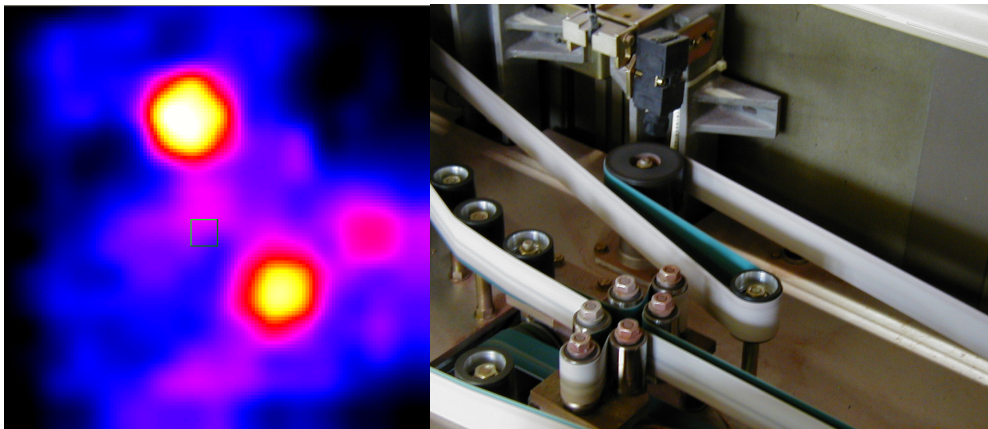


IRISYS 1000 Series Imager Report Writing Software

User Manual



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1 Introduction

This user manual details how to use IRISYS Report Writer. IRISYS Report Writer has been produced by IRISYS for people who are required to submit a report after performing a thermography inspection survey with an IRISYS thermal imager. It simplifies the process of combining the following into a thermography inspection report:

1. thermal images,
2. information that is required to assess the condition of a target object,
3. visual images if required.

1.1 You Will Need:

1. The IRISYS Report Writer Software – included on the CD.
2. IRISYS Thermal Snapshot files (.snp), taken using an IRISYS 1000 or 1020 series imager – see your IRISYS imager user manual for details on how to take thermal snapshots, and how to transfer them to a PC.
3. Visual images from a digital camera (although not required, these can aid the understanding of a thermography inspection, and can be included if relevant).

The IRISYS Report Writer Software produces report files in Adobe .pdf format. In order to print and view a file in Adobe PDF format, you first need to have the free Adobe Acrobat Reader installed on your computer.

You can download the free Adobe Acrobat Reader from Adobe's Web site:

<http://www.adobe.com/products/acrobat/readstep2.html>

For Adobe Reader support:

<http://www.adobe.com/support/products/acrreader.html>

1.2 End Result:

The IRISYS Report Writer creates a thermography inspection report in .pdf format. The report can include a company logo, an automatically generated contents page, general information about the thermographic survey, thermal snapshots and visual images, specific information about each thermal snapshot and finally an automatically generated report summary. The contents page is useful if many inspections are included in the report, and the summary can be used to plan a maintenance schedule as repair priorities can be displayed.

2 Quick Report Generation

1. Install IRISYS Report Writer onto the PC. See Section 3.3 for more details.
2. Launch IRISYS Report Writer from the desktop. See Section 4.1 for more details.
3. The "Title Page" tab opens as default. Use this tab to enter general information about the thermography inspection report. See Section 4.3 for more details.
4. Select the "Image Select" tab. Use this tab to select the thermal snapshots and visual images that will be included as "inspections" in the thermography inspection report. See Section 4.4 for more details.
5. Select the "Inspection Data" tab. Use this tab to add specific information about individual inspections. Select "Next" or "Previous" to add information about other inspections in the report. See Section 4.5 for more details.
6. Click "Generate Report" to create the thermography inspection report now, or select "Save" or "Save As..." from the file menu to complete the report at a later date. See Section 4.7 for more information.
7. The report opens in Adobe Acrobat Reader (if installed). Print the thermography inspection report from this window. See Sections 5 & 6 for more information.

3 Installation

3.1 Contents of the Report Writer Package

The package includes a CD-Rom, which contains the software and user manual.

3.2 PC System Requirements

The PC should be IBM compatible running MS Windows XP or 2000, with the free Adobe Acrobat Reader installed.

3.3 Installation of software onto PC

The software is on the supplied CD-Rom.

1. Insert the "IRISYS Report Writer" CD-Rom into the PC's CD-Drive.
2. Double click on 'My Computer' and then on the CD-Drive.
3. Double click on '1000 Series Report Writer Setup.exe'.
4. Follow the on screen prompts to complete the installation.

Note: The IRISYS Report Writer software will be installed by default into the following path:

C:\Program Files\IRISYS\1000 Series Report Writer

The above path and name can be changed during the installation, but it is advisable to leave it as the default. The installation will also put a 'Shortcut Icon' onto the PC's desktop to allow quick and easy start-up of the software.

