

# **InsidelR**

Thermal Image Analysis Software

## **Users Manual**

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# Chapter 1

## ***Installing and Preparing InsideIR***

Use InsideIR Thermal Image Analysis Software (InsideIR) and a PC to retrieve, archive, manage and analyze thermal images captured with a Fluke Thermal Imager.

### *Note*

*InsideIR supports Fluke Ti20 and Ti30 Thermal Imagers (Thermal Imager).  
For newer models, check the users manual.*

## **System Requirements**

### **Software**

- Microsoft Windows 2000, Windows XP, or Vista
- Internet Explorer 5.01 or later, appropriate to the language/culture settings of the operating system installed on the computer
- Microsoft .NET Framework 2.0 and Microsoft Visual runtime components 1.1 (included on the InsideIR 4.0 CD-ROM)

### *Note*

*To install the software and initialize the USB drivers, you must have administrator privileges for the PC.*

### **Hardware**

- PC with a 1-GHz processor
- 512 MB RAM
- 500 MB free hard disk space
- Super VGA monitor with the screen resolution set at 1024 x 768 or greater, small fonts setting, and true color (32 bits)
- CD-ROM drive
- USB port (USB 2.0 High-Speed recommended)

## **Contacting Fluke**

To contact Fluke, call:

1-888-993-5853 in USA  
1-800-363-5853 in Canada  
+31-402-675-200 in Europe  
+81-3-3434-0181 in Japan  
+65-738-5655 in Singapore  
+1-425-446-5500 from anywhere in the world

Or, visit Fluke's Web site at [www.fluke.com](http://www.fluke.com)

To register your product, visit <http://register.fluke.com>

## **Installing the Software**

### *Note*

*Do not remove the CD until after installing the software, rebooting the machine (if instructed to do so), and opening the application.*

1. Insert the CD.
2. If the window listing options available on the CD does not appear:
  - a. Select **Start>Run**.
  - b. Enter the CD drive letter followed by `:\launch.exe`.
3. Click **Launch Software**.

After installation, a link to the software appears on the desktop and in the Start>Programs list.
4. Register the software at <http://register.fluke.com> for access to free InsideIR updates and efficient technical support.

## **Launching the Software**

The first time you connect it to the PC's USB port, the Thermal Imager's USB drivers are copied to the windows\system32\drivers folder.

### *Note*

*You must separately initialize each model of Thermal Imager to be used with the software. Each model has its own set of USB drivers.*

- ▶ Double-click the desktop icon.

The InsideIR Image Explorer screen appears.

## Selecting a Language

- ▶ Select **Help>Language**.

The language you select appears on the toolbar and button labels.

## Setting the Clock for Image Captures

The Thermal Imager can timestamp images as you capture them. Before capturing images, set its clock to the local time.

### Note

*The Thermal Imager's clock appears in the top-right corner of its display. Periodically verify its clock's accuracy. You can only set or reset the clock from the PC.*

1. Launch InsideIR.
2. Connect the Thermal Imager to a USB Port on the PC.  
The Thermal Imager powers on. If InsideIR is configured to automatically download images from its memory, it does so. The button set in the Image Explorer window changes from gray to white.
3. Click **Set Time**. The Set Device Clock dialog appears. The PC's date/time appears by default.
4. Load the date/time to the Thermal Imager:
  - To accept the date/time, click **Set**.
  - To change the date/time, uncheck **Get current computer date/time**. Enter the date and time. Click **Set**.

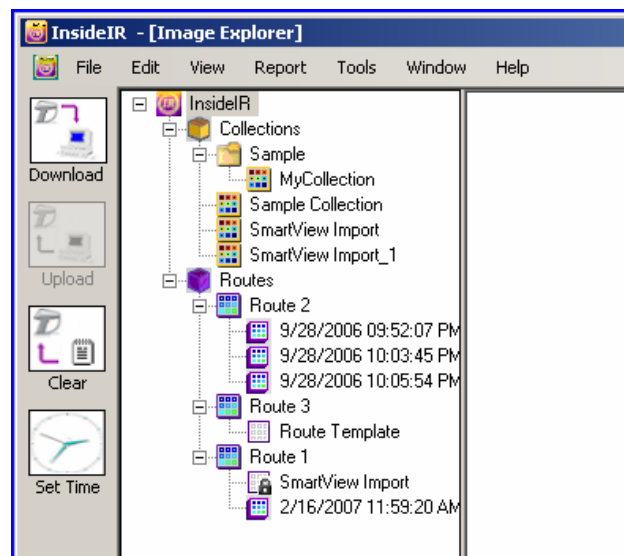


## Chapter 2

# Collecting and Managing Images

### Downloading Images

InsideIR downloads images to the Collections and Routes folders. You can add subfolders.



faa313f.bmp

| Folder      | Recommended Usage                                                                                              |
|-------------|----------------------------------------------------------------------------------------------------------------|
| Collections | One-time collection of images.                                                                                 |
| Routes      | Image sets for scheduled inspections. Examples: monitoring and maintaining industrial equipment installations. |

### **Capturing a Series of Images**

Inform the Thermal Imager of the download area (Collections or Routes) before capturing the first image in a series.

- ▶ Perform an upload from a collection or route.

All subsequent downloads are directed to this area.

To change the area:

- ▶ Upload to the Thermal Imager again.

### **Collections Folder (Default)**

Select a method to establish the Collections folder as the download location.

| Method       | Procedure                                                                                                                                                                       |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clear button | <b>Important:</b> This method deletes all images from the Thermal Imager.<br>▶ Click <b>Clear</b> (or <b>File&gt;Clear Images in Imager</b> ).                                  |
| Context menu | ▶ Right-click a collection in the Collections folder and select <b>Upload Collection</b> .<br>This method uploads the selected collection and its images to the Thermal Imager. |

#### *Note*

*Manually deleting all images from the Thermal Imager will not change the download area.*

### **Routes Folder**

Select a method to establish the Routes folder as the download area. Both methods create a route that contains a route template for the next upload.

### **Creating a Route Based on a Collection**

1. Open a collection from the Collections folder and edit it to define the assets to be inspected:

| Goal                                         | Procedure                                                                                                                |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Add an image                                 | 1. Copy the image from a collection or route inspection.<br>2. Paste the image into the route template you are creating. |
| Delete an image                              | 1. Select the image.<br>2. Press Delete.                                                                                 |
| Move an image within the inspection sequence | ▶ Click and drag the image.                                                                                              |
| Edit image data                              | ▶ Right-click each image and select <b>Edit Image Data</b> .                                                             |

2. Right-click the collection's icon and select **Create Route Template from**. The New Route dialog appears.
3. Enter a name. Click **OK**.

