

# **Intelligent Interfaces**

## **PCSpectraLite**

### **Reference Manual**

**Intelligent Interfaces Ltd**

**Issue 1 4th February 2003**

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This Reference Manual is intended only to assist the reader in the use of the PCSpectraLite software and, therefore, Intelligent Interfaces shall not be liable for any loss or damage whatsoever arising from the use of any information or particulars in, or errors or omissions in, this Reference Manual.

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## Introduction

The PCSpectraLite software was written for analysing images from the Elliott Instruments TVSPEC spectrometer. However, it accepts any size image of size up to 2048 pixels wide by 2048 pixels high in 24 bit colour bitmap bmp file format and can:

- show the X and Y co-ordinates of a pixel in the displayed image and its intensity I;

- define a rectangular area of the displayed image for one-dimensional X or Y projection and calculation of area properties;

- save the displayed image;

- print the displayed image;

- change the size of the displayed image;

- change the appearance of the displayed image by:

  - converting from a colour to a greyscale display;

  - inverting the display;

  - only displaying pixels above a threshold value;

- carry out an analysis of the displayed image by:

  - producing a plot of the average of every column or row in a selected rectangular area - one dimensional projection;

  - performing a pixel to wavelength calibration if the zero point and scale factor constants are available in a text file named SpecCal.txt;

  - save the projection as a bmp file;

  - save the projection as a csv file;

  - print the projection;

  - determine the centroid and count the pixels above the threshold value in a defined a rectangular area;

- give information about the program.

Note that any image that can be opened by Paint can be saved in 24 bit colour bitmap bmp file format and then be analysed using PCSpectraLite.

## Installation

The PCSpectraLite software is supplied on the TVSPEC CD-ROM. Open the PCSpectraLite folder and double click on setup.exe. This installs the software in the

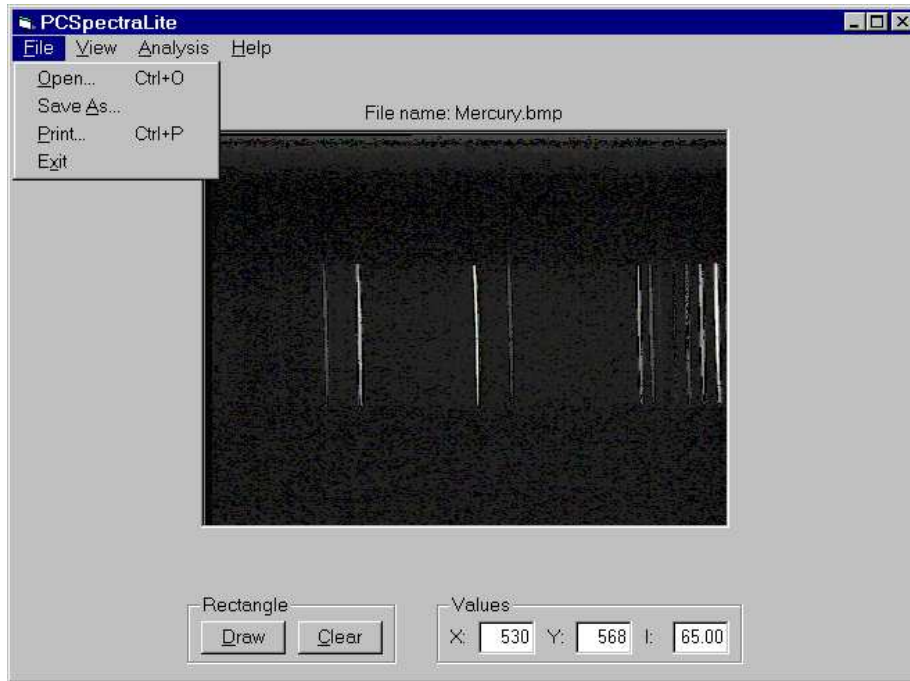
C:\Program Files\PCSpectraLite folder.

Drag the file C:\Program Files\PCSpectraLite\PCSpectraLite.exe to the Desktop to create a shortcut.

## Using the PCSpectraLite software

Double click on the PCSpectraLite shortcut or select Start->Programs->PCSpectraLite->PCSpectraLite





## Loading an Image

Select File->Open to use the standard Open dialogue to load and display a bmp file.

