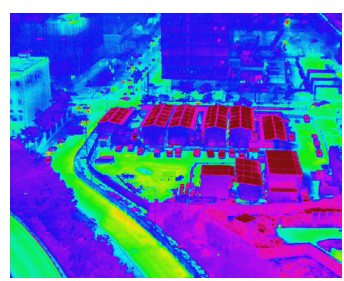
White Hot

Black Hot

Iron Red



Rainbow 1



9. Zoom In

   Tap ⊕ to enlarge the image by 10%, or you can zoom in by sliding the wheel up.

10. Zoom Out

    Tap ⊖ to reduce the image by 10%, or you can zoom out by sliding the wheel down.

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11. Screenshot

    Tap to save the current image in the workspace to the hard disk.

12. Settings

    Language Setting

    Supported languages: English and Chinese.

    Temperature Unit Setting

    Supported temperature units: Celsius (° C), Fahrenheit (° F), and Kelvin (K).

    About

    Shows the current software version.

13. Parameters Setting

    Distance: The distance to the target. An infrared thermal imager generates thermal images by receiving infrared radiation from objects. The farther away the object, the more the radiation attenuates. The camera's default calibration distance is generally fixed during production. This is the distance at which temperature measurements are the most accurate. Being too close or too far will resDistance:ult in bigger measurement errors.

    Relative Humidity: the relative humidity of the environment. Please configure this parameter based on the actual environmental conditions. The default value 70 means that the relative humidity is 70%, and the value range is [20~100]. Humidity configurations could affect the measurement result, but the effect is limited.

    Emissivity: how strongly the target surface is emitting energy as thermal radiation. Refer to the Emissivity of Common Materials Table to configure, since the target surface may be corroded or oxidized, the actual emissivity value may differ from the reference value. Emissivity configurations could significantly impact the measurement result.

    Reflected Temperature: the surface of the target that is measured could reflect the energy radiated by the surrounding objects. This reflected energy could be picked up by the camera along with the radiation, which could cause an error in the temperature reading. If there are no objects with extreme high or low temperatures nearby, set this parameter as the ambient temperature. Reflected temperature configurations could affect the measurement result, and the bigger the difference between the reading and the ambient temperature, the bigger the impact.

    Click Update to finish setting all the parameters.

- To maximize the accuracy of measurements, make sure that the parameters are set to meet the format and range requirements.
- The distance parameter can only be adjusted in photos taken by model ZH20T.

14. Image Information

    Shows the image information including model, serial number, focal length, aperture, image resolution, created or last modified time, and file size.

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