4 Using Report Writer

4.1 Launching the Software

Launch the IRISYS Report Writer program from the Desktop icon,



Figure 1: Report Writer Desktop Icon

Or from:

START/PROGRAMS/IRISYS/IRISYS 1000 Series Report Writer.



Figure 2: Report Writer Start Menu Location.

4.2 Introduction to Operation

The Report Writer software is used to create one “**thermography inspection report**”, which contains one or more itemized reports (each including one thermal snapshot) called “**inspections**”.

When launched, the window obtained will be similar to Figure 3.

The software has a toolbar with “File”, “Tools” and “Help” options, the functions of which are described in Section 4.7. It also has “Title Page”, “Image Select” and “Inspection Data” tabs which are selected by clicking on the tab labels. These tabs are used to input general information into the thermography inspection report and to create a number of “inspections”. When the software is launched, the “Title Page” tab is selected by default.

4.3 Title Page Tab

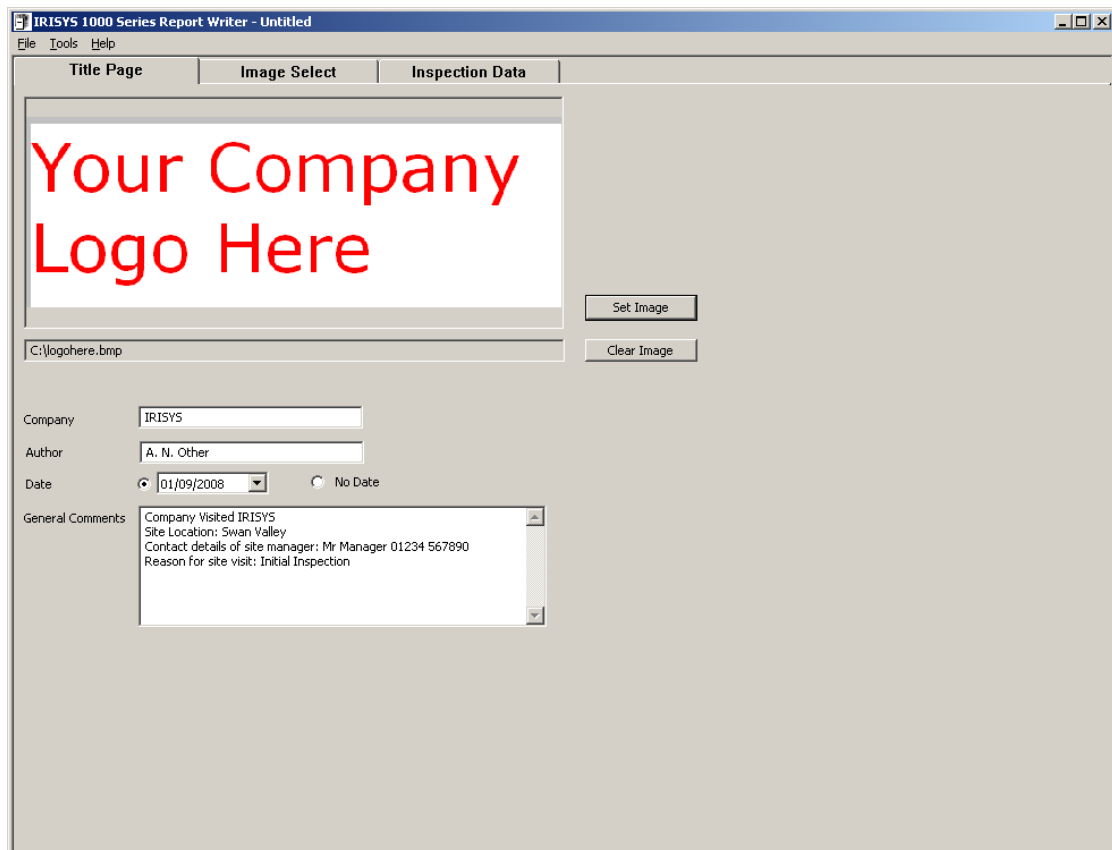


Figure 3: Report Writer Title Page Tab.

This tab is used to add the following information to the header of the thermography inspection report:

1. Company Logo (Section 4.3.1).
2. Company or Client Name (Section 4.3.2).
3. Author (Section 4.3.3).
4. Date (Section 4.3.4).
5. General Comments (Section 4.3.5).

4.3.1 Company Logo

If desired, click "Set Image" to insert a company logo into the image frame at the top of the thermography inspection report's title page. The "Set Image" button opens a search window that displays the Windows folder structure and .bmp & .jpg files only, as these are the image file types that can be imported. Once selected, images can be removed by selecting a new image, or by clicking "Clear Image".