### *Creating a Route Containing a Custom Template*

1. Right-click the Routes folder and select **Create Route**. The New Route dialog appears.
2. Enter a name.
3. Enter the total number of images to include in the route.
4. Click **OK**.  
The route and template appear in the Routes folder. The Edit Image Data dialog appears.
5. Complete the image data for each image in the template. Use the **Next** and **Previous** buttons to move through the images.
6. Click **OK**.

### *Managing Images, Collections, and Routes*

Use collections to randomly acquire and store images. The images are unlocked, so the associated data and image sequences are editable.

Use routes to acquire images according to established templates and to store the downloaded images with the route and its template. The template locks the route the first time it is uploaded.

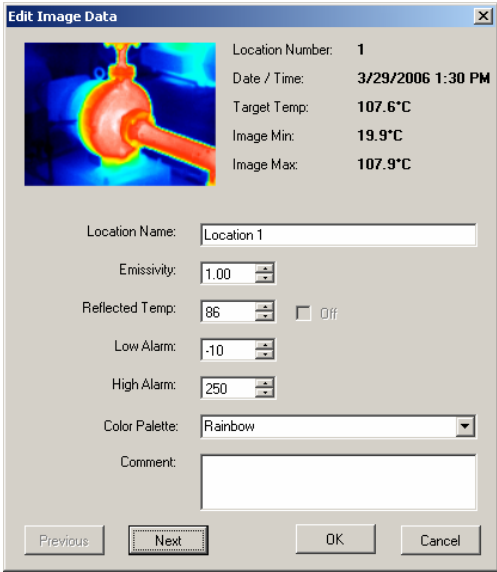
We recommend leaving routes locked because they accumulate a series of route inspections. You can unlock a route by setting security preferences.

### *Setting Security Preferences for Routes*

1. Select **Tools>Options**. The Inside IR Options dialog appears.
2. Select the **Routes** tab. Make changes.
3. Click **OK**.

Editing Images

You can edit images in collections and unlocked routes.

| Goal                                                    | Procedure                                                                                                                                                                                                                                     |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cut, Copy, Paste, Delete                                | ► Right-click the image and select from the context menu.                                                                                                                                                                                     |
| Enter variable properties data for the image            | <div>► Right-click the image and select <b>Edit Image Data</b>.<br/>This data is stored for analysis and reports.</div> <div></div> <div>faa526f.bmp</div> |
| Move images within the gallery                          | ► Click and drag them to another position.                                                                                                                                                                                                    |
| Copy (add) an image to an unlocked location in InsideIR | <div>1. Select the image in the gallery.</div> <div>2. Use Ctrl + click to click and drag it to another location (any unlocked template or collection).</div>                                                                                 |

Editing a Route

Note

*Templates cannot be unlocked unless the **Allow user to unlock route templates for editing** box is enabled (**Tools>Options>Routes**).*

You can edit and update routes any time before uploading their templates. During upload, the template locks to prevent unintentional changes.

### **Unlocking and Locking a Template**

The route template's icon (Image Explorer window) indicates whether the template is locked:

-  Template is unlocked; it has not been locked.
-  Template is locked.
-  Template is unlocked.

### **Unlocking a Template**

1. Verify that the **Allow user to unlock route templates for editing** box is enabled (**Tools>Options>Routes**).
2. Right-click the template and select **Unlock Template for Editing**.

### **Locking a Template**

- ▶ Right-click the template and select **Lock Route Template**.

### **Managing Markers and Temperature Ranges in a Route**

You can manage the markers and temperature ranges in a route template and its accumulated route inspections.

Markers are overlays on an image and they are not uploaded as part of the template. If they are required in a route inspection, you must add them after downloading images from the Thermal Imager.

You can add, delete, or modify markers in a locked template and its route inspections. Since the markers do not impact the image itself, the ability to edit them independently is an important part of analysis, especially when image positions shift between route inspections.

Right-click a route icon to use these menu selections:

| Selection                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Route Location Gallery         | <p>Populates the image gallery with a selected image from the template and subsequent instances of the image from each of its route inspections.</p> <p>You can select the image in the Route Gallery Setup dialog's Location Name list. This dialog displays the start and stop capture times for the series.</p>                                                                                                                                                                                                                                                                                                           |
| Populate Route Markers         | <p>You can populate all route inspections under the template with all markers from selected images in the route template.</p> <p>The Select Marker Population dialog lets you select markers.</p> <div data-bbox="816 720 1255 1005" data-label="Image"> </div> <p>This dialog lets you copy new markers while preserving existing ones or overwriting old ones. We recommend preserving existing markers when adding a route inspection to an existing set of route inspections.</p> <p>You can use the 2 lists to define a range of images within the image gallery (from 1 to all images) to receive the new markers.</p> |
| Normalize Route Display Ranges | <p>Applies the same span (Min/Max) to all images at a single location.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## Managing Subfolders and Downloads

Add subfolders as needed to organize the Collections and Routes folders.

### Note

*The Thermal Imager downloads a route inspection to the route location from which it received its last upload. We recommend downloading data from the Thermal Imager before reorganizing. After reorganizing, upload the collection or route from its new location.*

| Goal                                                     | Procedure                                                                   |
|----------------------------------------------------------|-----------------------------------------------------------------------------|
| Create a folder                                          | ► Right-click any folder and select <b>New Folder</b> .                     |
| Copy or move routes or collections to or from subfolders | ► Copy: Click and drag the item.<br>► Move: Ctrl + Click and drag the item. |



## Chapter 3

# Analyzing Images and Creating Reports

### Note

*If the window is too small, some tools do not appear. Maximize the window or adjust its size until all tools are visible.*

