



## **Colour Display with TVSPEC**

User Guide 1.0

## Acknowledgments

One of our customers has written freeware software, which allows real-time colour display and real-time graphical display with Elliott Instruments TVSPEC.

The software was written by Joze Rihtarsic, a student in the Physics Education Group of the Faculty of Mathematics and Physics at the University of Ljubljana, in Slovenia.

His supervisors were Prof. Dr Gorazd Planinsic. Faculty for Mathematics and Physics, Department for Physics University of Ljubljana and Prof.Dr. Sasa Divjak from Faculty for Computer and Information Science.

A copy of the installation can be found on the TVSPEC CD-ROM in the Freeware Folder.



Install5CSpec.exe

No charge has been made for this software.

## 1: Installation of SCSpec Colour Display Software

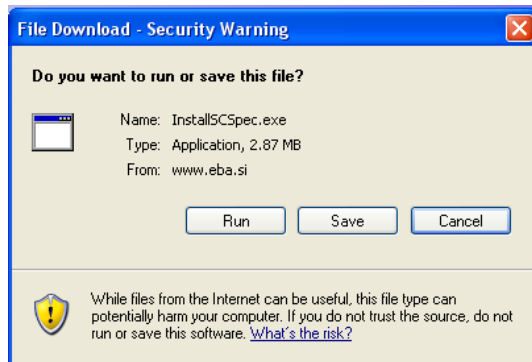
The software can be downloaded from the web or installed from the TVSPEC CD-ROM. The latest version, which may contain updates is available from the web.

This software can be freely downloaded from

<http://www.eba.si/opensource/scspec/>

The link to download the program is [Šolski spektrometer](#)

This will give you the option of loading the file eg

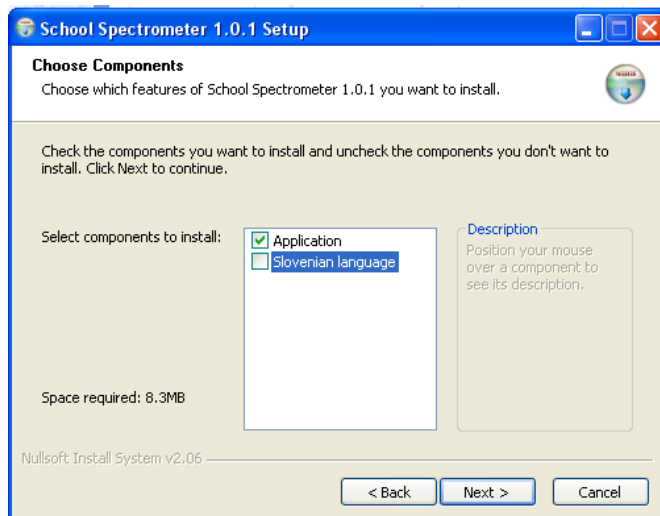


Select the option Run and the InstallSCSpec.exe will be installed on your PC. If you use the Save option which will produce an Installation file



InstallSCSpec.exe

This is also available on the TVSPEC CD-ROM in the Freeware folder. During the installation you will be asked for a language option. For display in English, de-select the Slovenian language as show



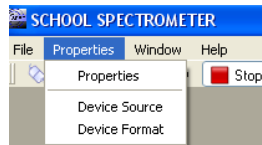
You will find a shortcut to the program on your desktop.



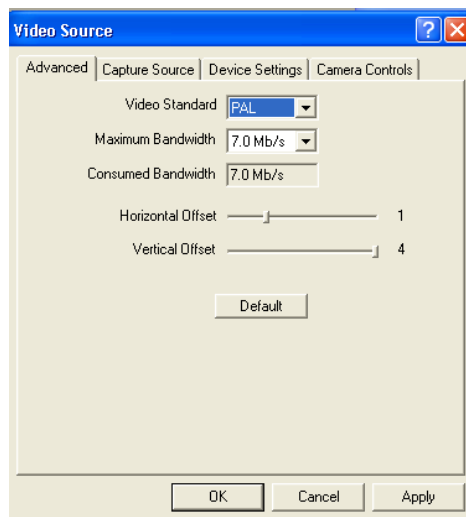
## 2: Setting up the Video Capture for the SCSpec Colour Display