Note: When Report Writer opens, the logo last used is selected by default.

4.3.2 Company or Client Name

This is the name of the company whose site is being surveyed. After entering the company name, it becomes the default company name when the software is restarted.

4.3.3 Author

This is the name of the thermography inspection report author. Note that camera operator's names can be entered separately in Section 4.5.3. The Authors' name will persist when the software is restarted.

4.3.4 Date

The default is to display today's date. Select whether or not to display the date of thermography inspection report generation by clicking on the radio buttons. If the default is not correct click on the list box and the calendar will appear as shown in Figure 4.

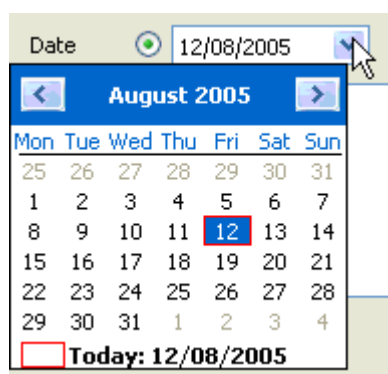


Figure 4: Select the Date From The Calendar.

Note: When loading previously saved .TIR files, the original date remains and is not overwritten by today's date.

4.3.5 General Comments

Comments can be added to assist with the understanding of the thermography inspection report when read at a later date. Typical examples include company visited, site location, contact details of site manager, initial reason for site visit etc.

When all the appropriate information has been added to the thermography inspection report, click on the "Image Select" tab. It is possible to return to the "Title Page" tab to edit this information at any time before the .pdf report is generated.

4.4 Image Select Tab

This tab (see Figure 5) is used to select which thermal snapshots (file extension .snp) are to be added to the thermography inspection report. Please see the imager user manual for information on how to download thermal snapshots from a handheld device to a PC. This page is also used to match up these thermal snapshots with any related digital camera visual images.

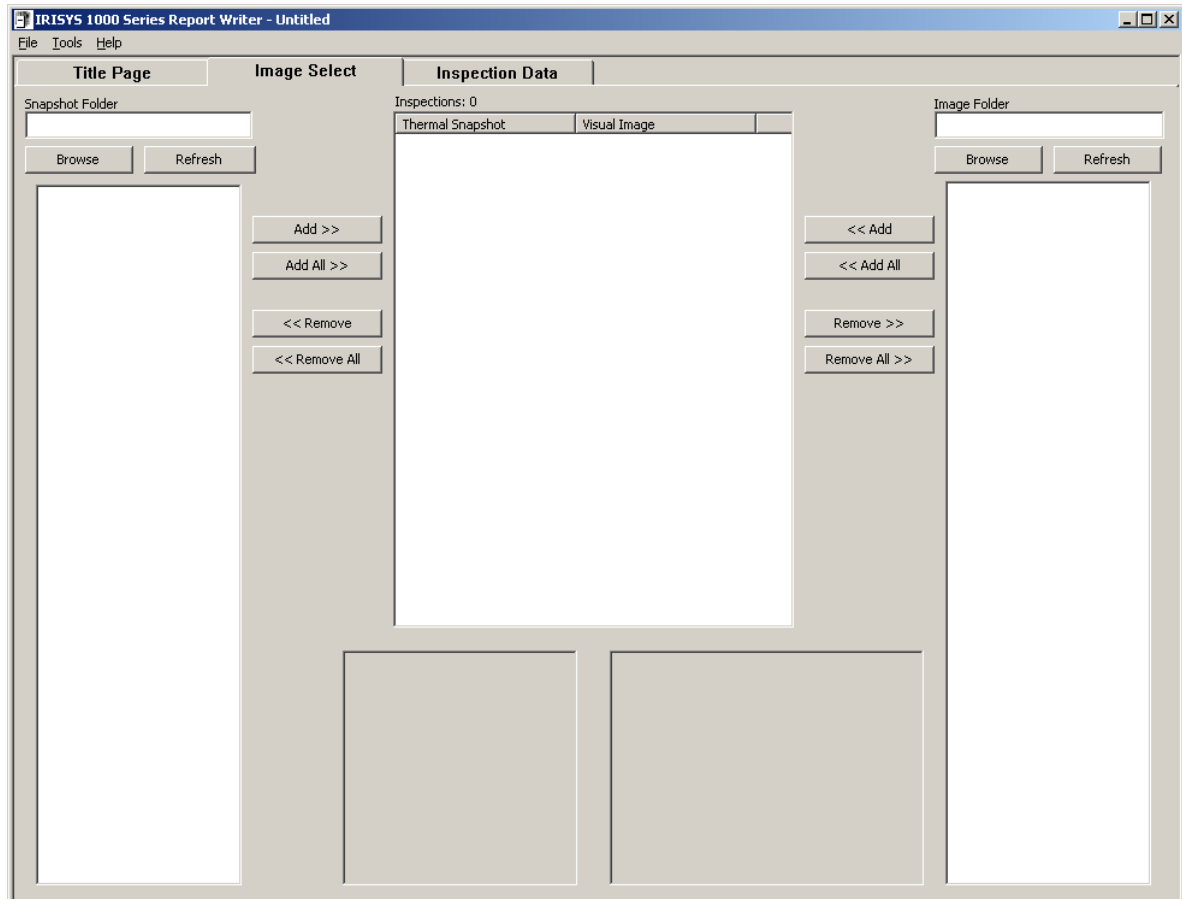


Figure 5: Report Writer Image Select Tab.