## Saving the Displayed Image

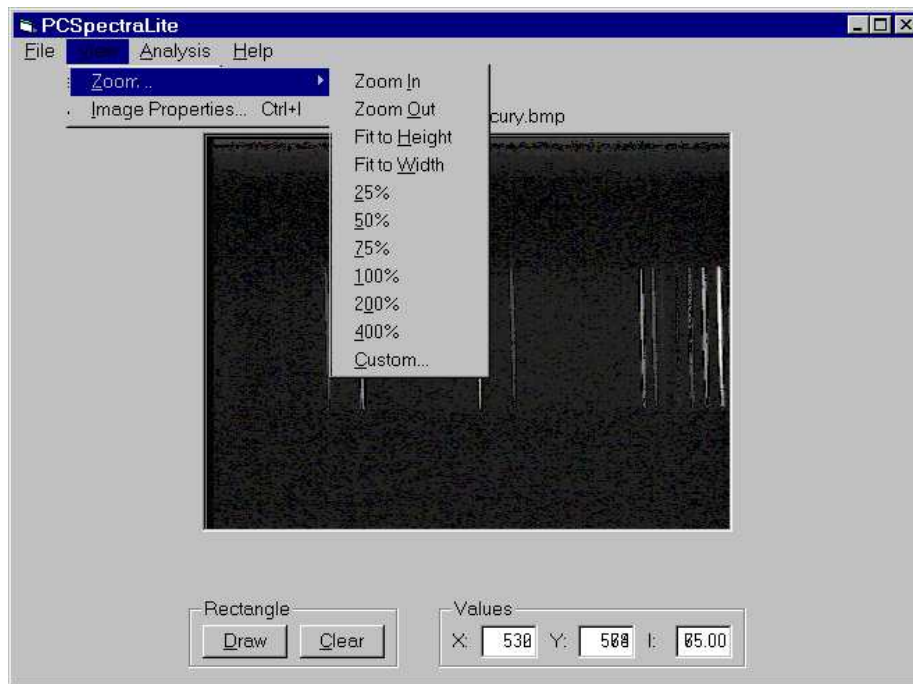
Select File->Save As to use the standard Save As dialogue to save the display as a bmp file.

## Printing the Displayed Image

Select File->Print to print the display.

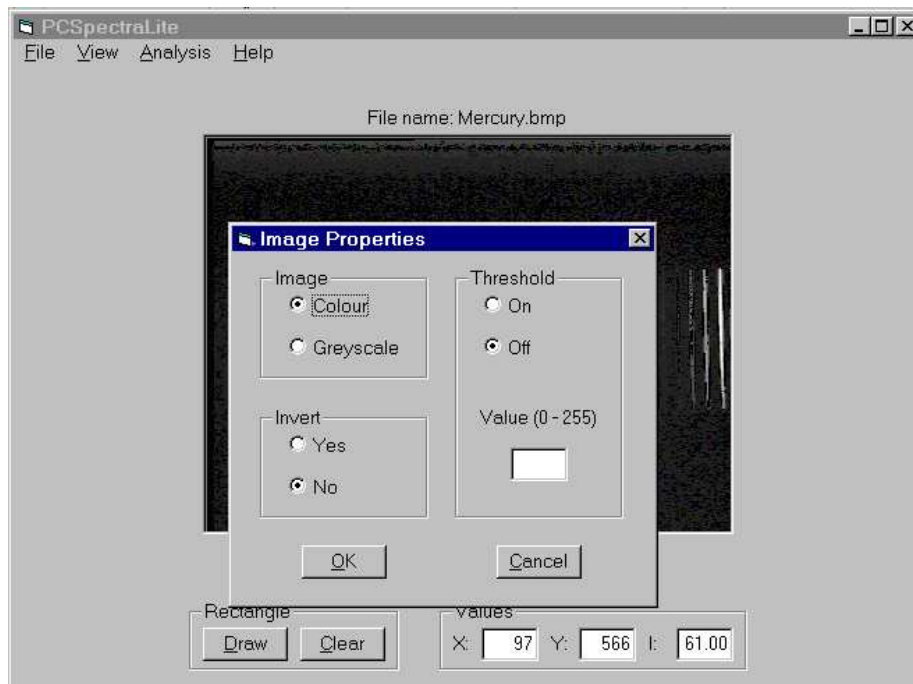
## Displaying Values

When the pointer moves over the displayed image the X and Y co-ordinates of the pixel and its intensity I are shown at the bottom right of the window



## Changing the View

Select View->Zoom->Zoom In, Zoom Out, ... or Custom to change the size of the Displayed image. The Fit to Height option is particularly useful.