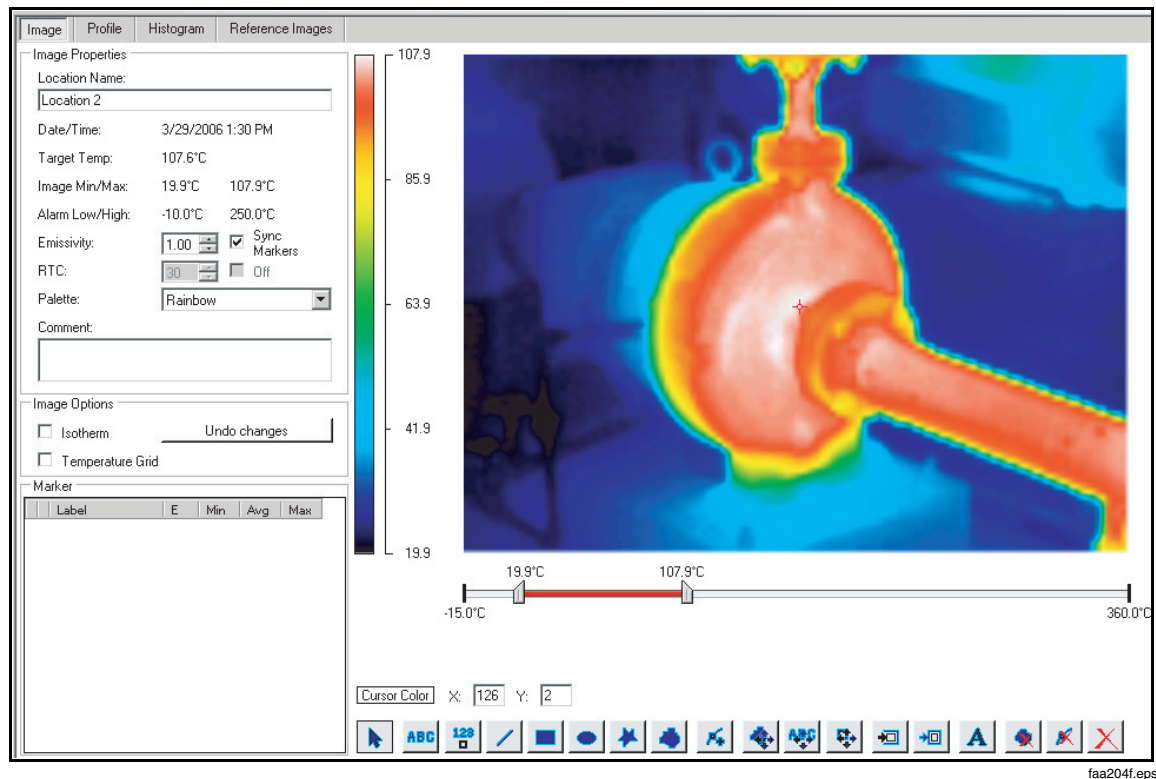
## Analyzing Images

1. From the Image Explorer window, open an image. You use the Image View window that appears for all image analysis.
2. Select a tab (see the following sections).

| Tab              | Description                                                                                                                                        |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Image (default)  | Lets you inspect and freely mark the image to reveal specific thermal data.                                                                        |
| Profile          | Creates X-Y temperature graphs based on your cursor's location in the image. Alternatively, you can create a graph based on a custom profile line. |
| Histogram        | Lets you view and refine the look of a histogram, which you can export or add to a report.                                                         |
| Reference Images | Lets you store a series of .bmp or .jpg files for visual reference.                                                                                |

## Image Tab

The Image View window is in the Image analysis view.



## Image Properties: Exercise

The Image Properties area (top left) provides data (from the image data in the template or collection) about the active image. You can edit some properties, which are saved as image data.

### Note

*Use an image from a collection for this exercise, since its fields are editable; fields for images in locked routes are not.*

1. Rename the image: select the text in the **Location Name** box and enter “Test 1”.
2. Use the scroll windows for **Emissivity** and **RTC** to adjust emissivity and reflected temperature compensation values.

The checkbox in the RTC area enables/disables reflected temperature compensation.

The checkbox in the Emissivity area enables/disables the synchronization of marker emissivity with global emissivity. Editing either value changes the image’s temperature values and temperature scales. See the Thermal Imager Users Manual.

3. Locate the Palette area. The color palette selection’s default is the color palette from the Thermal Imager when the image was originally captured.

The color bar to the image’s left is the color palette, which represents the temperatures in the image.

4. Click the list. Try a few selections.

5. Return the palette to the original selection.
6. In the **Comment** box, enter observations about the image.

### Temperature Bars: Exercise

The active image includes a color palette bar on the left and a temperature bar with a red slider below. Both are initially scaled to most efficiently represent the temperatures in the image.

For example, the red slider initially has a range starting at the coldest temperature in the image and going to the hottest temperature in the image (Min/Max). The temperature spread on the red slider also appears on the color palette.

1. Select **Tools>Temperature Scale**. Select **Fahrenheit** or **Celsius**. The selected scale is not saved with the image, but with the application as the default for the next startup.
2. Click and drag the red slider. The temperature range on the slider and the color palette change in unison. The colors in the image react because the color assignments change as the scale is redefined.

#### Note

*The temperature values assigned to the pixels in the image remain constant as the slider moves. Only the colors assigned to the temperature scale change.*

3. On the high end of the red slider, click and drag the gray limit bar down toward the low end of the slider. The slider's length shortens and the temperature decreases until the temperature difference is 5 °C or 9 °F, depending on the image's temperature scale. Then, the entire slider begins moving down the scale.
4. Try the same procedure, except use the gray low limit bar on the slider. The effect is the same, but the red scale moves to the right. Leave the slider with the minimum temperature difference in place.
5. Click and drag the slider along the scale. As the slider moves, temperatures that fall within the minimum range appear and fade. The color data is accurate, but is visually limited to the minimum range.
6. Move the low end of the slider (gray bar) to the low end of the scale and the high end of the slider (gray bar) to the high end of the scale. The red slider fills the scale.

All temperatures within the scale's range are visible in the image, but visually the information may appear fuzzy or too light. Narrowing the visible scale helps sharpen the image.

7. Click and drag the high end of the slider down scale until the high temperature color begins to show (white for the Rainbow palette).

8. Click and drag the low end of the slider up the scale until background details in the image are recognizable.
9. Adjust the slider's controls until the image's critical temperature areas are easily identified. Changes to the slider are saved with the image when it is closed.
10. Return the temperature scales to their original settings by right-clicking near or on the image and selecting **Auto Range Image**.

### *Image Options: Exercise*

1. Locate the **Images Options** area at the mid-left side of the Image view window.
2. Check the **Isotherm** box. A mauve color band appears in the color palette.
3. Move the red slider left and right. All pixels in the image that fall within the slider's temperature range appear mauve.
4. Reduce the range of the red slider to its minimum, about 1 °C or 1 °F.
5. Uncheck the **Isotherm** box or click **Restore Original Image** to return the image and its scale settings to their original state.
6. Check the **Temperature Grid** box. A grid overlays the image and displays the average temperature within each grid area.
7. To improve the grid's visibility, edit the **Grid Color** (double-click to activate) and **Grid Intensity** controls in the Image Options area. Experiment to optimize the grid details for the image.
8. Uncheck the **Temperature Grid** box.

### *Image Markers: Exercise*

The Image View window's marker toolbar, located at the bottom of the Image Analysis window, includes text markers and temperature markers.