The following sections give a detailed description of how to:

1. Search for a folder of thermal snapshots to open (Section 4.4.1).
2. Add the required thermal snapshots to the report (Section 4.4.2).
3. Search for a folder of visual images (Section 4.4.3).
4. Insert the required visual images into the report, and associate them with thermal snapshots already in the report (Section 4.4.4).

4.4.1 Thermal Snapshot Folder Search

To find a folder containing thermal snapshots:

- Click "Browse" on the left hand side of the page and search for the required snapshot folder using a standard search window. Only folders and .snp files will be displayed.

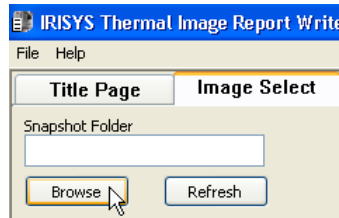


Figure 6: Thermal Snapshot Folder Search

To open a folder of thermal snapshots:

- Either double-click a thermal snapshot within the required folder, or single click one and then press "Open".

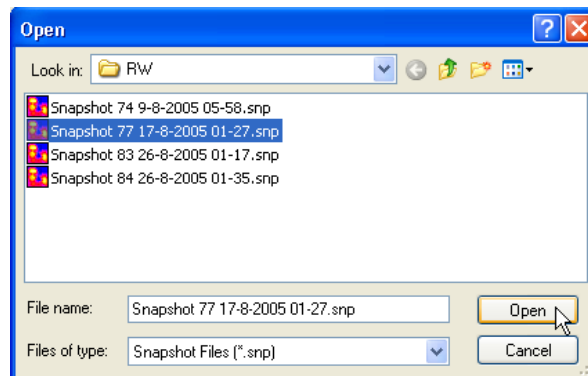


Figure 7: Opening a Thermal Snapshot Folder

Note: A snapshot must be selected to load the snapshot folder.

- Alternatively if the location of the saved thermal snapshots is known, the folder path can be typed into the text box labelled "Snapshot Folder" and then "Refresh" can be clicked.

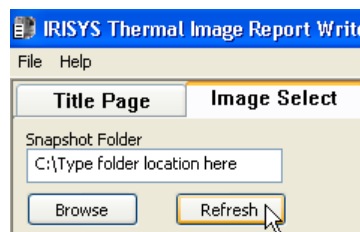


Figure 8: Opening a Thermal Snapshot Folder

All the thermal snapshots in the selected folder will appear as thumbnail snapshots in the frame below the "Browse" and "Refresh" buttons as shown in Figure 5. If there are more thumbnails to display than the available space permits, a scrollbar appears beside the frame.

4.4.2 Thermal Snapshot Select

To add a thermal snapshot from the selected "Snapshot Folder" to the thermography inspection report:

- Click on a thermal snapshot thumbnail. This will make the thermal image appear in the preview frame at the bottom left-centre of the page. If the image is required in the report, click "Add". TIP: simply double-click a thumbnail to add a thermal snapshot directly. This will make the snapshot thumbnail appear in the central column.