Connect the TVSPEC and run SCSpec

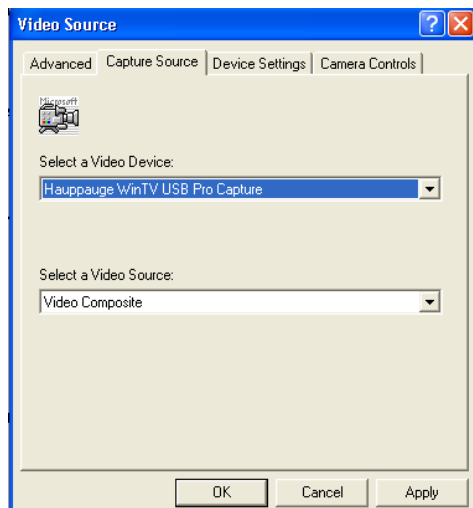
In the SCHOOL SPECTROMETER window double click on **Connect**  
Move the cursor over the **Properties** button below Connect and you should have two options



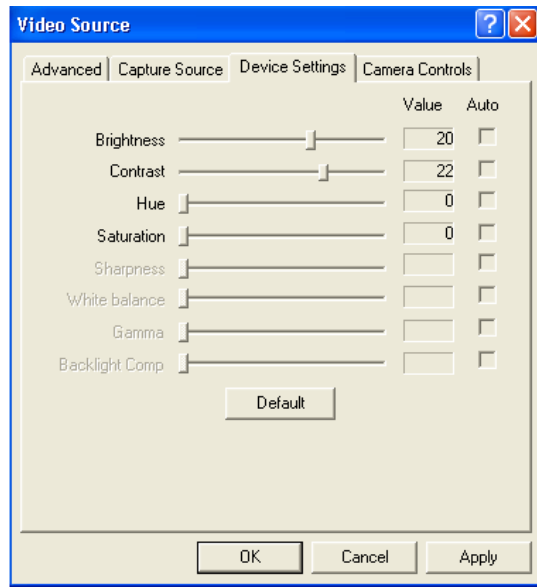
In the Device Source windows ensure video source is PAL as in the example below



Capture source should be Hauppauge WinTV USB Pro Capture as shown

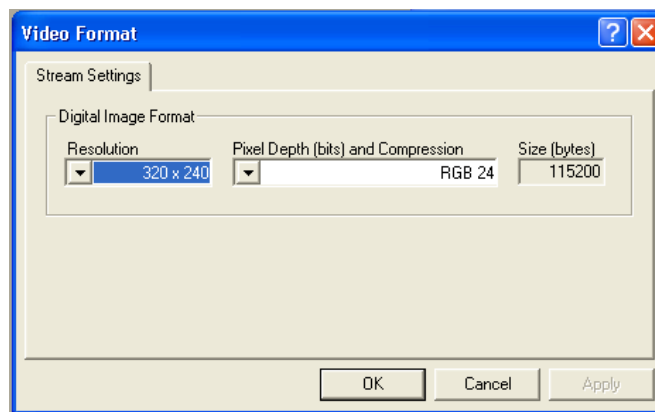


Device settings should be as shown below



The Brightness and Contrast should be the default values, but Hue and Saturation should be zero.

Now click on **Device Format** and the Video Format should be 320x240 RGB24 as shown below

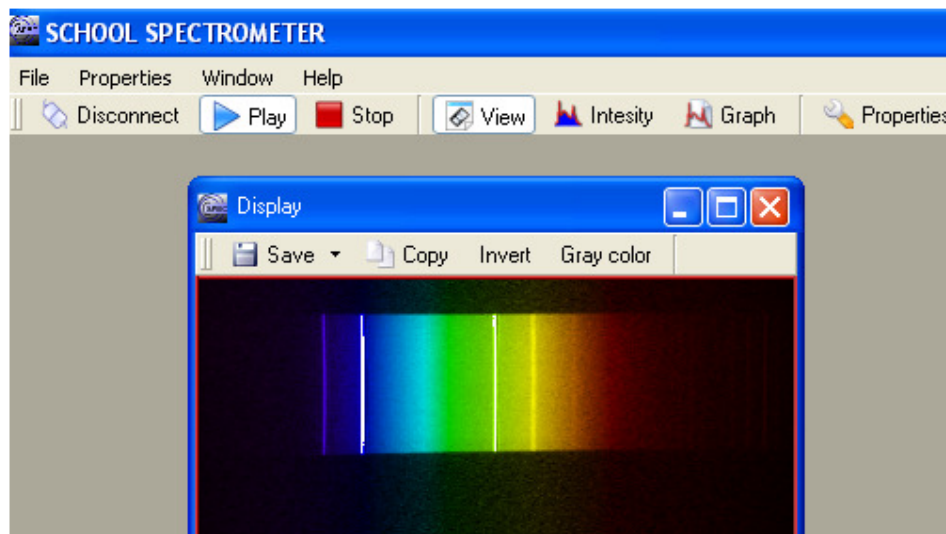


You will probably only need to change the Video Source to PAL and the Video Format to 320x240 and RGB24

