How to open a Theremino Logger file (.CSV) into KST2

KST2 is a nice "Open Source" graph and plot creator and visualizer. You can view and download the program from the author's site: "https://kst-plot.kde.org/"
Most recent Windows version for now is 2.0.8 created in 2014, July.
This program is quite simple to use and you can find some video tutorials on their website.

I want to show only how to load data created with Theremino Logger (version 3.2) which is a nice Datalogger software that works fine and collects data from Theremino Master or Theremino Master+ADC24 and put thesevalues into a file.

Theremino Logger outputs an ASCII text file whith the extension .CSV. The file name is automatically generated whith a string representing starting date & Time (when your data recording begins). This file can also be loaded into Microsoft Excel and OpenOffice Calc.

But let see how to open it with KST2.
I'll show this to you by using screenshots marked and commented in RED (Numbers in sequence order, Circles, lines, arrows, some text)

First of all install and start KST2 into your PC. We suppose to use Windows version but I think it'll work with Linux versions too.
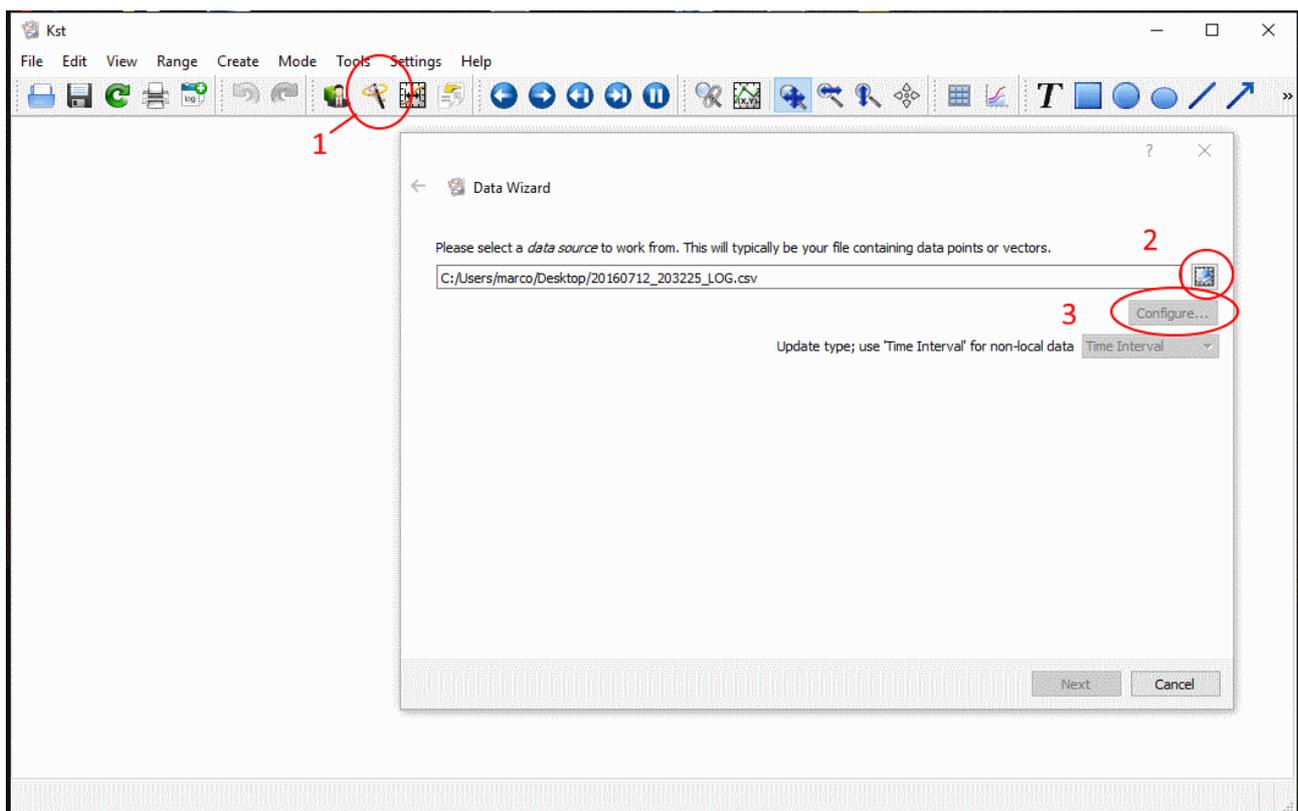
This is the main window. It appears after you've started the program and pressed the "Data Wizard" button (1).
The "Data Wizard" windows is displayed and you can choose your data file by pressing the little icon (2). Once you've selected your file the "Configure" button will activate: press it (3).
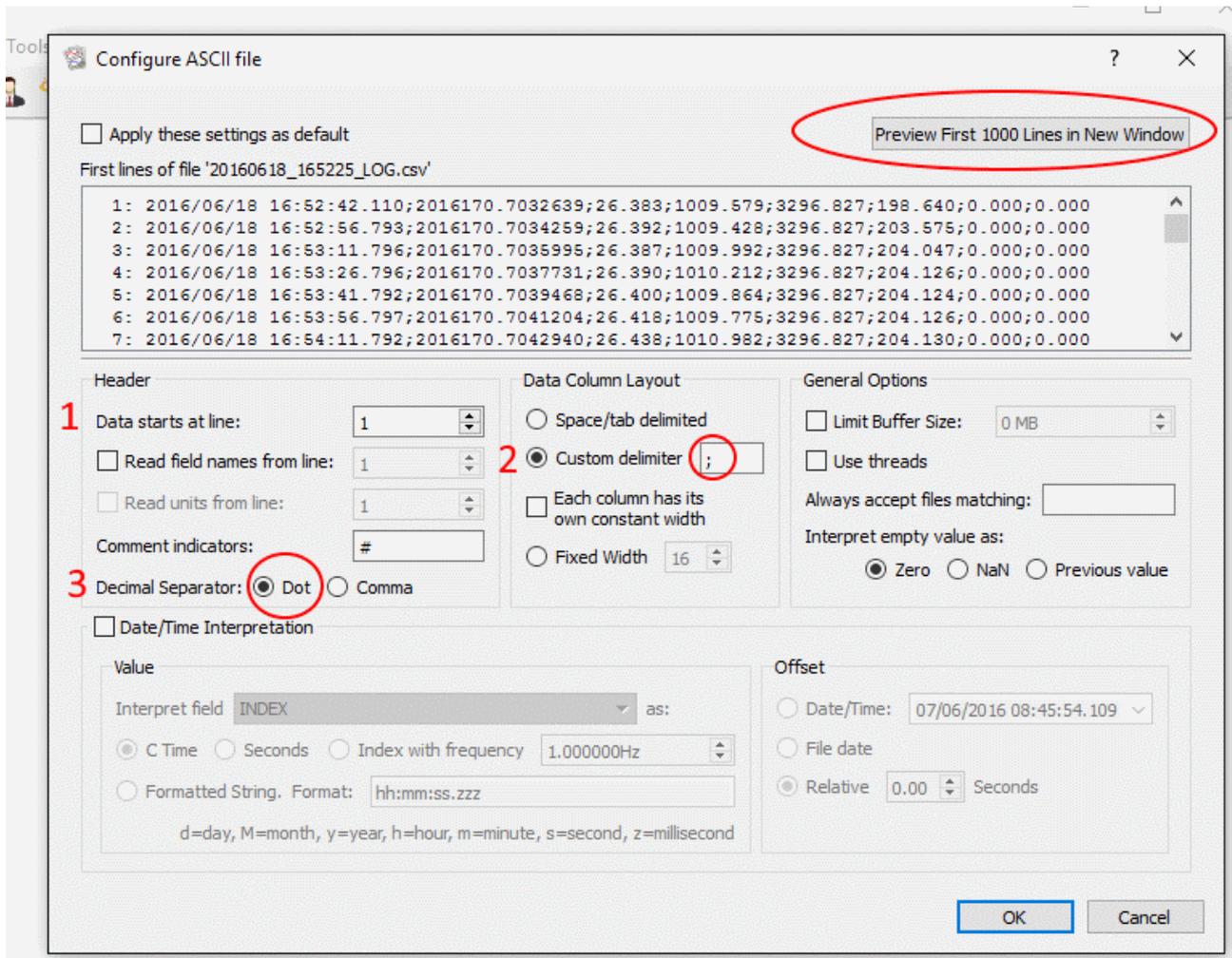
The above "Configure Ascii File" window opens.

Please check / uncheck all the options according to the example shown.