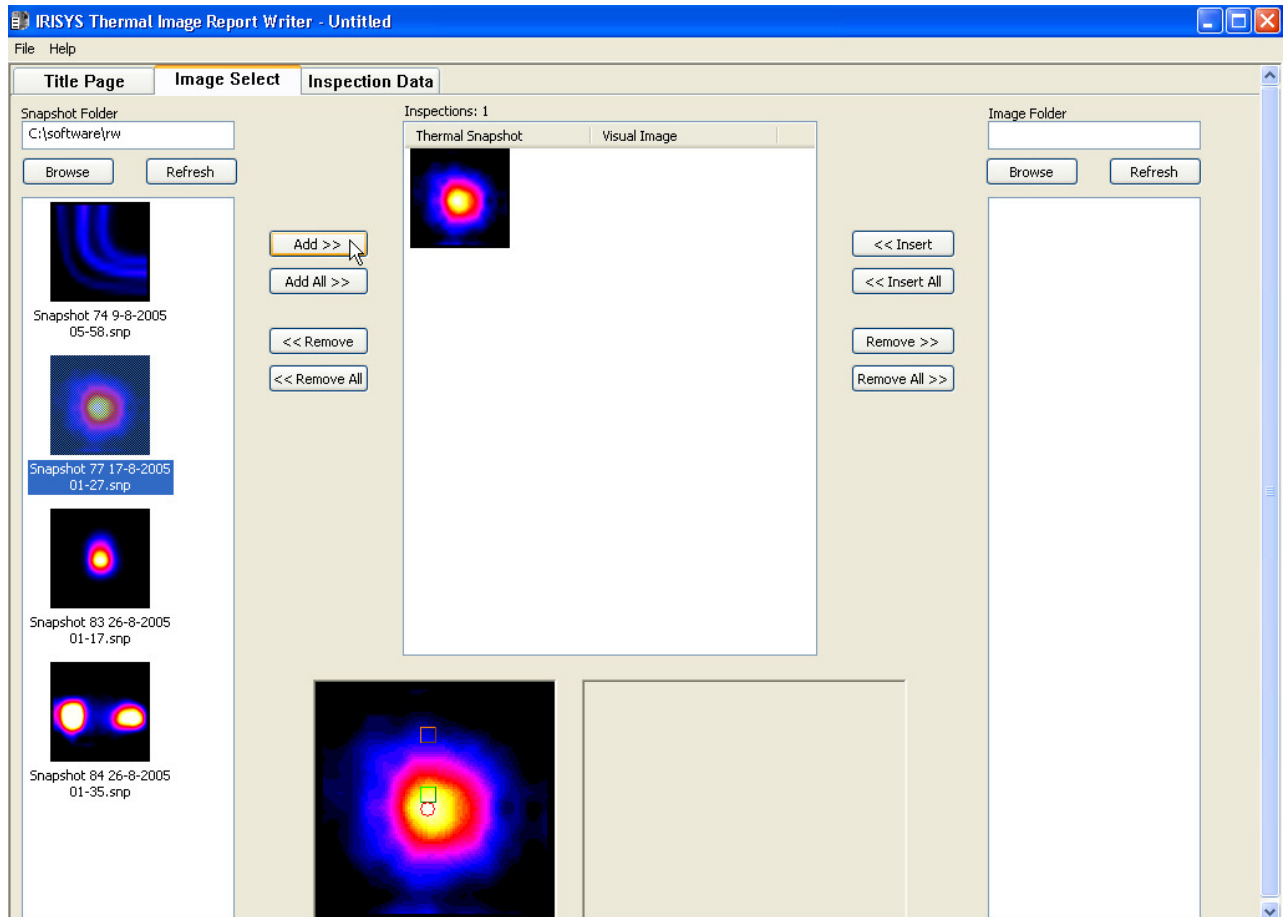


Figure 9: Adding a Thermal Snapshot to the Report

- If all of the thermal snapshots in the folder are required, click "Add All". To remove thermal snapshots from the central column, first click on the thermal snapshot (which will highlight it in blue) and then click "Remove". To remove all thermal snapshots, click "Remove All".

Notes:

- Repeat sections 4.4.1 and 4.4.2 if thermal snapshots are required from multiple thermal snapshot folders.
- Removing thermal snapshots from the thermography inspection report will also remove any associated visual images and any text you may have entered for this inspection in the "Inspection Data" Tab.
- The header of the central column of the "Image Select" tab displays how many "inspections" will be included in the report.

4.4.3 Visual Image Folder Search

The same procedure is used to add visual images to the thermography inspection report. To find a folder containing visual images:

- Click the "Browse" button on the right hand side of the page to search for and open the folder required. Only folders, .bmp and .jpg files will be displayed.

To open a visual image folder:

- Double-click a visual image within the required folder, or single click one and press "Select".
- Alternatively type the path of the visual image folder into the text box on the right of the page and click "Refresh".

All the .jpg and .bmp files in the selected folder will appear as thumbnail visual images in the frame below the "Browse" and "Refresh" buttons as shown in Figure 5. If there are more thumbnail visual images to display than the available space permits, a scrollbar appears beside the frame.

4.4.4 Visual Image Select

To add a visual image from the selected "Image Folder" to the thermography inspection report:

- Click on the thermal snapshot in the central column to which the visual image is related by clicking on it. This will highlight it in blue and also make it appear in the preview frame at the bottom left-centre of the page.

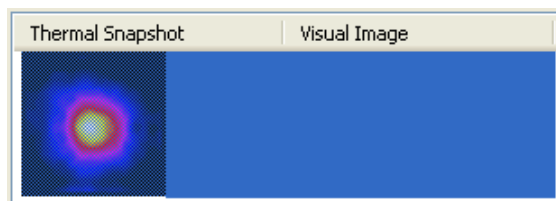


Figure 10: Highlighted Thermal Snapshot

- Click on a thumbnail visual image to see the image preview in the bottom right-centre of the page. Click "Add" if it matches the previewed thermal snapshot in the bottom left-centre of the page. TIP: simply double-click a thumbnail visual image to add it directly.
- If all of the visual images in the folder are required and the images are in the same order as the thermal snapshots, highlight the first thermal snapshot in the central column and click "Add All".
- To remove visual images from the central column, first click on the visual image and then click "Remove". To remove all visual images, click "Remove All".