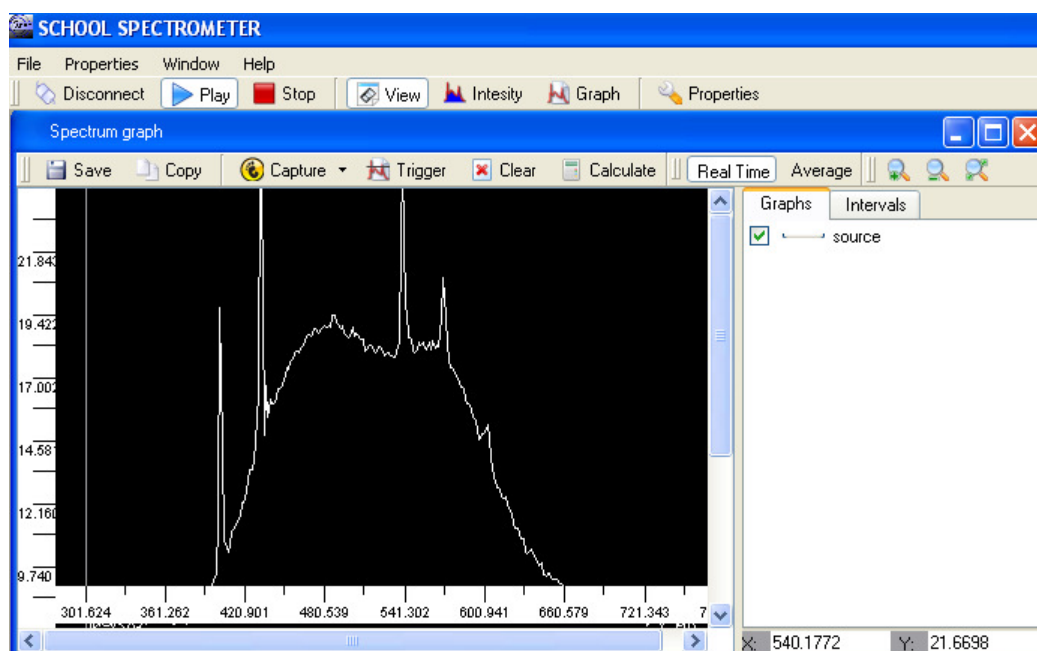
NB The video set-up should only be needed the first time you use the software.

### 3: Displaying Real-time Colour Spectra and Graphs

Click in **Connect** and then on **Play** and a Display Window should open with a real-time colour display of your spectrum. The spectrum shown below is of a fluorescent lamp containing the characteristic line spectrum of mercury. The Display Window can be re-sized or can be full screen. Saturated pixels appear white in the display.



A real-time display graph of relative intensity versus wavelength can be displayed by clicking on the Graph button as shown below.



Both windows are displayed at the same time and can be re-positioned and re-sized. Placing the cursor on the graph will display the wavelength (in nm) of any feature in the spectrum.

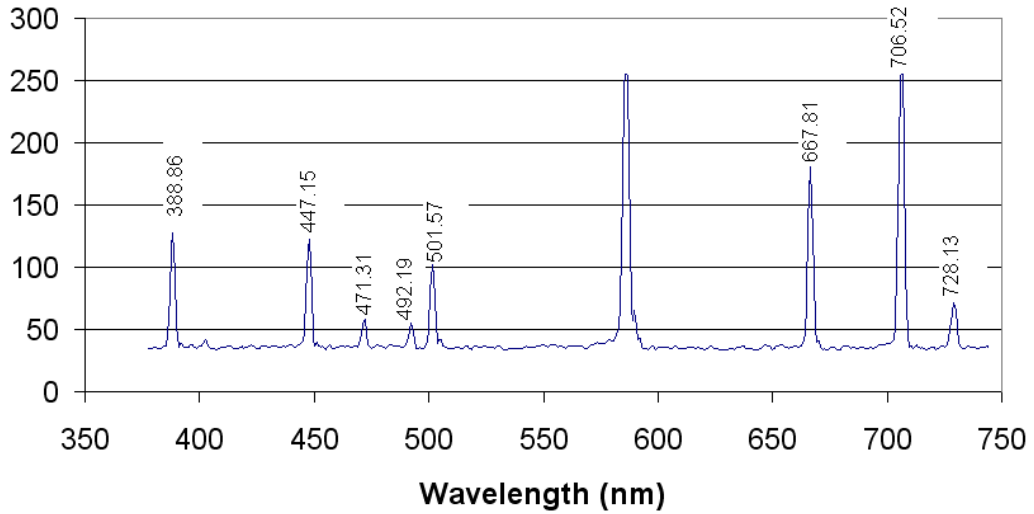
#### 4: Adjusting the Wavelength Calibration

When TVSPEC is used with the monochrome data capture and image analysis software PCSpectralite, and the data is saved to the folder Spectra\MySpectra, the spectra are automatically calibrated into **nm** by the calibration constants in Spectra\MySpectra\SpecCal.txt.