Tell KST from which line you'll start to read your data (1): a common error is to load some first lines that were recorded before setting Theremino Logger properly. A good thing to do is first load and set the HAL application properly and then set the Logger. Once you've done this please close and open again Theremino Logger. In this way you'll be sure that a new log file will be generated and populated with the right data values.

You can display and check your first 1000 lines of data by pressing the upper right button (circled in red).

It is important to set the proper "Custom delimiter": Theremino Logger uses semicolon (2)

It's important also to choose the right decimal separator. This may vary according to your Windows settings (3). Theremino uses DOT as default decimal separator.

Press OK and then you'll return to Data Wizard window. Press NEXT.

Another Data Wizard window opens
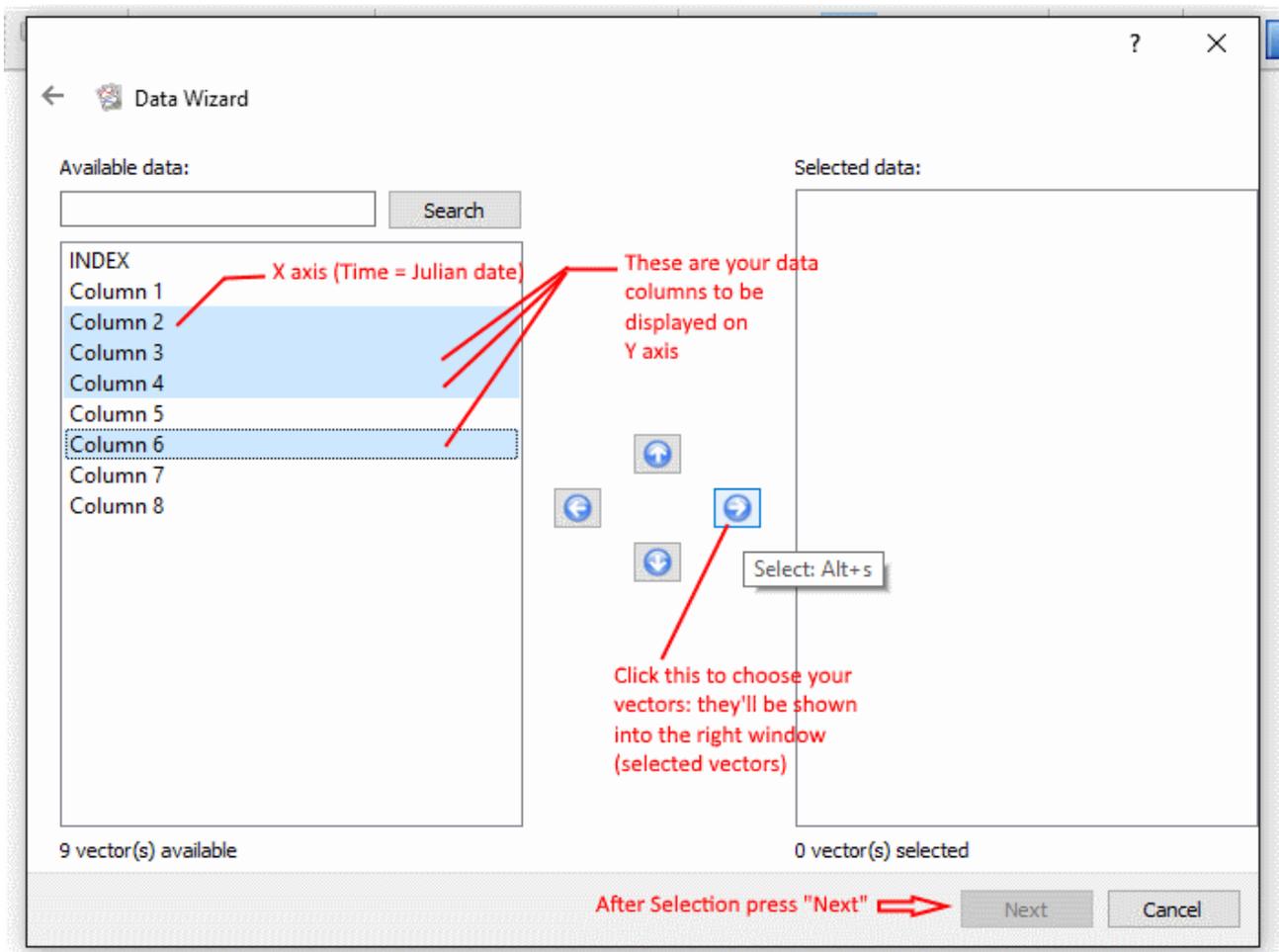
In this screen you'll choose your data from the LEFT window: according to my experience is usual to use "Column 2" as X axis, so you'll mark it by left-clicking with the mouse.