Notes:

1. Repeat sections 4.4.3 and 4.4.4 if visual images are required from multiple visual image folders.
2. If visual images are to be added to the thermography inspection report, they must be added to thermal snapshots already in the central column of the "Image Select" tab.
3. After the required thermal snapshots have all been added to the thermography inspection report (and matched with visual images where relevant) click on the "Inspection Data" tab. It is possible to return to the "Image Select" tab to enter more inspections at any time before the .pdf report is generated.

4.5 Inspection Data Tab

This tab (see Figure 11) is used to enter information specific to each thermal snapshot. The tab generates a one page "inspection" per thermal snapshot. To cycle through the inspections, click "Previous" or "Next" at the top of the page. If 3 thermal snapshots have been entered on the "image Select" tab, the page will initially display inspection 1 of 3. The information that can be entered is listed below:

- Line Drawing (Section 4.5.1).
- Inspection Name (Section 4.5.2).
- Operator (Section 4.5.3).
- Location (Section 4.5.4).
- Equipment (Section 4.5.5).
- Comment (Section 4.5.6).
- Load (Section 4.5.7).
- Temperature Measurement Information (Section 4.5.8).
- Repair Priority (Section 4.5.9).
- Fault / Recommended Action (Section 4.5.10).
- Inspection, Repair & Re-inspection Dates (Section 4.5.11).

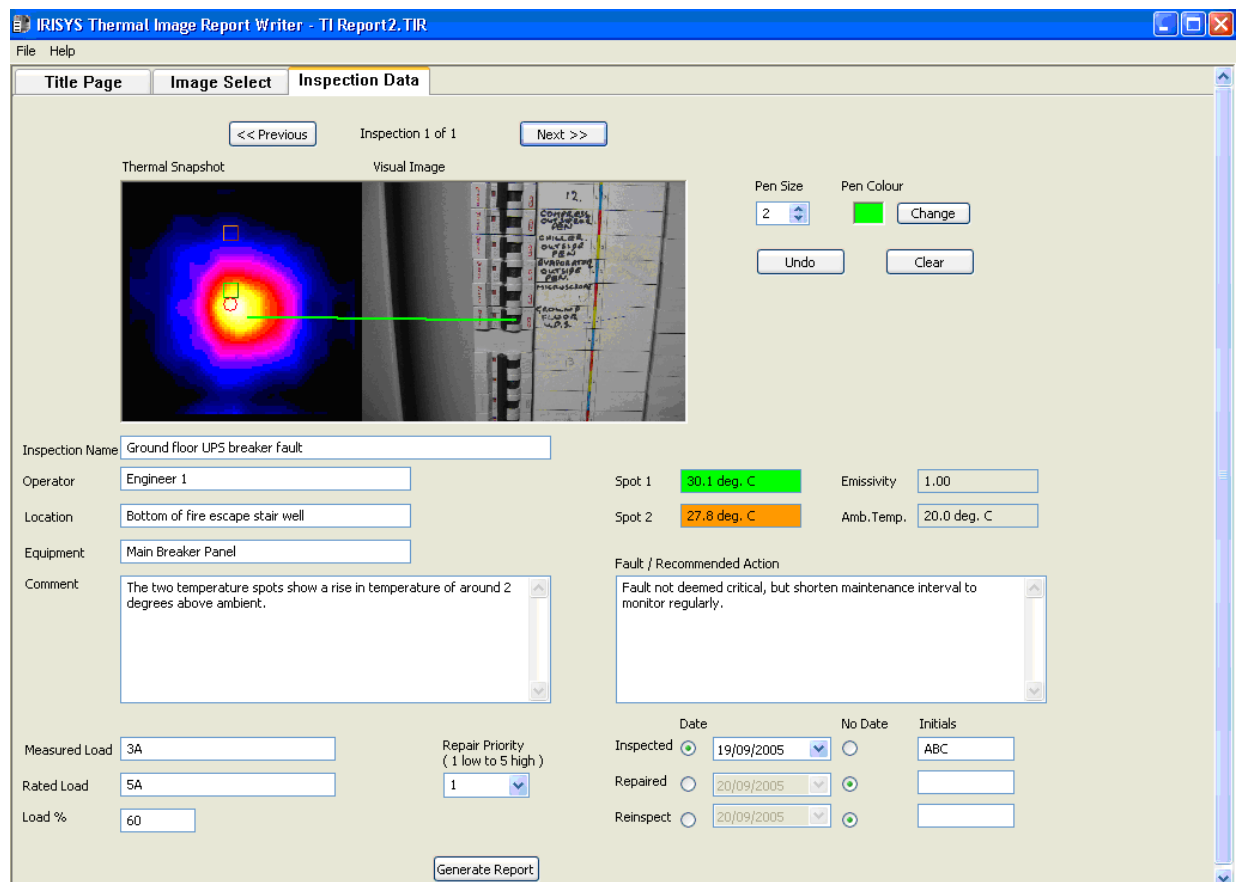


Figure 11: Report Writer Inspection Data Tab.