The text marker is a text line (default = timestamp). The temperature markers' options range from marking a single pixel to marking an irregularly shaped pixel area. Tools for editing and visually optimizing a marker are included.

#### **Cursor**

1. Select  to enable the **cursor tool** (active by default when an image opens).
2. Move the cursor over the image. As you move over each pixel, the temperature value assigned to that pixel appears. The X: and Y: text boxes above the toolbar define the cursor's location.

A temperature display accompanies the cursor. By default, the cursor is white with a black outline. To edit the temperature display's color, see Text and Timestamp Markers.

## Text and Timestamp Markers

3. Click  to enable the **text marking/timestamp** tool.
4. Move the cursor over the image. The cursor is shaped like a pencil. Point the pencil where the text should start and click. A timestamp appears on the image.
5. Add another timestamp: move the cursor slightly and click again.
6. Locate the **Marker** area in the lower-left corner of the Image Analysis window. Two entries under the Label column represent the labels for the timestamp markers.
7. Select the **Label** cell of the second timestamp, and enter text (< 25 characters). Press **Enter**. The label appears on the image.
8. Click  to enable the **move marker text** tool. Click and drag the line of text to a different location in the image. Do the same with the timestamp.
9. To the left of the Label cells in the Marker area, locate the 2 color selection cells for the text in the label (left cell for the outer color and right cell for the inner color). Select both and try changing the marker colors.

You can set the same color information using the text color   buttons. The first button colors the text and the second colors the text outline. Using the buttons, select new colors and apply them to one or more markers by moving the cursor over a marker and clicking.

10. Select  to enable the **font edit** tool. A font dialog appears. Select a font, increase its size by 4 points, and select **OK**. Move the cursor over the image. Click any marker to apply the font.

## Point Marker

11. Click  to enable the **point marker** tool. Move the cursor over the image. Click a pixel to mark its temperature. A single square marker identifies the pixel and a label above the marker displays the pixel's temperature.

The label for the marker appears as another row in the Marker area. You can rename the label, redefine its color, or move it.

## Line Marker

12. Click  to enable the **line marker** tool. Click and drag the cursor to draw a line on the image. The line is applied to the image and a marker is added to the line. The marker includes a name, and the minimum, maximum, and average temperatures that occur at the pixels beneath the line. You can rename the label, redefine its color, or move it.
13. Click  to enable the **move marker text** tool. Move the cursor over the text for the line marker entered earlier. A box surrounding the label indicates you can click and drag to reposition the label. Try moving the label. A narrow line links the label to the mark, identifying them as a pair.
14. Click  to enable the **move marker** tool (similar to the **move marker text** tool, but it moves the marker and its text). Move the cursor over a marker or its text. Both are highlighted, indicating you can click and drag to reposition the label. Try moving the label.

## Rectangle and Ellipse Markers

### *Note*

*These tools are identical in operation; only the marker's shape is different.*

15. Click  or . Move the cursor over the image. Click and drag to form a marker (its exact size and position are unimportant). Use it as a starting point. The marker contains the standard label and temperature data. The temperatures (Min, Max, and Avg) describe the pixel temperatures the marker contains.
16. Click  to enable the **marker edit** (move single point) tool. Each marker (including the text, line marks) includes a set of click-and-drag handles for resizing. Use this tool with the **move marker text** and **move marker** tool to precisely define the marker, its label, and its position.

## Polygon and Closed Curve Markers

### Note

*These tools are similar in operation. The polygon marker's rubber-band effect forms a straight-line segment enclosure. The closed curve marker results in a curved-line enclosure.*

17. Click  or . Move the cursor over the image. Click and move the mouse several times to create the desired shape. Double-click to end the session.

18. To edit the marker's shape, click . Move the marker's click-and-drag handles. Also try the **insert a point** tool.

19. Click  to enable the **insert a point** tool (for existing polygon markers and closed curve markers only).

Move the cursor over the image. Radiating from the cursor, 2 lines connect it to the closest pair of handles, suggesting an insertion point. Move the cursor to the location for the new point, ensuring the radiating lines identify the appropriate handles. Click the mouse to insert a point.

To remove a point, click  to enable the **delete a point** tool. Move the cursor over the polygon or closed curve handle to delete and click.

### Delete a Marker

20. Click  to enable the **delete a marker** tool. Move the cursor over the image to highlight a marker. Click the marker to delete it.

### Delete All

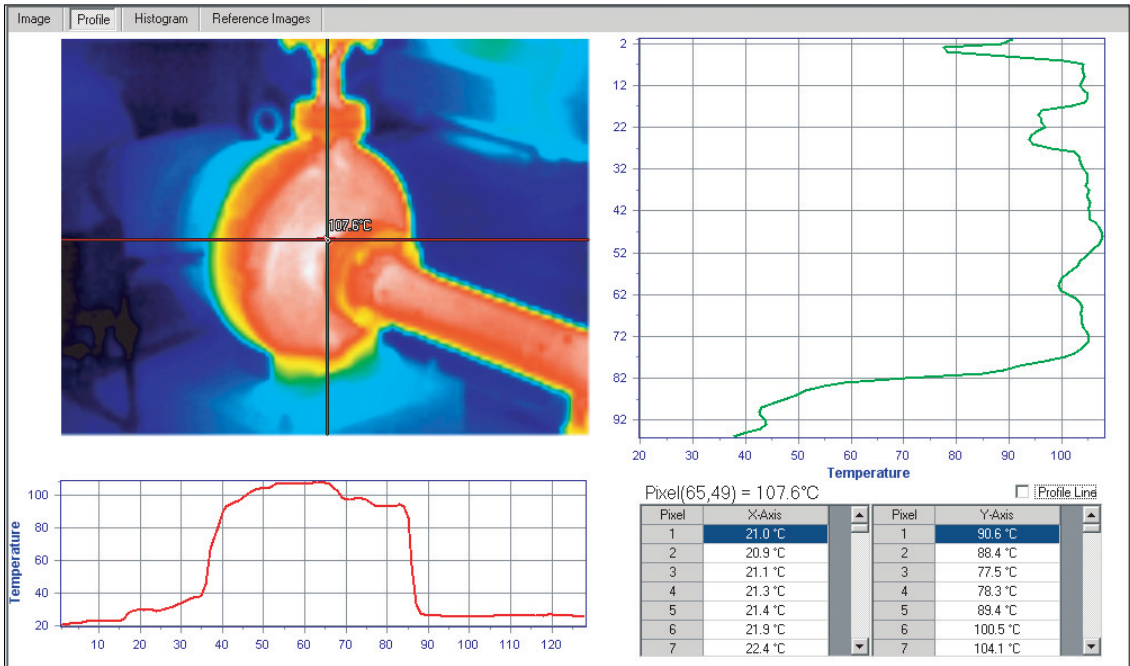
21. Click  to delete all markers from the image. Confirm the deletion.