Then you can left-click on other columns numbers while keeping "CTRL" down (Multiple Selection) and then put them on the right window by left-clicking the RIGHT ARROW icon button as shown .

Every column is referred as "Vector" according to KST definitions. Vectors will be your X,Y data on the graphs generated by KST.

As I mentioned before, Column 2 is commonly used because it's a time value represented in the "Julian Day" format. This format will be explained later. Usually Julian day is used as "X Axis" data because a DataLogger works by collecting various data types and time is the logical "organizer" for your data collection.

Other columns represent one or more "Y-Axis" data (your sensor's values).

You have to choose at least two columns to create a regular X/Y Plot curve.

After you have completed data selection press "Next" again ….

A new Data Wizard window will open: more things about how to display data can be defined.
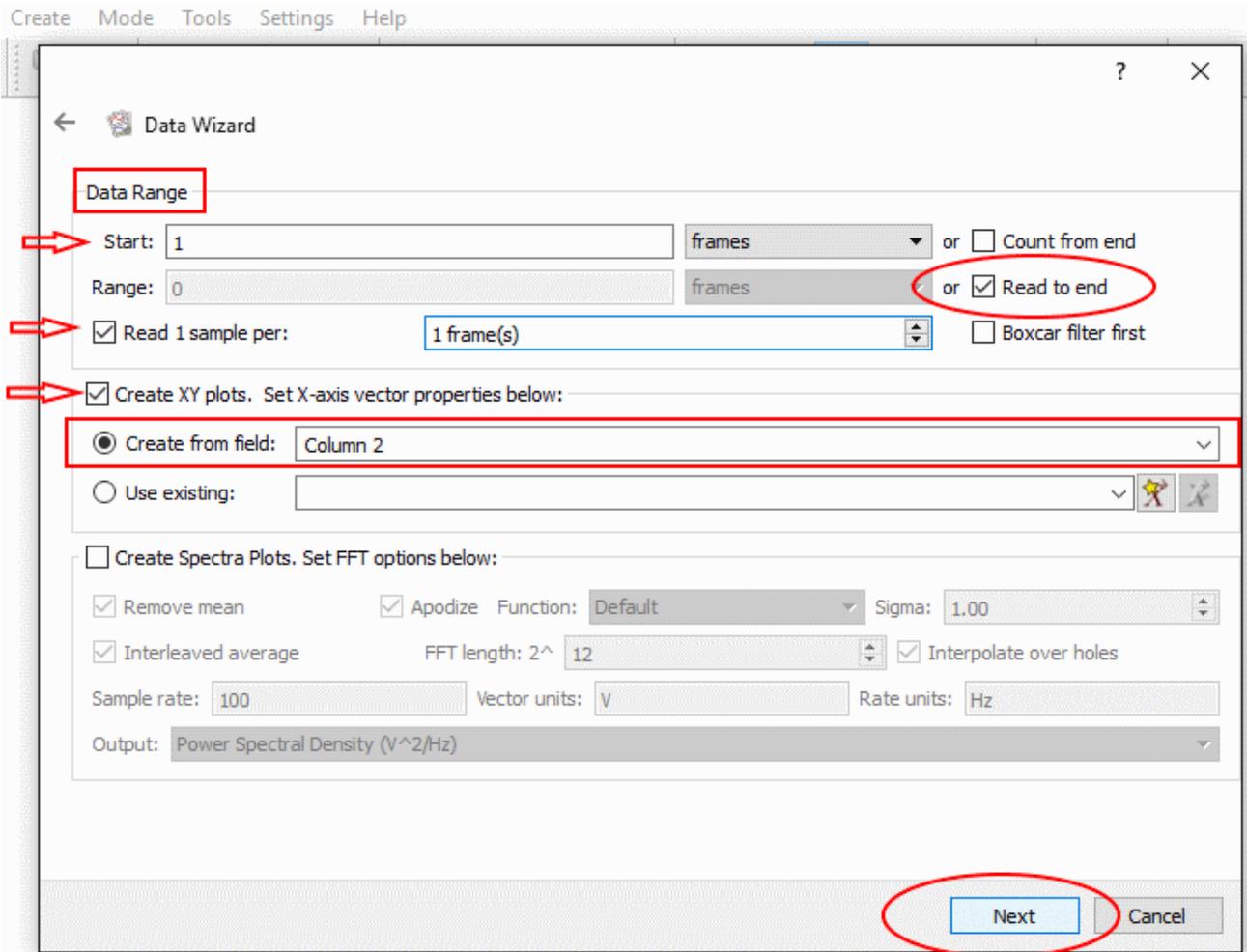
These parameters are very important: start from above and go down to set all the parameters correctly.