## Changing the Image Properties

Select View->Image Properties and then choose:

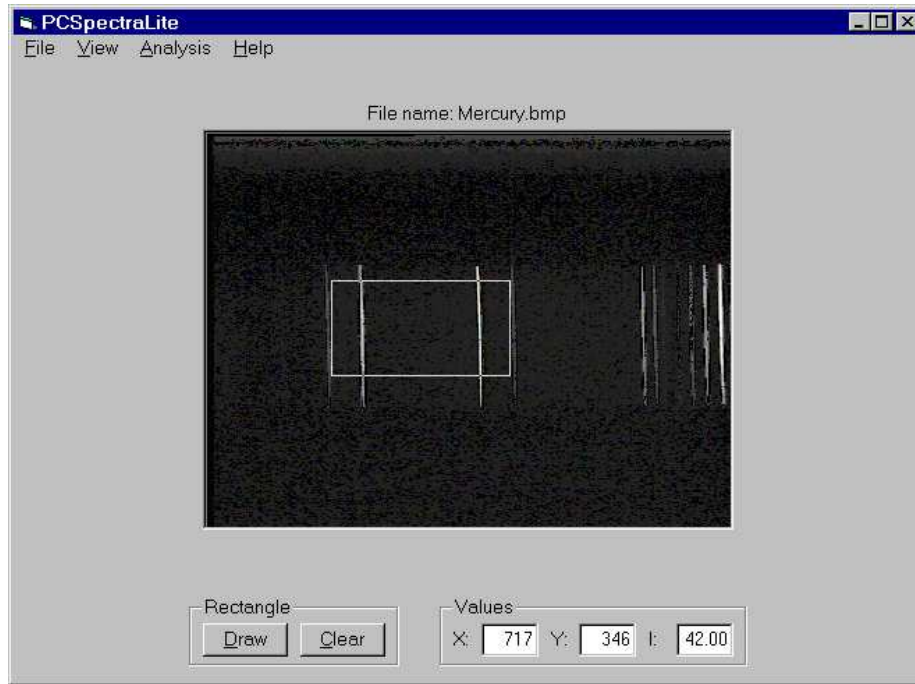
Image - Colour or greyscale;

Invert - Yes or No;

Threshold - On or Off and enter a value.

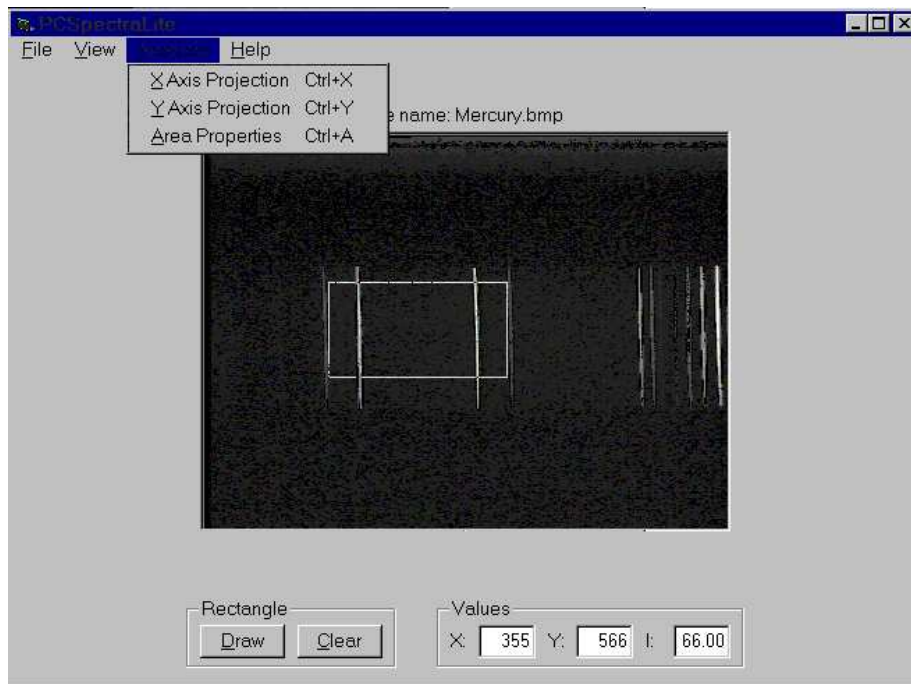
Each pixel with an intensity value lower than the threshold value is displayed as black.

Images which contain a lot of black can be converted to a negative to save ink when printing.



## Defining an Area for Analysis

The Rectangle->Draw and Rectangle->Clear commands are at the bottom left of the window. To define a rectangular area of the displayed image for one-dimensional X or Y projection and calculation of area properties select Rectangle->Draw and then depress the left hand mouse button in one corner of the required area, move the pointer to the diagonally opposite corner and release the button. The selected area is marked by a rectangle. To analyse the entire displayed image select Rectangle->Clear.

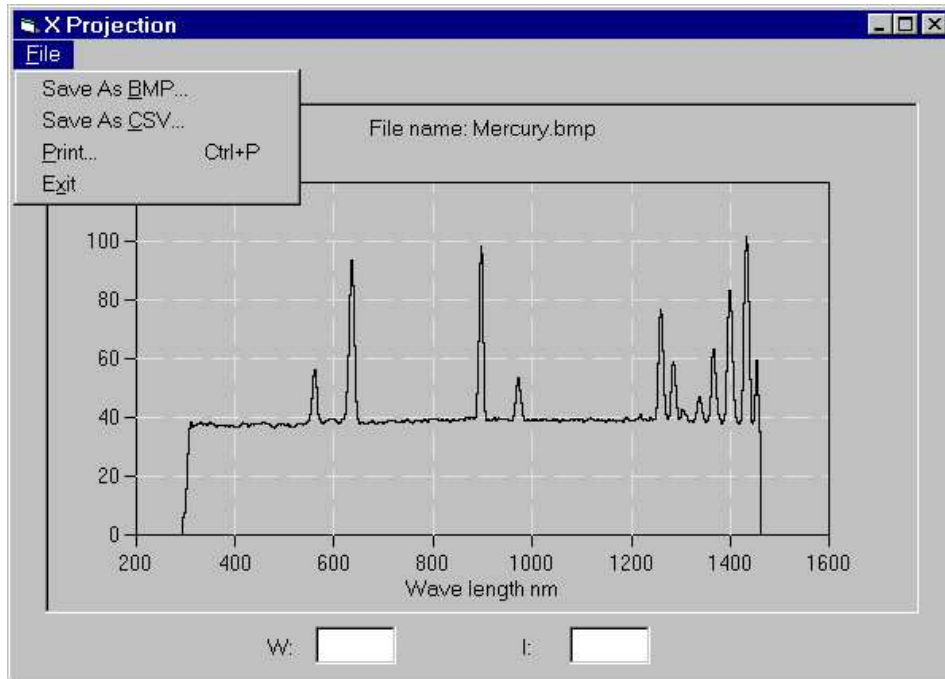


## One-Dimensional Projection

Selecting Analysis->X-Axis Projection or Analysis->Y-Axis Projection displays a histogram of the average of every column (X) or row (Y) in the selected area.

For the X-Axis Projection a pixel to wavelength calibration is carried out if a text file named SpecCal.txt is placed in the same folder as the image bmp file. The text file must contain the zero point and scale factor constants on one line separated by a comma.

The average intensity (I) and the co-ordinate (W, X or Y) are shown as the cursor is moved over the histogram.



## **Saving the Projection as a bmp file**

Select File->Save As BMP to use the standard Save As dialogue to save the display as a bmp file. This enables it to be included in reports.

## **Saving the Projection as a csv file**

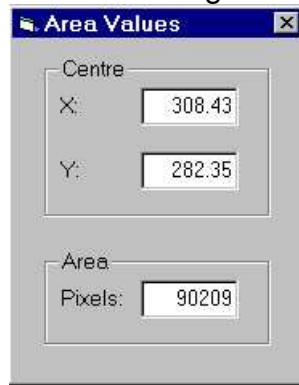
Select File->Save As CSV to use the standard Save As dialogue to save the data as a csv file. This enables it to be read into a spreadsheet.

## **Printing the Projection**

Select File->Print to print the display.

## Determination of the centroid and count of the pixels above the threshold value in a defined rectangular area

Ensure that Threshold is on and a Value has been entered in the Image Properties window. Select Analysis->Area Properties to calculate the centroid and count the pixels in the selected rectangular area.



(Note that if an image is inverted to produce a negative eg a spectra of black lines on a white background, the centroid of the box minus the contribution of the feature is determined)