4.5.1 Line Drawing

The software has the ability to draw lines onto the thermal snapshot (and visual image if available) to help the reader of the report to identify the points of interest. For example in Figure 12 below, the hot breaker has been identified in both the thermal snapshot and the visual image.

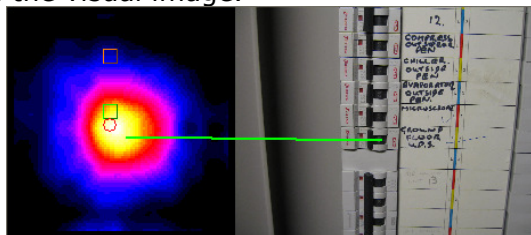


Figure 12: Drawing Lines to Identify Hotspots.

This is done on the "Inspection Data" tab by clicking on part of the combined visual and thermal image to create one end of the line, and then by clicking elsewhere in the image to create the other end of the line. The controls for drawing lines are shown in Figure 13. The line thickness can be adjusted by selecting a number between 1 and 9 from the "Pen Size" list box, and the colour of the line can be adjusted by clicking "Change", and selecting a colour from the popup palette. Clicking "Undo" removes drawn lines one at a time or all the lines can be removed by clicking "Clear".

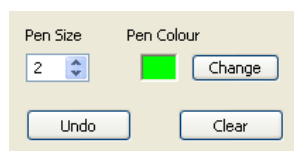


Figure 13: Line Drawing Controls.

4.5.2 Inspection Name

The inspection name appears in the contents page of the thermography inspection report, and therefore it is recommended that the inspection name includes enough information to identify the thermal snapshot.

4.5.3 Operator

This is the camera operator's name (for this inspection). Note that the software allows an individual entry for each inspection, allowing inspections from different operators to be included in the thermography inspection report. Also note that the report author is entered separately (see Section 4.3.3).

4.5.4 Location

This is the inspection location, such as site name, building name, floor number or area.

4.5.5 Equipment

Description of equipment, for example "fan motor" or "main breaker panel".

4.5.6 Comment

This is for comments specific to the equipment and snapshot. For example, detailed location information, tools required for access, access time limitations etc.

4.5.7 Load

Measured and rated load on equipment, and measured load as a percentage of rated. Load can include current and voltage measurements, rotation speeds, weights lifted etc.

4.5.8 Temperature Measurement Information

Depending on how many pixels are selected in the thermal snapshot, up to two colour coded temperature measurements can be displayed here. The emissivity and ambient temperature values are also included so it is possible to make an accurate evaluation of the temperature of the target(s).

4.5.9 Repair Priority

Repair priority (1 low to 5 high) can be added to indicate the severity of the fault. This appears in the thermography inspection report summary and can be used as part of a continuous maintenance program or for a one-off inspection.

4.5.10 Fault / Recommended Action

Description of the fault found, and details of recommended action. This section can also be used to explain the repair priority given above.

4.5.11 Inspection, Repair & Re-inspection Dates

The date and name of operator for inspection repair and re-inspection can be included. Note that thermography inspection reports can be saved (see File menu commands in section 4.7) after initial inspection and reopened at a later date to fill in date of repair and re-inspection, and information about the repair can be added to the "Fault / Recommended Action" text box.

When the information for this inspection has been correctly entered, click "Next" at the top of the page to fill in data for other inspections in the same manner. When this is finished there are three saving options.

4.6 Generate or Save?

1. If the thermography inspection report is ready for printing, select "Save" or "Save As" from the "File" menu on the toolbar to save the report information as a .TIR file. This enables you to return to edit the report at a later date if required. See Section 4.7 for more information. Now click "Generate Report" at the bottom of the "Inspection Data" tab. This will open a "Save As" window to save the thermography inspection report in .pdf format.
2. Note: It is not possible to return to edit the report (including repair and re-inspection details) unless it is saved as a .TIR first.
3. If more report information needs to be added at a later date, select "Save" or "Save As" from the "File" menu on the toolbar to save the thermography inspection report in progress as a .TIR file. See Section 4.7 for more information.
4. If more information or snapshots need to be added to the report now, it is possible to reselect the "Title Page" or "Image Select" tabs as required.