If you wish to obtain accurate wavelengths with the colour SCSpec software you need to calibrate the TVSPEC. You need to illuminate the TVSPEC with a spectral lamp, which has two lines of accurately known wavelengths which are well separated in wavelength. A Helium lamp is ideal for the purpose.

The Helium spectrum with its major lines identified is shown at the end of this manual. It is best not to use the strong yellow line, which saturates and will give poor calibration. In this example I have used the 388nm and 728nm lines at extreme ends of the Helium spectrum

### Helium Wavelength Identifications



With the **Play** selected and a spectrum being displayed select the **Properties** tab with the spanner icon at the RHS of the screen.




Select **Graph Scale**

Select **Average**

Select **Set X** and then click **OK**

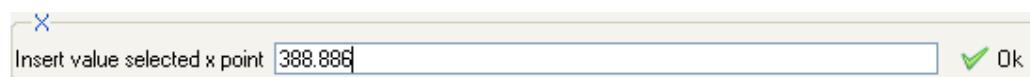
You will be prompted Select 1 point

Click the cursor on the centre of a spectral line at the LHS of the spectrum and the program will show its relative position eg 0.175758 click **OK**



A dialog box with a close button (X) in the top left corner. The text reads "Select 1. point" followed by a text input field containing the value "0.175758". To the right of the input field is a green checkmark icon and the text "Ok".

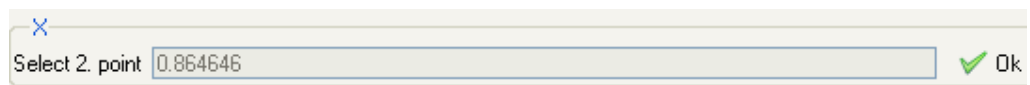
You will now be prompted to enter the wavelength in nm of the first line, eg 388.86, enter this in the box and then click **OK**



A dialog box with a close button (X) in the top left corner. The text reads "Insert value selected x point" followed by a text input field containing the value "388.866". To the right of the input field is a green checkmark icon and the text "Ok".

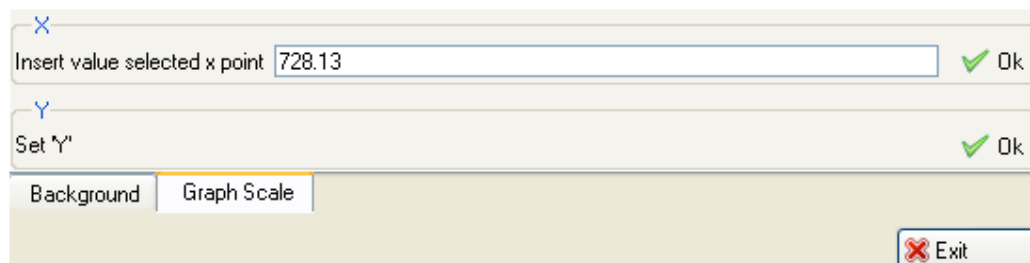
Your will then be prompted Select 2 point

Click the cursor on the centre of a spectral line at the RHS of the spectrum and the program will show its relative position eg 0.864646 click **OK**



A dialog box with a close button (X) in the top left corner. The text reads "Select 2. point" followed by a text input field containing the value "0.864646". To the right of the input field is a green checkmark icon and the text "Ok".

You will then be prompted for the wavelength in nm of the second line, eg 728.13, enter this in the box and click **OK**



A screenshot of a software interface. The top dialog box has a close button (X) and the text "Insert value selected x point" followed by a text input field containing "728.13" and a green checkmark with "Ok". Below it is another dialog box with a close button (Y) and the text "Set Y'" followed by a green checkmark with "Ok". At the bottom, there are two tabs: "Background" and "Graph Scale", with "Graph Scale" selected. In the bottom right corner, there is a red "X" icon and the text "Exit".

Select **EXIT**

The online graphical display will now show the correct wavelengths in nm when the cursor is placed over a region of interest.

The SCSpec program contains many more features, which are not yet documented.