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ThermalCam User Manual

Revision History

| Date	Rev No.	Description	By
02/09/2023	2	Initial draft	Jeremy Hong
06/14/2024	2	Update to latest version	Bing Wen
03/28/2025	4	Update to latest version	Bing Wen

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Introduction

ThermalCam is a Windows program created to read frames streamed from a Miramar Camera and render them onto a display window. The format can be either YUYV or raw16.

Installation

ThermalCam.exe is a portable program. There is no installation needed other than unzipping all the contents of ThermCam*.zip to the desired location. Run "ThermCam.exe" from the directory to launch. Several dependencies, such as .NET runtime from Microsoft Inc., are required to run ThermalCam properly. Windows will detect the required .net version and prompt the user to download and install them if needed.

Opening Camera Stream

In the top menu bar, go to Source -> Open Device to open a Miramar camera. If playing back raw data, go to Source -> Open File.
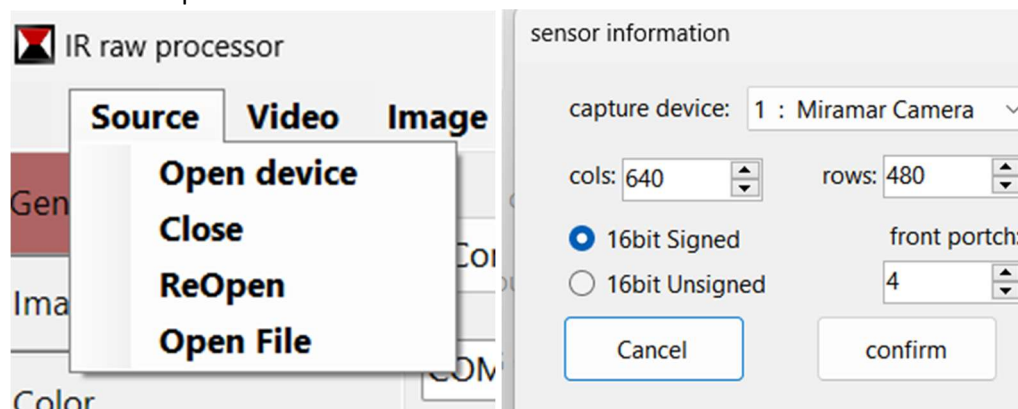
If multiple Miramar Cameras are connected, please select the desired index. If loading from .bin file, please specify the resolution correctly.
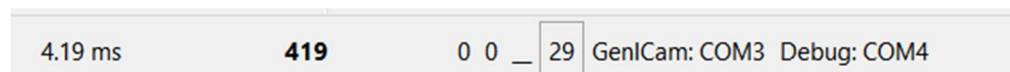
Once the video stream is open, the corresponding GenICam port will be connected correctly. The debug port will also be displayed at the bottom of the window, so the user can use a terminal program to display the debug information.

Image

The options in the *Image* tab allow the user to change how image is displayed by the computer. For most users, "Render by Camera" should be used. The image is rendered by the camera and to make any change, a GenICam command must be sent. In this mode, Colormap/AGC/CLAHE are turned on. UVC received image is in YUYV format. If "Render by PC" is used, Colormap/AGC/CLAHE are all turned off. The image will be displayed using some histogram equalization method.

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GenICam

Camera commands can be sent via controls in the GenIcam tab of the control window.

[Reboot]: Reboots camera. This will interrupt any stream and reload the camera with user set default settings.
[<-]: Drives the shutter in one direction
[->]: Drives the shutter in the opposite direction
[Save Background]: Performs a background subtraction using the shutter as reference.
Shutter Polarity: Reverses the direction of left/right shutter. This should be correct by default and left unchanged.
Enable Shutter: Enables/disables the shutter when performing **[Save Background]**. If disabled, user will need to use an external reference while saving the background.
Auto Background: Enables/disables periodic automatic background subtraction.
Rotate: rotate the captured image by 90 degrees before display
Radiometry: display temperature value (for radiometric calibrated cameras only, and must be "render by PC")
9Hz: display only 1 of every 3 frames.
Colormap: turn on/off colormap
AGC: turn on/off AGC
CLAHE turn on/off CLAHE

"set" button should be pushed to update the following 3 values.
Shutter delay: The length of time in frames for background subtraction shutter.
Background frames: The number of frames to be averaged as the background reference.
Max BG Gap (minutes): The maximum length of time in minutes between automated shutter calibration

Color

This page is only effective in "render by PC" mode.
In the *Color* tab, the user can test many different colormap palettes. To apply a colormap, toggle on the **color map** checkbox near the bottom of the window. Click on any of the listed colormaps, and toggle **invert** to reverse the cold-hot color spectrum.

Recording Data

Save current frame as png: **Image** -> **PNG**
Save current frame as raw: **Image** -> **Raw**
Copy current frame to clipboard: **Image** -> **Clipboard**
Save stream as mp4: **Video** -> **Save as MP4** (need to click again to stop recording)
Save stream as raw: **Video** -> **Save Raw** (need to click again to stop recording)

Developer Tools

If Listen CMD mode is checked, the program will listen to commands on TCP port 1099. Other program can send commands to control the behavior of this program.
Display the Log Form can provide some information on camera/program behavior.
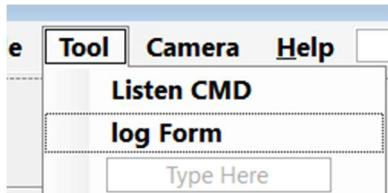
Save camera default settings

This menu will save current camera registers value to the flash so it will be loaded during reboot.
For example, to use camera with other apps, such as windows Camera app, make sure camera is in "render by camera" mode, and save all the settings.