4.7 Toolbar

The **File** menu allows the following:

- New – Opens a blank Report Writer window.
- Open... – Opens a search window so existing .TIR files can be found and opened.
- Save - Opens a "Save As" window to save a report as a .TIR file with the same name.
- Save As... - Opens a "Save As" window to save a report as a .TIR file with a new name.
- Recently opened .TIR files will be listed here.
- Exit – Exits the IRISYS Report Writer program.

Note: The .pdf thermography inspection report cannot be edited, so it is recommended to save the report information as a .TIR file before closing Report Writer.

The **Tools** menu allows the following:

- Language – Allows the user to change the language of the user interface and reports generated. Note this setting is persisted when the program is restarted.

The **Help** menu displays information about the program, including the software version number.

5 Sample Thermography Inspection Report

The thermography inspection report is saved in .pdf format.

5.1.1 Title Page

The first page of the thermography inspection report shows a company logo if required and is titled "Thermography Inspection Report". The information previously entered on the "Title Page" tab (Company, Author, Date, and General Comments) appears here.



Company	IRISYS
Author	A N Other
Date	17 th August 2005

General Comments

Company visited: IRISYS
 Site location, Swan Valley
 Contact details of site manager: A N Other, 01604 594200
 Initial reason for site visit: Routine maintenance interval.

5.1.2 Contents Page

The second page is an automatically generated contents page, detailing which inspection appears on which page of the thermography inspection report. It also gives the page number of an automated thermography inspection report summary.

Contents	
Description	Page No.
Ground floor UPS breaker fault	3
Summary	4

5.1.3 Inspections

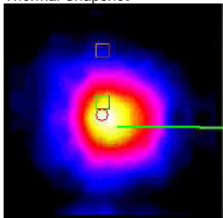
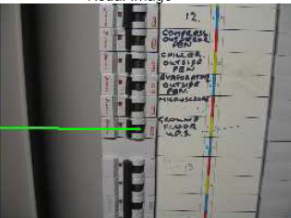
There are then X pages of inspections where X is the number of thermal snapshots included in the thermography inspection report. Each inspection shows all of the information entered during the "Inspection Data" stage, and they also show some information gathered from the thermal snapshot file:

1. Up to two colour-coded, temperature measurement pixels are highlighted on the thermal snapshot.
2. Either one pixel temperature measurement, or two pixel temperature measurements and the difference in temperature between the two are shown below the thermal snapshot.
3. The date and time that the snapshot was taken.

Note: The time and date information comes from the Imager, PC or Pocket PC the snapshot was saved on, and if these settings are not set correctly, then the time will not be correct in the snapshot file.

4. The emissivity and reference ambient temperature, as entered into the Imager or imager software.

Note: If these details are incorrect, the snapshot properties can still be altered using the imaging software.

Ground floor UPS breaker fault		Snapshot	
Operator	Engineer 1	Date	17th August 2005
Location	Bottom of fire escape stair well	Time	10.46 AM
Equipment	Main Breaker Panel		
Comment			
The two temperature spots show a rise in temperature of around 2 degrees above ambient.			
Thermal Snapshot		Visual Image	
			
Temperature Measurements		Measurement Parameters	
Spot 1	30.1 deg. C	Emissivity	1.00
Spot 2	27.8 deg. C	Ambient Temp.	20.0 deg. C
Difference	-2.3 deg. C	Measured Load	3A
		Rated Load	5A
		Load %	60
Fault / Recommended Action		Repair Action	
Fault not deemed critical, but shorten maintenance interval to monitor regularly.		Action	Date
		Inspected	19th Sep 05
		Repaired	
		Reinspect	
Repair Priority 1 Low - 5 High			
1			

5.1.4 Report Summary

At the end of the thermography inspection report there is an automatically generated report summary that gives the following details about each inspection:

1. Inspection number, which is taken from the order the thermal snapshots were entered.
2. Location,
3. Equipment,
4. Fault / action
5. Priority (1 Low, 5 High).

This summary makes it easy to plan a maintenance schedule using the priority values given for each inspection.

Summary				
Insp. Number	Location	Equipment	Fault / Action	Priority
1	Bottom of fire escape stair well	Main Breaker Panel	Fault not deemed critical, but shorten maintenance interval to monitor regularly.	1

6 Printing

The thermography inspection report is now complete and can usually be printed by selecting "Print" from Adobe Acrobat Reader "File" menu on the toolbar. As an alternative to printing, the .pdf file can be emailed to a customer or client.

7 Customer Feedback Form

If you have any feedback or have had any technical issues with an IRISYS Thermal Imager or the Report Writer software, please complete the details below and send it back to IRISYS at the address on the front page of this manual.

Name:

Company name and address:

Contact details:

Thermal Imager part number and serial number:

Imaging software version installed:

Report Writer software version installed:

Description of technical fault/feedback: