ThermoStudio®

User Manual



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1. Prerequisites

1.1. System Requirements

- Above Windows 10 x64
- Minimum 4GB RAM
- Minimum 250GB Disk space
- Microsoft .NET (DotNet) Runtime 6.0
- Display resolution above 1024 x 768

1.2. License

To use this program without restrictions, you need to activate it with a 'License Number'. Programs that are not activated will offer a 30-day trial period.

2. Installation and Uninstallation

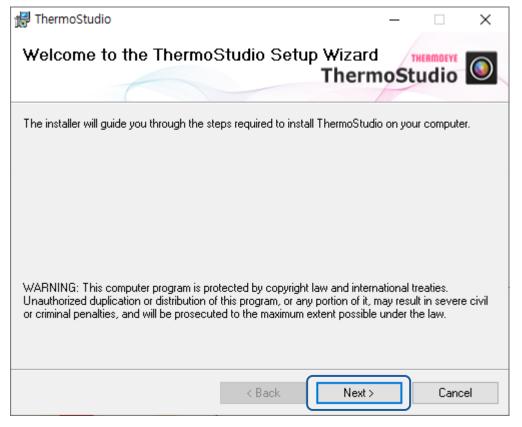
2.1. Installation

1) First, download the program installation file from the following link

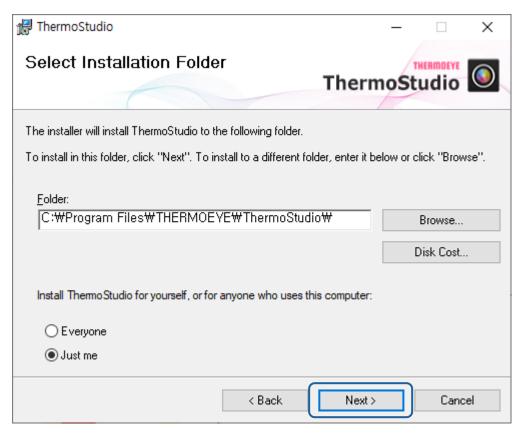
https://github.com/ThermoEye/ThermoStudio3/releases



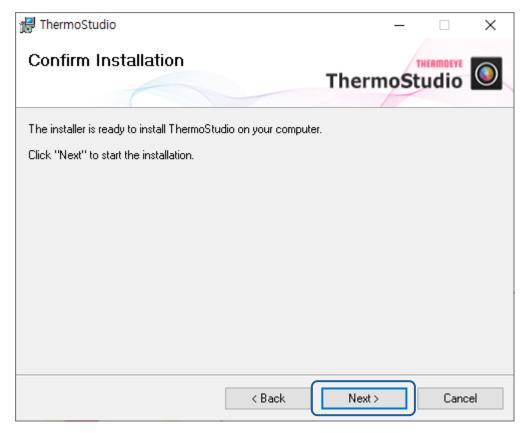
2) Run the installation program.



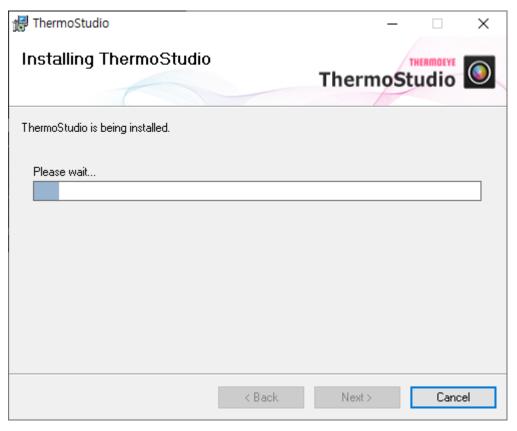
3) Click the 'Next' button.



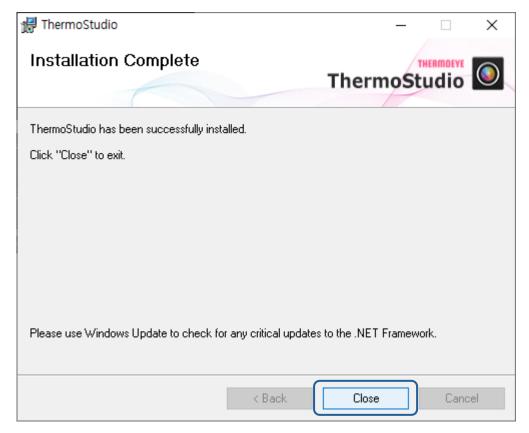
4) Click the 'Next' button. If you want to change the installation path, either enter it manually or browse to select your desired path.



5) Click the 'Next' Button.



6) The installation will begin



7) Once the installation is complete, click the 'Close' button to exit the installer.

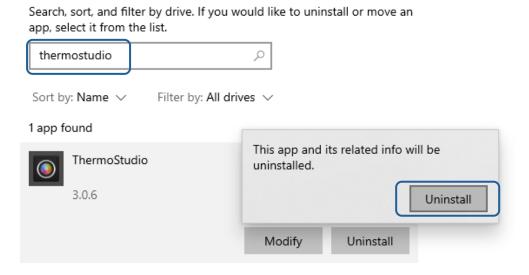
2.2. Uninstallation



1) Click the 'Windows Start' button and click the 'Settings' icon.



2) Click the 'Apps' button.



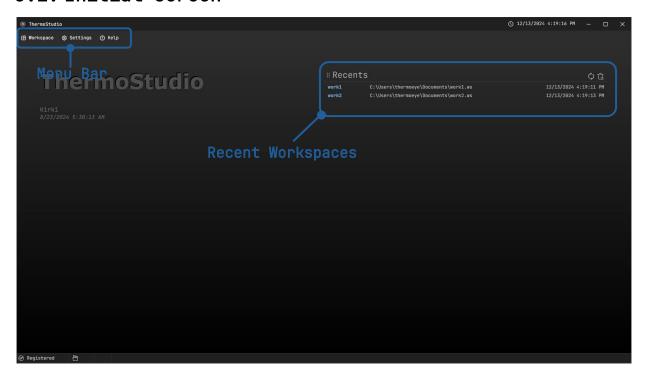
3) Search for the keyword 'thermostudio', select the result, and click the 'Uninstall' button.

3. Startup



You can run the program from the 'Apps' section in the 'Windows Start Menu'.

3.1. Initial Screen



3.2. Menu Bar

3.2.1. Workspace

This menu is related to the workspace.



New

Create a new workspace.

Open

Open the saved workspace file(.ws).

• Close

Close the current workspace.

Save

Save the current workspace status to a file(.ws). This saves the thermal camera's properties and global options.

• Save As

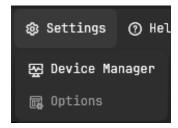
Save current workspace status to a different file(.ws).

Exit

Shut down the program.

3.2.2. Settings

Manage devices or configure workspace settings.



• Device Manager

Search for and configure thermal cameras.

Options

Set options for the current workspace. These options can only be configured when the workspace is active.

3.2.3. Help

Check the license status, activate the license and view the program's information.



3.3. Recent Workspaces

Display recently opened or saved workspaces. Double-click an item in the list to open the corresponding workspace.



Refresh

Refreshes recent workspaces.

• Clear

Clear recent workspaces.

4. License Management

4.1. License Status



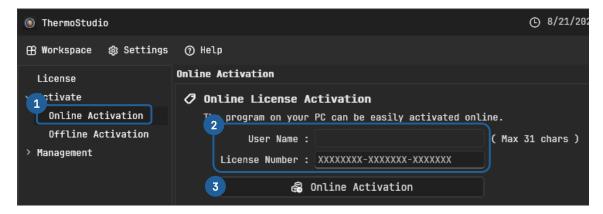
1) Click the 'Help' menu at the top of the program window, then select the 'License' option.



2) You can check the status of your license.

4.2. Online Activation

With online activation, you can easily activate your license.



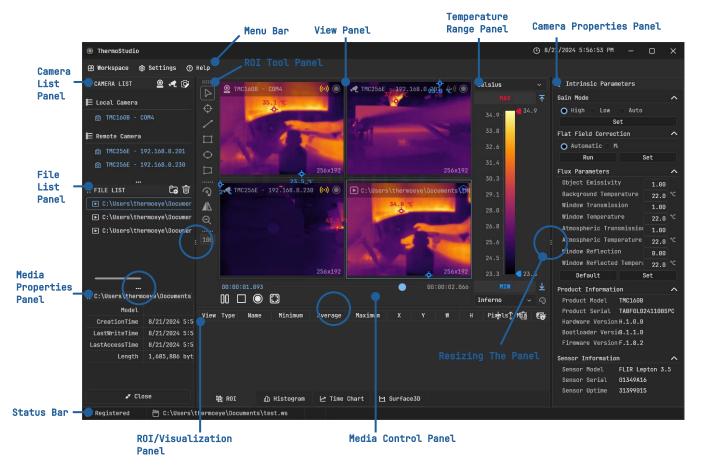
- 1) While in the 'License' menu, select the 'Online Activation' option.
- 2) Enter your desired user name and the provided 'License Number'.
- 3) Click the 'Online Activation' button to activate.

5. Workspace

Initially, you need to create a new workspace.



5.1. Layout



5.1.1. Menu Bar

Main menu bar.

5.1.2. Camera List Panel

Search for local or remote thermal cameras, display the found thermal cameras, and rename them.

5.1.3. File List Panel

Load and display media files (.tmi) recorded from the thermal camera.

5.1.4. Media Properties Panel

Display information about thermal cameras or media files, connect or disconnect thermal cameras, and open or close media files (.tmi).

5.1.5. Status Bar

Display the license status and show the file path if the workspace was loaded from a workspace save file(.ws).

5.1.6. ROI Tool Panel

Draw ROI(Region Of Interest) on the view and flip the view.

5.1.7. View Panel

Display views from connected thermal cameras or opened media files.

5.1.8. Media Control Panel

Display the connection uptime of the thermal camera, record the thermal camera's view, take a snapshot from the thermal camera view, display the running time of a media file, play, pause, or stop the media file, and seek a frame from the media file.

5.1.9. ROI/Visualization Panel

Display ROI information from the view, and visualize the temperature distribution from the view.

5.1.10. Temperature Range Panel

Display the temperature range with colors, customize the colors for the temperature range, display the minimum and maximum temperatures, select colors for the temperature range, and adjust the temperature range to filter the temperature from view.

5.1.11. Camera Properties Panel

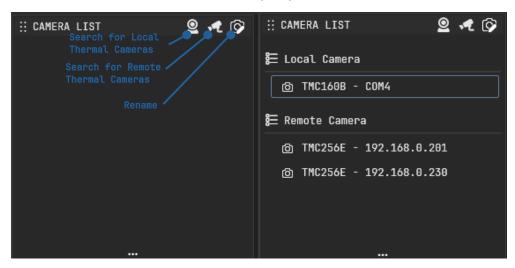
Adjust the thermal camera properties and monitor the alarms.

5.1.12. Resizing The Panel

Resize the panel by dragging.

5.2. Camera List Panel

Search for thermal cameras, display results and rename them.



5.2.1. Search for Local Thermal Cameras

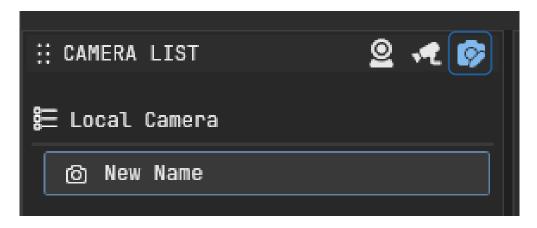
Click the 'Scan Local Cameras' button. The detected cameras will be listed in the 'Local Camera' section.

5.2.2. Search for Remote Thermal Cameras

Click the 'Scan Remote Cameras' button. The detected cameras will be listed in the 'Remote Camera' section.

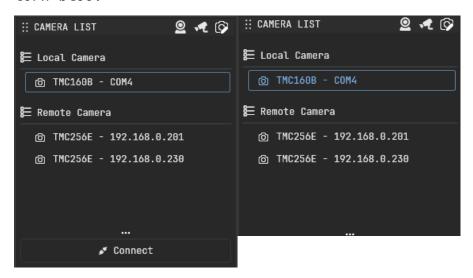
5.2.3. Rename

Click the 'Edit Camera Name' button to rename the thermal camera. After clicking the button, select the desired camera from the list and enter a new name. Click the button again to finish renaming the thermal camera.



5.2.4. Connect

Select a thermal camera from the list and click the 'Connect' button in the 'Media Properties Panel', or double-click the camera in the 'Camera List Panel'. The name of the connected camera will turn blue.

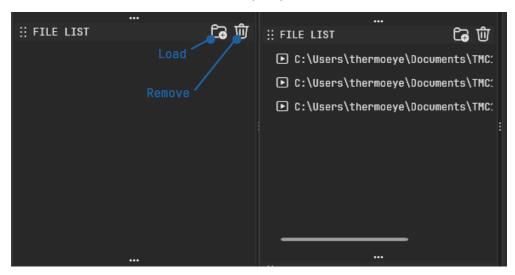


5.2.5. Disconnect

Select a thermal camera from the 'Camera List Panel' and click the 'Disconnect' button in the 'Media Properties Panel', or double-click the camera in the 'Camera List Panel'. The name of the disconnected camera will turn white.

5.3. File List Panel

Load recorded files(.tmi) and play them.



5.3.1. Load

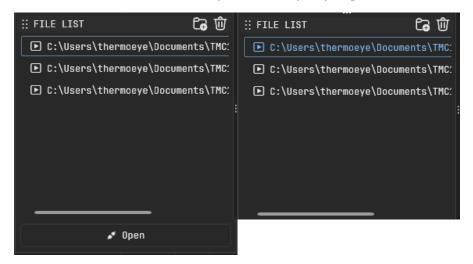
Click the 'Load Media File' button, The loaded files will be displayed in the list.

5.3.2. Remove

Select a media file from the list and click the 'Remove Media File' button to remove it from the list. This action only removes the file from the list and does not delete the actual file.

5.3.3. Open

Select a media file from the list and click the 'Open' button in the 'Media Properties Panel,' or double-click the media file in the list. The name of the opened or playing media file will turn blue.

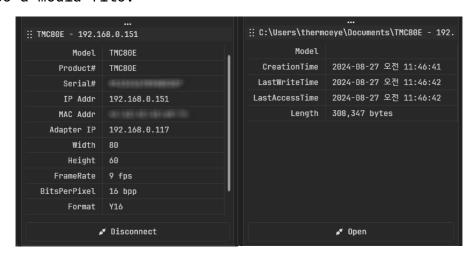


5.3.4. Close

Select a media file from the list and click the 'Close' button in the 'Media Properties Panel,' or double-click the media file that is open in the list. The name of the opened or playing media file will turn white.