## Other Marker Options

You can select 7 additional **Show Marker...** features in the **View** menu (or right-click the image). They control the visual presentation of the markers' content.

Profile Tab

The Image View window is in the Profile analysis view.



faa205f.eps

Selecting a Profile Marker

In this view, the marker is always visible on the image.

The **Profile Line** check box in the lower-right corner of the window toggles this tool:

| Profile Line check box | Description        |
|------------------------|--------------------|
| Checked                | Single-line marker |
| Unchecked              | X-Y lines marker   |

X-Y Lines Marker: Exercise

The marker is initially centered on the image. The Y line is green and X is red, as are their corresponding charts to the right and bottom of the image.

1. Move the cursor anywhere over the image. Click and drag.  
The cursor position defines the X-Y coordinates for the lines and captures them. The lines follow the cursor. The pixel temperature at the X-Y coordinate appears. To fix the coordinate, release the mouse.
2. Locate the green chart to the right of the image. The Y scale displays pixel count and the X scale displays temperature. Change the temperature scale by selecting **Tools>Temperature Scale>Fahrenheit** or **Celsius** on the main toolbar. The scale in the chart follows the selection.
3. Click and drag on the image. Move the mouse horizontally across the image; try not to move it vertically. The chart paints a profile, using the pixel temperature values present along the vertical (green) line. Release the mouse.

4. Click and drag the mouse vertically along the image. The green chart remains constant as the red chart paints a temperature profile, using the pixel temperatures along the horizontal (red) line.
5. Locate the **Pixel** temperature spreadsheet in the lower-right corner of the window. Click and drag the cursor over the image. The pixel coordinates for the cursor and temperature follow the cursor. To update the spreadsheet's pixel data, release the mouse.

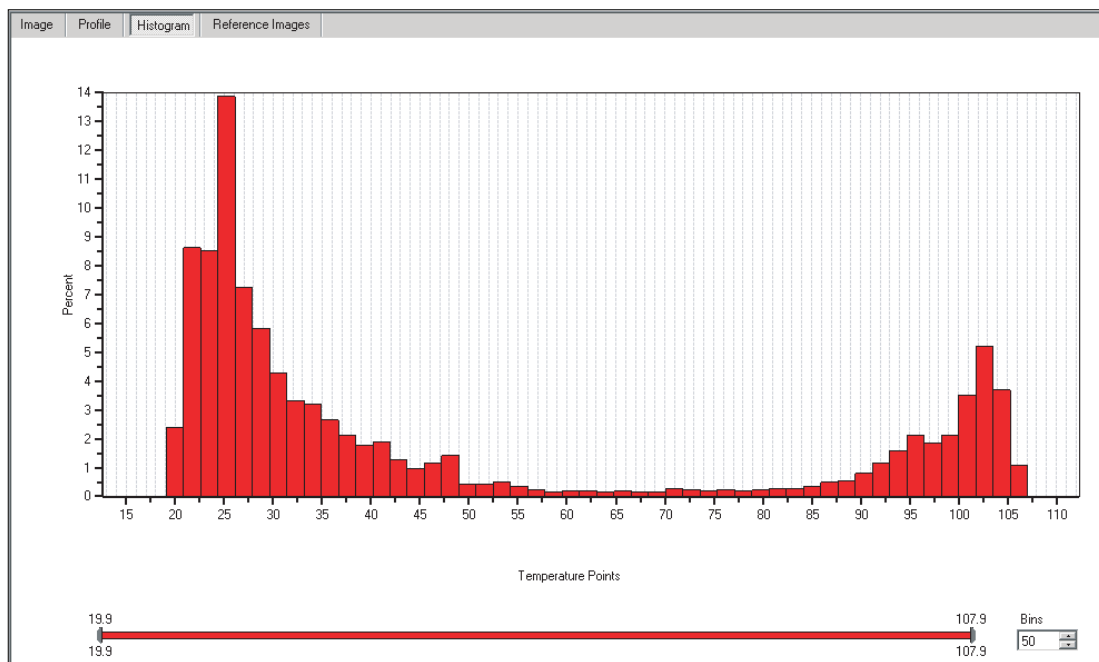
### *Single-Line Marker: Exercise*

The marker initially appears as a single diagonal line centered on the image. Handles on each end of the line let you size it and position it on the image.

1. Move the cursor over a handle at the end of the marker. Click and drag. The selected end of the line follows the cursor. To fix the handle's position, release the mouse.
2. Alternately, position both ends of the line so it extends diagonally across an obvious temperature variation on the image. Both charts update by painting an X-Y profile of the pixel temperatures along the line. Typically, the line does not travel across the entire image, so 1 or both ends of the charts may not show data.
3. Locate the **Pixel** temperature spreadsheet in the lower-right corner of the window. The heading displays coordinates for each end of the line. Scroll through the spreadsheet's X and Y columns. A dash indicates the line does not cover the pixel.

## Histogram Tab

The Image View window is in the Histogram analysis view.



The histogram divides the minimum and maximum temperature range of the image into a number of smaller ranges (bins, bars, or classes) and counts the pixels (frequency) that fall within each bin.

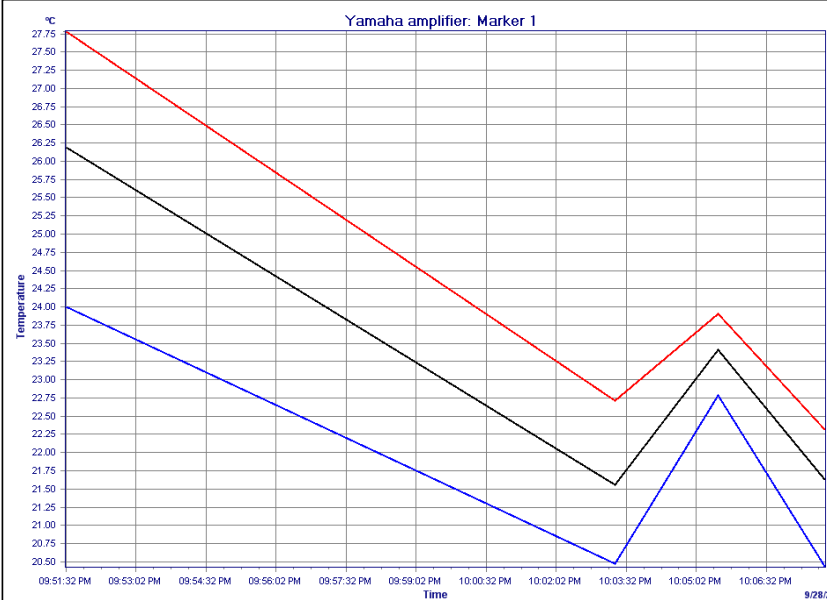
To make the Y-scale display the percentage of the total pixel count or the absolute number of pixels, select **View>Histogram Y-Axis Mode**. The total pixel count remains constant regardless of the Bins selection.

Use the Bins selector to define the number of bars into which the total temperature range is divided.

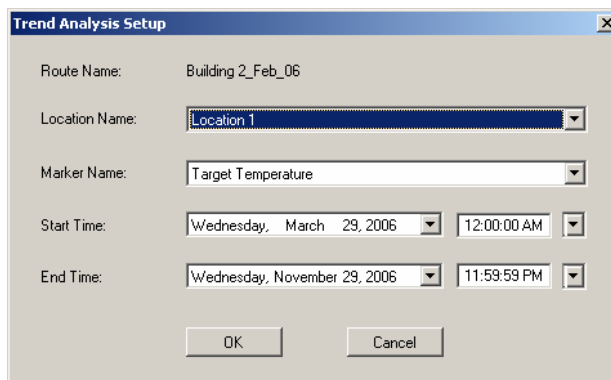
The histogram includes a click-and-drag temperature slider. You can adjust it to smaller temperature spans within the temperature range using the gray bars on the ends. You can move the slider along the temperature (slider) scale to narrow the histogram's focus (scale).

Route Trend Analysis: Exercise

You can retrieve and plot the temperature of a common marker within a series of images from a common route to show the marker’s temperature trend over time. You can use the Target Temperature or any marker label that is consistently applied to like images in the series.

| Marker       | Result                                                                                                                                                                                                                                                                                                                                  |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Single-point | Single-line plot (trend line)                                                                                                                                                                                                                                                                                                           |
| Multi-point  | 3-line plot: Min, Max, Avg <div><div><div>Yamaha amplifier: Marker 1</div><div>9/28/2006</div><div>faa528s.eps</div></div><div><p>This example of a trend plot uses data from a series of 4 separate route inspections in the route.</p></div></div> |

1. Establish a route with a route template including at least 1 image.
2. Establish the baseline images (template) for the route. Add markers to areas of interest to each baseline image.
3. Perform at least 3 route inspections on the baseline images.
4. From the Image Explorer window, open an image in the baseline file.
5. Right-click the icon for the route or the route template and select **Populate Route Markers**. The markers in the route template images are added to all like images in the route inspection series. Review each image in each route inspection and reposition the marks when appropriate.
6. Right-click the route icon and select **Route Trend Analysis**. The Trend Analysis Setup dialog appears.

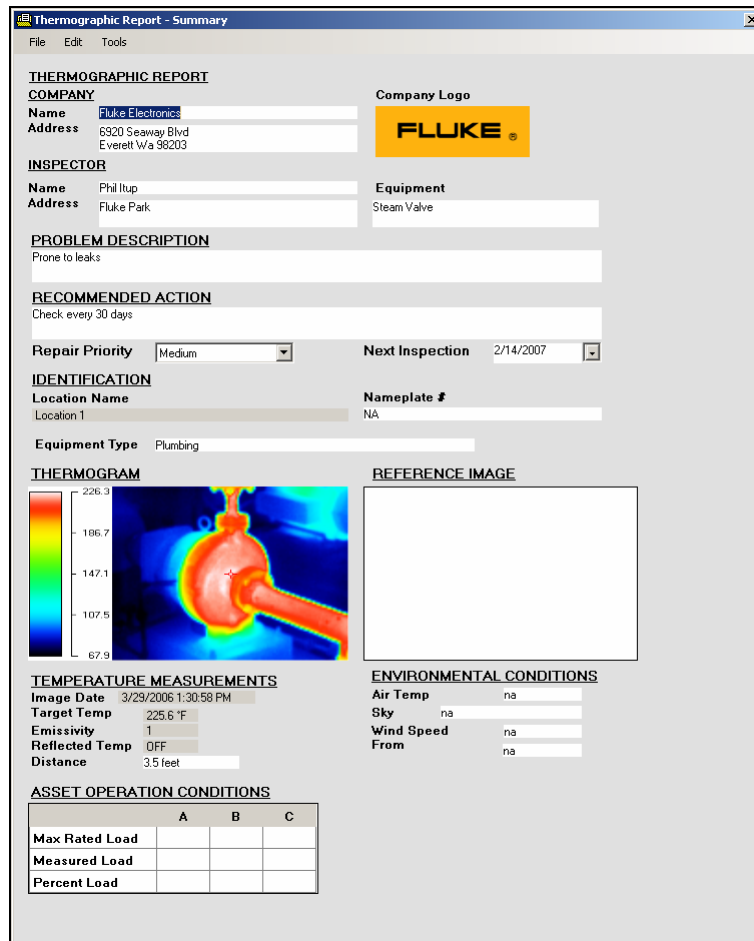


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7. Using the first 2 lists, identify the image and the marker to be plotted, Marker 1.
8. Click **OK**. The trend graph displays. This dynamic chart is not saved as part of the route data.
9. To edit trend parameters and regenerate the graph, reopen the Trend Analysis Setup dialog by right-clicking the graph and selecting **Setup Chart**.

## Creating Reports

This is a sample report creation form used for all reports.



**Thermographic Report - Summary**

File Edit Tools

**THERMOGRAPHIC REPORT**

**COMPANY**

Name: Fluke Electronics  
Address: 6920 Seaway Blvd  
Everett WA 98203

Company Logo: **FLUKE**

**INSPECTOR**

Name: Phil Itup  
Address: Fluke Park

Equipment: Steam Valve

**PROBLEM DESCRIPTION**

Prone to leaks

**RECOMMENDED ACTION**

Check every 30 days

Repair Priority: Medium  
Next Inspection: 2/14/2007

**IDENTIFICATION**

Location Name: Location 1  
Nameplate #: NA  
Equipment Type: Plumbing

**THERMOGRAM**

Temperature scale: 226.3, 186.7, 147.1, 107.5, 67.9

**REFERENCE IMAGE**

**TEMPERATURE MEASUREMENTS**

Image Date: 3/29/2006 1:30:58 PM  
Target Temp: 225.6 °F  
Emissivity: 1  
Reflected Temp: OFF  
Distance: 3.5 feet

**ENVIRONMENTAL CONDITIONS**

Air Temp: na  
Sky: na  
Wind Speed: na  
From: na

**ASSET OPERATION CONDITIONS**

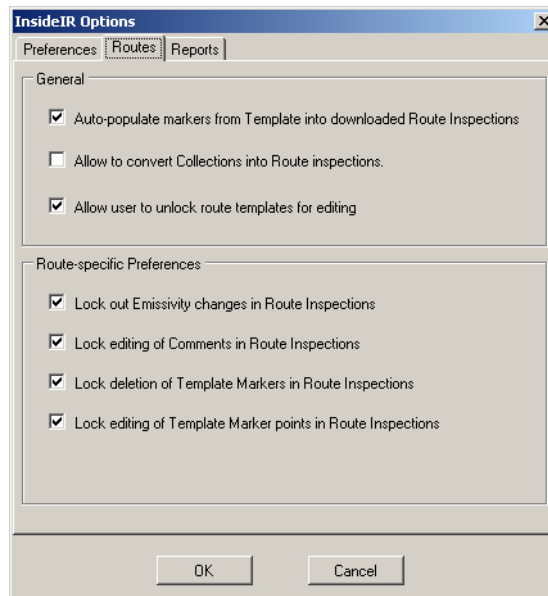
|                | A | B | C |
|----------------|---|---|---|
| Max Rated Load |   |   |   |
| Measured Load  |   |   |   |
| Percent Load   |   |   |   |

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The Summary Report uses only the first page. The other reports include the first page and additional data:

| Report   | Description                                                                                                                                                       |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Advanced | <ul style="list-style-type: none"> <li>Image with a table of markers (if any are defined)</li> <li>Profile, histogram, and (optional) reference images</li> </ul> |
| Trend    | <ul style="list-style-type: none"> <li>First image in the group</li> <li>Trend plot</li> <li>All trend images in the group</li> </ul>                             |

Options for the Advanced and Trend Reports appear in the lower half of this dialog.



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To access this dialog, select **Tools>Options** from the main menu or the report creation form.

You can save any report as a report template to hold text (not graphics) for use in subsequent reports. When you preview a report, the database stores the company logo, then inserts it in the next created report.

### **Creating Summary and Advanced Reports**

1. In the image gallery, select or open an image from a collection or a route inspection.
2. Select **Report>Create Summary Report** or **Report>Create Advanced Report**. The report creation form appears, including a thermogram of the selected image.
3. To load or clear graphics in the **Company Logo** and **Reference Image** fields, right-click the field.

If one or more reference images are defined for the image, the default reference image appears. You can select a different reference image from a graphic stored outside of the application.

4. Complete the remaining white text fields.

Gray fields are auto-populated using data from the image or the last information entered and saved from the previous report.

5. To preview the report, select **File>Preview** from the report creation form.

### **Creating a Route Trend Report**

This report charts the trend of a common marker for each route inspection in a route. Therefore, if a route includes 6 route inspections, the chart shows the trend for 1 marker in 6 route inspections.

1. Create a Route Trend Analysis chart.
2. In **Tools>Options>Reports**, select preferences.
3. Right-click anywhere on the chart and select **Create Trend Report**.
4. To preview or print the report, select **File>Preview / Print Report** from the report creation form.

### **Saving Reports**

1. Select **File>Preview / Print Report** from the report creation form. The Thermographic Report appears.
  - To save the report to the InsideIR database, select **File>Save Report**. Enter a filename. Click **OK**.
  - To export the report to an external file on the PC, select **File>Export Report**. Indicate a location and enter a filename.
2. To close the preview window, select **File>Exit**.

### **Opening Saved Reports**

1. Select **Report>View Saved Report**. A dialog appears, listing all reports in the InsideIR database.
2. Select the report. Click **OK**. The Thermographic Report preview window appears. You can preview, export, or print the report.
3. To close the report, select **File>Exit**.



# Appendix A

## Software Features

### Note

*This information is limited to features requiring explanation that are not covered elsewhere in this document.*

## Menus

The Image Explorer and the Image View windows are the application's main windows; the menu bar is common to both.

### Notes

*Some menu selections depend on the active window or tab selected.*

*Some menu selections require a USB connection between a Thermal Imager and the PC.*

## File Menu

| Selection                     | Description                                                                                                                                                                                                                                                                 |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Import Collection(s)/Route(s) | Imports externally saved images (.iir, .zip (zipped .iir), and .is2 files), collections, and routes into the workspace.                                                                                                                                                     |
| Export Collection(s)          | Exports collections of images from the workspace and saves them externally (.iir files) without removing the images from the workspace.                                                                                                                                     |
| Open Workspace                | Opens previous work sessions, including all open Image Explorer and Image View windows.                                                                                                                                                                                     |
| Save Workspace                | Saves changes to the current work session, including all open Image Explorer and Image View windows.<br>Saving changes affects neither the workspace's structure nor the InsideIR folder's contents; it only saves the workspace's current view so you can reopen it later. |
| Clear Workspace               | Removes all open views from the workspace.                                                                                                                                                                                                                                  |

|                            |                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display Imager Information | <p>Displays information about the Thermal Imager used to capture the selected or active image (if none, the first Thermal Imager on the list displays).</p> <p>When you call the factory for service, access this information. We recommend using the name of the Thermal Imager at the highest level in the folder structure, keeping all images stored by a single Thermal Imager in the same folder.</p> |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

*Note*

*Button equivalents of the following selections appear by default on the bottom of the window. You can move them to the left side of the window or hide them using the View menu.*

| Selection              | Description                                                                                                                                                                                                |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Download from Imager   | Downloads images from the Thermal Imager to the PC for storage, analysis, and report creation.                                                                                                             |
| Upload to Imager       | Uploads the selected collection, route inspection, or route template to the Thermal Imager. You can view image names, comments, and so forth in the Thermal Imager for guidance during an inspection tour. |
| Clear Images in Imager | Removes all images stored on the Thermal Imager and restores all storage locations to factory defaults (see the Thermal Imager Users Manual).                                                              |

**View Menu**

The Image View window has tab equivalents of the additional analysis view selections (Image View, Temperature Profile View, and Histogram View).

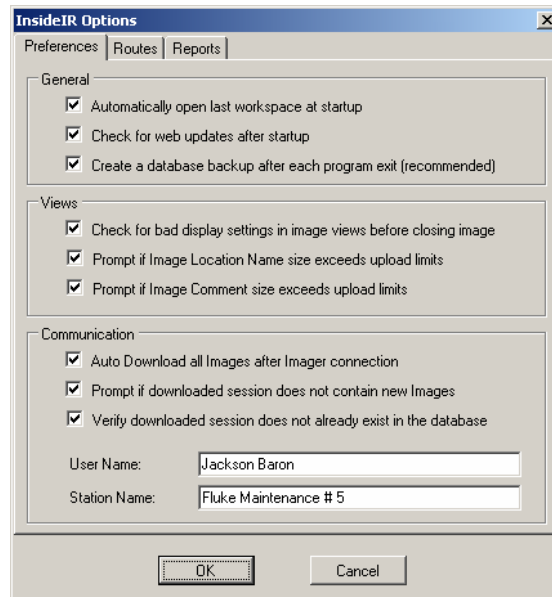
The Button Toolbar> selection lets you move the Thermal Imager buttons to the left or bottom of the window or hide them (Left, Bottom, or Off).

The following selections activate the corresponding view of the selected image.

| Selection                | Equivalent tab in Image View Window |
|--------------------------|-------------------------------------|
| Image View               | Image                               |
| Temperature Profile View | Profile                             |
| Histogram View           | Histogram                           |
| Reference Images         | Reference Images                    |

## Tools Menu

InsideIR Options opens a dialog with the Preferences, Routes, and Reports tabs. Most selections are self-evident.



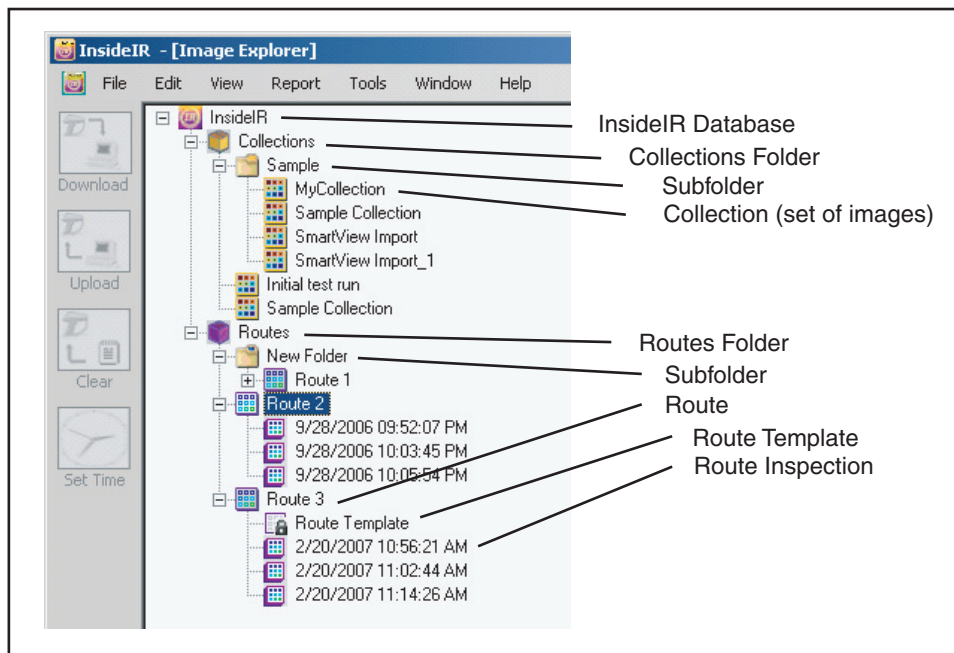
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## Preferences tab – Communication area

If the Auto Download all Images after Imager connection box is unchecked, you can download images using the menu (**File>Download From Imager**) or the **Download** button.

## Image Explorer Window

This window (the default when you open InsideIR) lets you collect, organize, and access images from a Thermal Imager.



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## Image Folders

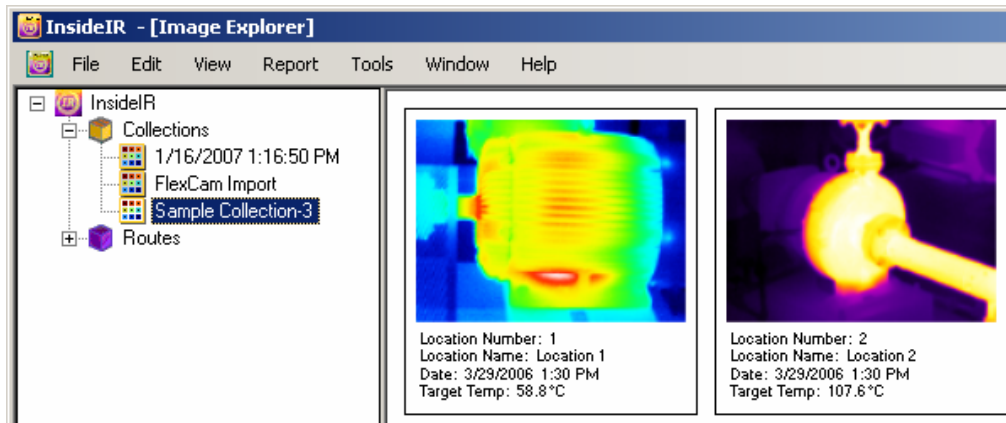
A route inspection is a series of images collected on a route inspection.

| Folder      | Copying and Moving Images                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------|
| Collections | Download images and copy/move them to subfolders you create or to other collections.                                         |
| Routes      | Copy an entire route to a subfolder.<br>To copy/move some parts of a locked route, you must first unlock the route template. |

- Right-click any collection, route inspection, route template, or subfolder to view the actions you can initiate from that folder. Many selections are also available from the main menu.
- To change the name of a collection, unlocked template, or subfolder, double-click the name and type a new one.

## Image Gallery

In the left pane, opening the Collections or Routes folder and clicking a subentry causes the images in the subentry to appear in the image gallery in the right pane.



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You can individually or collectively open the images for analysis in the Image View window.

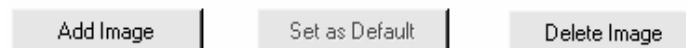
To open the menu, right-click any image in the gallery.

## Image View Window

The Image View window opens when you double-click an image in the Image Explorer window, or when you right-click it and select **Open Image**.

Use the Image, Profile, and Histogram tabs to inspect and analyze images.

## Reference Images Tab



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These buttons at the bottom of the window let you:

- Add one or more reference images.
- Set the visible light image as the default upon opening. (When creating a report, the default image uploads into the report form as the default reference image.)

### Note

*Imports from Fusion images in .is2 files assign 2 undeletable images to the reference images: the plain visual image and the blended picture-in-picture version.*

- Delete the visible light reference image.

## Image Sequence Buttons



Image Sequence Buttons

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These buttons at the bottom of the window let you:

- View previous or next image in the gallery (yellow buttons)
- Return to the Image Explorer window (black arrow button)