5.4. Media Properties Panel

Display properties of a selected thermal camera or a media file. You can also connect or disconnect a thermal camera and open or close a media file.



5.5. View Panel

Display the feed from the connected camera or any opened media file. By default it shows the maximum temperature and minimum temperature spots.



5.5.1. Single-view and Multi-view

When there is only one camera or media file view, the 'View Panel' displays it in a single frame. (Single-view mode)
When there are multiple camera or media file views, the 'View Panel' arranges them in a grid. (Multi-view mode)

5.5.2. Select View

Click a view frame to select it. The border of the selected frame will turn blue. You can then perform various actions with the selected frame or view information about it.

5.5.3. Switching Between Single-view and Multi-View

In multi-view mode, double-click a view frame to switch to single-view mode and zoom in on it. In single-view mode, double-click a view frame to switch to multi-view mode.

5.5.4. View Information Bar

At the top of the view frame, there is some information.

• Local thermal camera



- 1) Camera icon(Local Camera) and name.
- 2) If the connection is good, it will blink.
- 3) If the view frame is recording, it will blink.

Remote thermal camera



- 1) Camera icon(Remote Camera) and name and IP.
- 2) If the connection is good, it will blink.
- 3) If the view frame is recording, it will blink.
- Media file



- 1) File icon and file name.
- 2) If the view frame is playing, it will blink.
- 3) If the view frame is recording, it will blink.

5.6. Media Control Panel

5.6.1. Navigation Bar



From left to right

- Thermal camera connection uptime or media file playtime.
- Seek to a specific point by dragging.
- Total runtime of the media file.

5.6.2. Control Panel

Control selected thermal camera or media file view.



From left to right

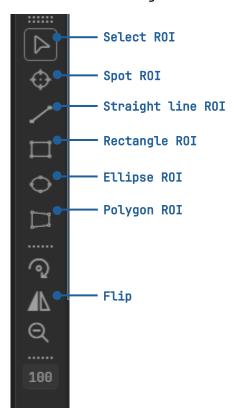
- Play or pause the selected views. If media is recording, it will also play or pause.
- Stop the selected views. If the media is recording, it will finish.
- Record the selected thermal camera view or tmi file view. The icon will blink when there is any recording in selected views.
 Clicking this blinking button will finish the recording of views in the selected views.

The recording will be done in one of the following two types, depending on the view type being recorded.

- tmi file (.tmi): When record camera views, this type will be recorded. This type is consists of raw data from the thermal camera. It can be played in ThermoStudio.
- Video file(.mp4|.avi): When record tmi file(.tmi), this type will be recorded. It will be recorded as viewed. It can be played in any video player that supports this format.
- Take a snapshot of the selected view. If snapshots are taken periodically, the icon will blink during each snapshot.

5.7. ROI Tool Panel

Draw ROIs on the selected view or flip it horizontally. The ROI displays the minimum, maximum and average temperature within its area. This feature is only available in single-view mode.



5.7.1. Select ROI

Select a ROI on the view by clicking, and move its position by dragging. Selected ROI's border is displayed as a dotted line.

5.7.2. Spot ROI

Draw a spot ROI on the view by clicking.

5.7.3. Straight line ROI

Draw a straight line ROI on the view by dragging.

5.7.4. Rectangle ROI

Draw a square ROI on the view by dragging.

5.7.5. Ellipse ROI

Draw a Ellipse ROI on the view by dragging.

5.7.6. Polygon ROI

Draw a polygon ROI, to first draw a straight line by dragging on the view. Then, click to place vertices. Finish the drawing by clicking on any vertex. Clicking on any vertex will draw a line connecting the last vertex to the initial vertex, completing the polygon from the first to the last vertex.

5.7.7. Flip

Flip the view. By right-clicking, you can toggle the flip direction (Horizontal or Vertical)

5.8. ROI/Visualization Panel

5.8.1. ROI Tab

Display ROIs information of the selected view and control ROIs.



Click ROI tab.



From left to right

5.8.1.1. Import ROIs

Import ROIs from a file(.roi).

5.8.1.2. Export ROIs

Export ROIs to a file(.roi).

5.8.1.3. Remove All

Remove all ROIs from the list.

5.8.1.4. Log ROI

Log ROI data to a file (.csv). The icon will blink during the logging process. Click again to finish logging.

5.8.2. ROI List

Display ROI information and control them.



From left to right

5.8.2.1. Toggle Visibility

The ROI's Visibility. Click to toggle the ROI's visibility.

5.8.2.2. Type and Color

Type of ROI. Change the ROI's border color by clicking. A color palette will pop up, allowing you to select a color.



5.8.2.3. Name

Name of the ROI. Click to enter a new name.

5.8.2.4. Minimum Temperature

Minimum temperature within the ROI area.

5.8.2.5. Average Temperature

Average temperature within the ROI area.

5.8.2.6. Maximum Temperature

Maximum temperature within the ROI area.

5.8.2.7. X Coordinate

The X coordinate of the top-left corner of the ROI. Click to edit and move the position along the X-axis. The origin is the top-left corner of the view frame.

5.8.2.8. Y Coordinate

The Y coordinate of the top-left corner of the ROI. Click to edit and move the position along the Y-axis. The origin is the top-left corner of the view frame.

5.8.2.9. Width

Width of the ROI. Click to edit and adjust ROI's width.

5.8.2.10. Height

Height of the ROI. Click to edit and adjust ROI's height.

5.8.2.11. Pixels

Number of pixels within the ROI's area.

5.8.2.12. Minimum Visibility

Minimum temperature visibility of the ROI. Click to toggle its visibility.

5.8.2.13. Maximum Visibility

Maximum temperature visibility of the ROI. Click to toggle its visibility.

5.8.2.14. Remove

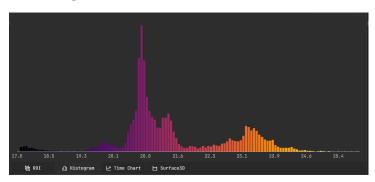
Remove ROI. Click to remove the ROI item from the list.

5.8.3. Visualization

Visualize the temperature distribution of the view.

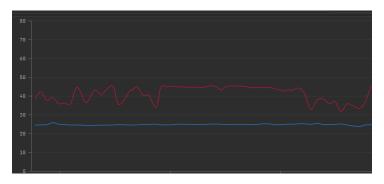
5.8.3.1. Histogram

Click the Histogram tab in the ROI/Visualization Panel.



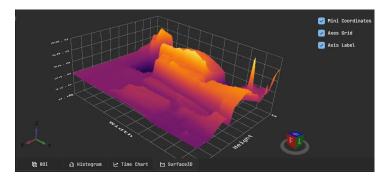
5.8.3.2. Temporal Chart

Click the Temporal tab in the ROI/Visualization Panel.



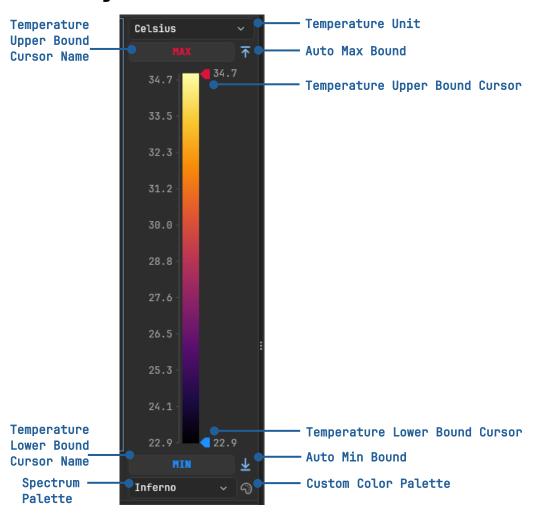
5.8.3.3. Spatial Chart

Click the Spatial tab in the ROI/Visualization Panel.



- Pan by dragging with the left mouse button.
- Rotate by dragging with the right mouse button.
- Move the rotation pivot point by dragging with the mouse wheel.

5.9. Temperature Range Panel



5.9.1. Temperature Unit

Click to select the temperature unit. Options include Raw, Celsius, Fahrenheit, Kelvin.

5.9.2. Temperature Upper Bound Cursor

Cursor that indicates the upper bound of the temperature filtering range. When 'Auto Max Bound' is disabled, you can move it by dragging to adjust the upper temperature bound.

5.9.3. Temperature Upper Bound Cursor Name

When 'Auto Max Bound' is disabled, Click to enter a new name of the 'Temperature Upper Bound Cursor'.

5.9.4. Auto Max Bound

Toggle 'Auto Max Bound'. When enabled, the 'Temperature Upper Bound Cursor' will automatically track the maximum temperature in the view.

5.9.5. Temperature Lower Bound Cursor

Cursor that indicates the lower bound of the temperature filtering range. When 'Auto Min Bound' is disabled, you can move it by dragging to adjust the lower temperature bound.

5.9.6. Temperature Lower Bound Cursor Name

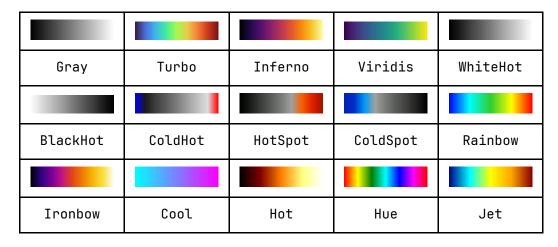
When 'Auto Min Bound' is disabled, Click to enter a new name of the 'Temperature Lower Bound Cursor'.

5.9.7. Auto Min Bound

Toggle 'Auto Min Bound'. When enabled, the 'Temperature Lower Bound Cursor' will automatically track the minimum temperature in the view.

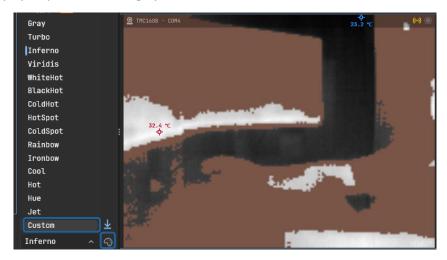
5.9.8. Spectrum Palette

Click to change the temperature range spectrum. The following presets are available.



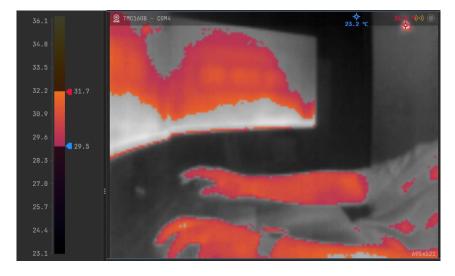
5.9.9. Custom Color Palette

Select 'Custom' from the spectrum list. Then click the palette icon to change the color of the temperature range bar. A color palette will pop up, allowing you to select a color.

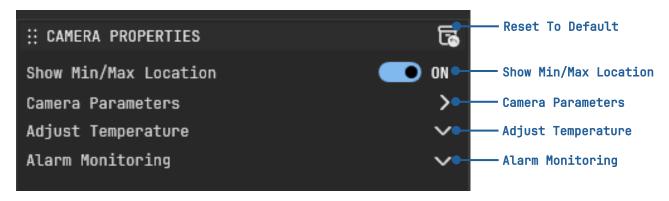


5.9.10. Temperature Filter

Adjust the temperature range using the temperature bound cursors. Only temperatures within that range will be displayed in color. Temperature outside the range will be displayed with gray scale.



5.10. Camera Properties Panel



5.10.1. Reset To Default

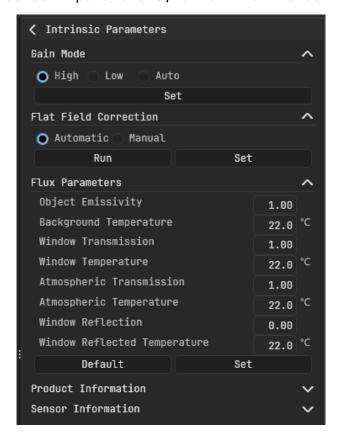
Reset all properties to their default settings.

5.10.2. Show Min/Max Location

Toggle the visibility of the Min/Max temperature in the selected view.

5.10.3. Camera Parameters

To adjust the thermal camera parameters, click the 'Set' button. To restore the default parameters, click the 'Default' button.



5.10.3.1. Gain Mode

Set the 'Gain Mode'.

5.10.3.2. Flat Field Correction(FFC)

Set the Flat Field Correction mode. When you click the 'Run' button, FFC will be initiated immediately.

5.10.3.3. Object Emissivity

Set the 'Object Emissivity'.

5.10.3.4. Background Temperature

Set the 'Background Temperature'.

5.10.3.5. Window Transmission

Set the 'Window Transmission'.

5.10.3.6. Window Temperature

Set the 'Window temperature'.

5.10.3.7. Atmospheric Transmission

Set the 'Atmospheric Transmission'.

5.10.3.8. Atmospheric Temperature

Set the 'Atmospheric Temperature'.

5.10.3.9. Window Reflection

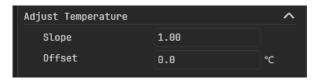
Set the 'Window Reflection'.

5.10.3.10. Window Reflected Temperature

Set the 'Window Reflected Temperature'.

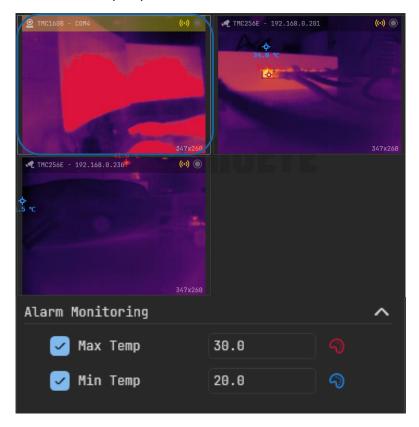
5.10.4. Adjust Temperature

When a value is set, it is applied immediately.



5.10.5. Alarm Monitoring

When the detected temperature exceeds the specified range, a notification is displayed on the view.



Max Temp

Set the upper temperature limit. To enable this feature, check the box and enter the desired temperature. You can select a custom color using the palette, and any area in the view exceeding the specified temperature will be highlighted with the selected color.

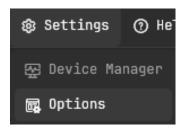
Min Temp

Set the lower temperature limit. To enable this feature, check the box and enter the desired temperature. You can select a custom color using the palette, and any area in the view exceeding the specified temperature will be highlighted with the selected color.

6. Settings

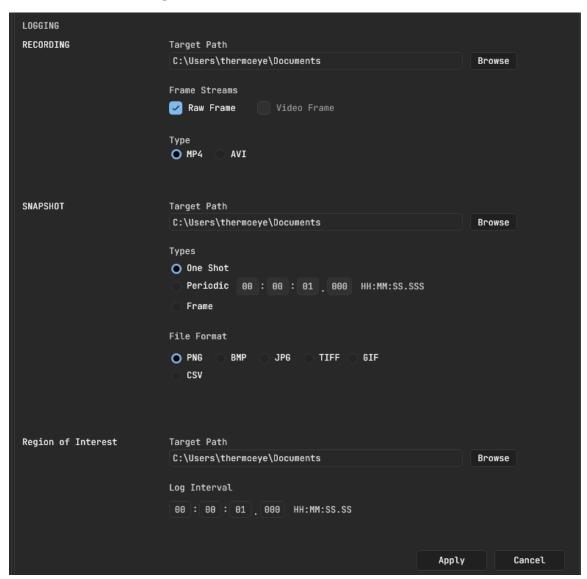
6.1. Options

Configure the global settings for the workspace. This can only be used when the workspace is open.



6.1.1. Logging

Configure settings for recording, snapshots, and ROI. Click the 'Apply' button to save the settings, or click the 'Cancel' button to discard changes.



6.1.1.1. Recording

- Target Path
 - Setting for default target path for record files.
- Frame Streams
 - Only 'Raw Frame' is supported in this version.
- Type
 - This setting is only applied when recording the .tmi file.

6.1.1.2. Snapshot

• Target Path

Setting for default target path for snapshot files.

Types

A snapshot can be set to either 'One Shot' or 'Periodic' and 'Frame'.

- One Shot: Take a screenshot of selected views.
- Periodic: snapshots will be taken at its set intervals. You can specify the interval for each snapshot.
- Frame: Not supported for this version.

Image File Format

Set the format for snapshot images. When set to 'CSV', it will record continuously.

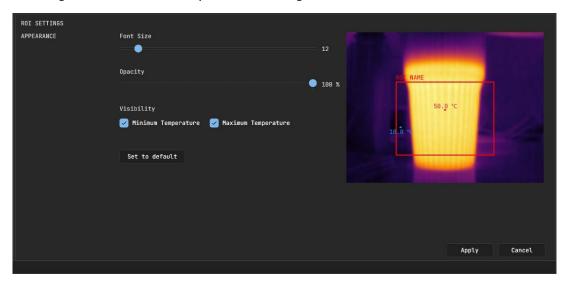
6.1.1.3. ROI

• Log Interval

Set the interval for ROI logging.

6.1.2. ROI Settings

Settings for ROI appearance. You can preview the result of this configuration in the preview image.



• Font Size

Adjust font sizes for both the ROI's data (Name, Temperature) and the global Minimum/Maximum temperature.

Opacity

Adjust the opacities of the ROI object, ROI's data (Name, Temperature) and the global Minimum/Maximum temperature.

• Visibility

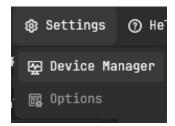
Set the visibility of the ROI's Minimum/Maximum temperature. This option does not affect the global Minimum/Maximum temperature.

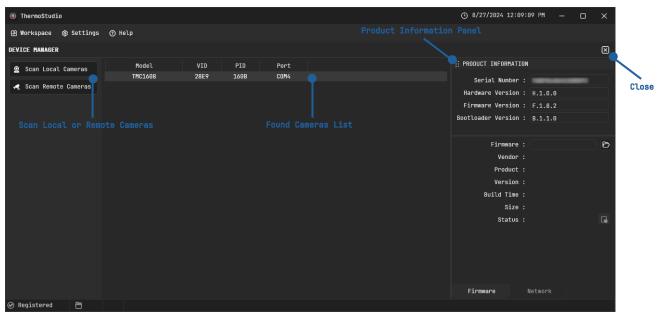
Set to default

Restore ROI settings to default. To apply this, click the Apply button after clicking 'Set to default' button.

6.2. Device Manager

Configure settings for local and remote thermal cameras. To configure, first scan for cameras.





6.2.1. Scan Local or Remote Cameras

Search for local or remote thermal cameras.

6.2.2. Found Cameras List

Display the found cameras. Click a camera in the list to view its information or configure its settings.

6.2.3. Close

Close the 'Device Manager' window.

6.2.4. Product Information Panel

Display thermal camera information. It includes 'Firmware' and 'Network' tabs.



6.2.4.1. Firmware Tab

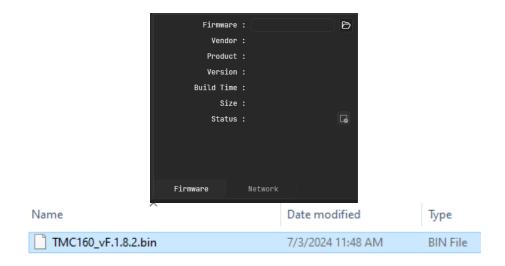
Update the firmware of the selected thermal camera.



1) Select a thermal camera to update its firmware



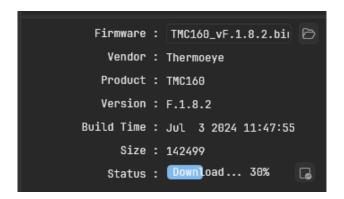
2) Click the 'Firmware' tab.



3) To open a firmware binary file, click the 'Open Firmware' button. Select a firmware binary file that is compatible with the thermal camera model.



4) You can view firmware information. To update click the 'Update Firmware' button.



- 5) The firmware update will begin.
- 6) After the firmware update is complete, reconnect the thermal camera.

6.2.5. Network Tab

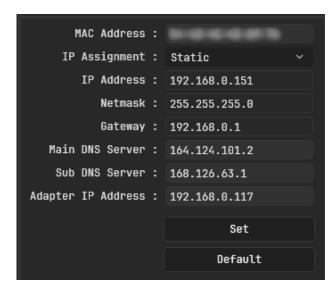
Configure settings for a remote thermal camera. To configure, first scan for remote cameras.



1) Select a remote thermal camera.



2) Click the 'Network' tab.



3) To apply the settings, click the 'Set' button. To restore to default Click the 'Default' button.

• IP Assignment

When set to 'Static,' you can edit the 'IP Address,' 'Netmask,' and 'Gateway.' If 'DHCP' is selected, the camera will automatically obtain an IP address.

• IP Address

Set the IP address. When 'IP Assignment' is set to 'Static'.

Netmask

Set the network mask. When 'IP Assignment' is set to 'Static'.

Gateway

Set the gateway. When 'IP Assignment' is set to 'Static'.

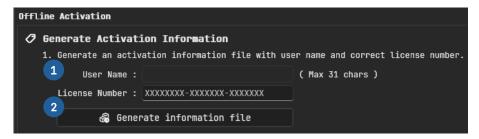
7. Help

7.1. License

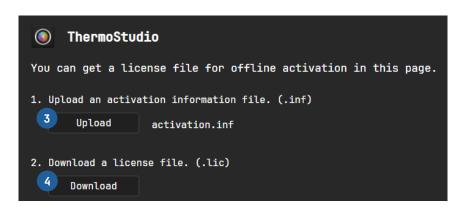
7.1.1. Online Activation

See 4.2 Online Activation.

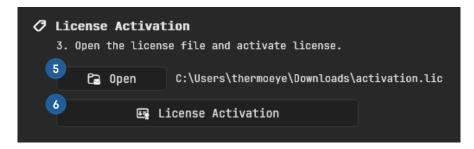
7.1.2. Offline Activation



- 1) Enter user name and 'License Number'.
- 2) Click the 'Generate Information File' button to generate the 'License Information File'(.inf).



- 3) Visit the ThermoStudio license authentication web page and upload the 'License Information File' (.inf).
- 4) After uploading, Download the 'License File'(.lic).

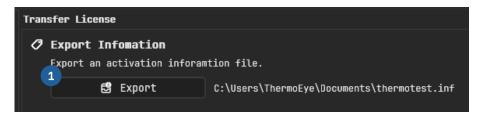


- 5) Open the downloaded 'License File'(.lic) by clicking the 'Open' button.
- 6) Activate license by clicking 'License Activation' button.

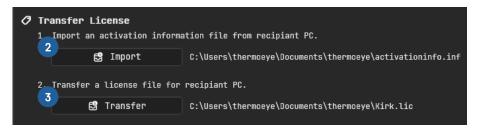
7.2. Management

7.2.1. Transfer License

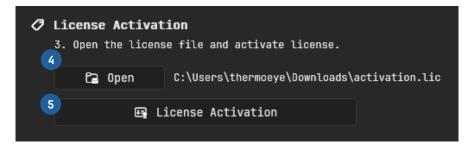
You can transfer the license activation to a different PC.



1) Export the 'Activation Information File'(.inf) from the recipient PC by clicking the 'Export' button.



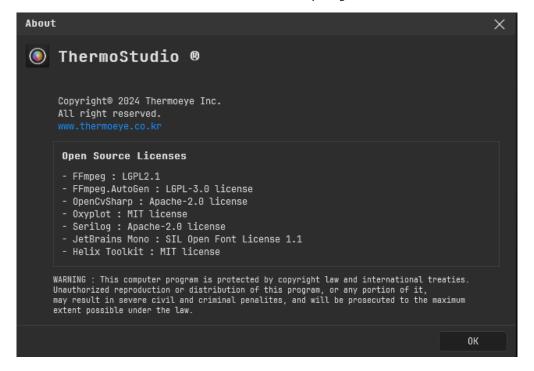
- 2) Import the 'Activation Information File'(.inf) to the donor PC by clicking the 'Import' button.
- 3) Generate 'License File'(.lic) from the donor PC by clicking the 'Transfer' button.



- 4) Open the 'License File'(.lic) at the recipient PC by clicking the 'Open' button under 'Activate > Offline Activation'.
- 5) Activate the license by clicking the 'License Activation' button.

7.3. About

You can check information about this program.



Contacts

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Supports

www.github.com/ThermoEye