First of all the data range:usually you'll start to read and display data from the first line by setting "1" in the start Tab and, if your data file is not corrupted, you'll check the "Read to End" option , so all the data lines will be taken into account.

Check and set also the "read 1 sample per 1 frame" option: every line of data will be displayed.

Check the "Create XY plots" box and define the "Create from field" option. Here is a good thing to choose Column 2 because in this column Time has been recorded as Julian Day.

What is Julian day ? Is a particular date format in which time is recorded as progressive number of days starting from the year 4713 BC. **Julian day** is the continuous count of days since the beginning of the Julian Period. This format is used primarily by astronomers but can be useful to transform a time "string" from the usual format of "Year/Month/Day/Hour/Minute/Second.ssss" into a single or double precision number. The unit is "day". So integer part are days since 01-01-4713 BC while decimal part is the fraction of the last day containing all hours, minutes seconds and fraction of seconds into it.

In this format for example one hour is $1/24 = 0.0416666....$ days, one minute is $0.0006944444...$days and so on.

IN THEREMINO LOGGER "COLUMN2" IS THE CURRENT DATE/TIME OF EACH EVENT (LINE) RECORDED AS "JULIAN DAY"

After this press "Next" again.... The following "Data Wizard" window is shown:
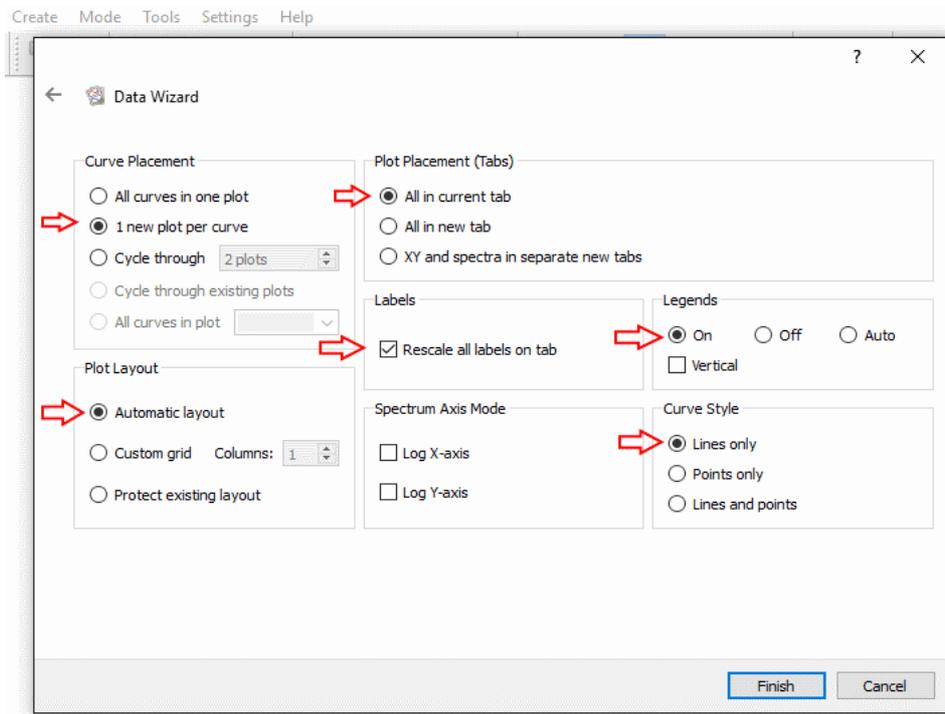
Use the above example as a good starting point to correctly show your graphs. You can simply apply all the settings as described.

Then click "Finish". This will end the "Data Wizard" and all the graphs will appear on next screen.
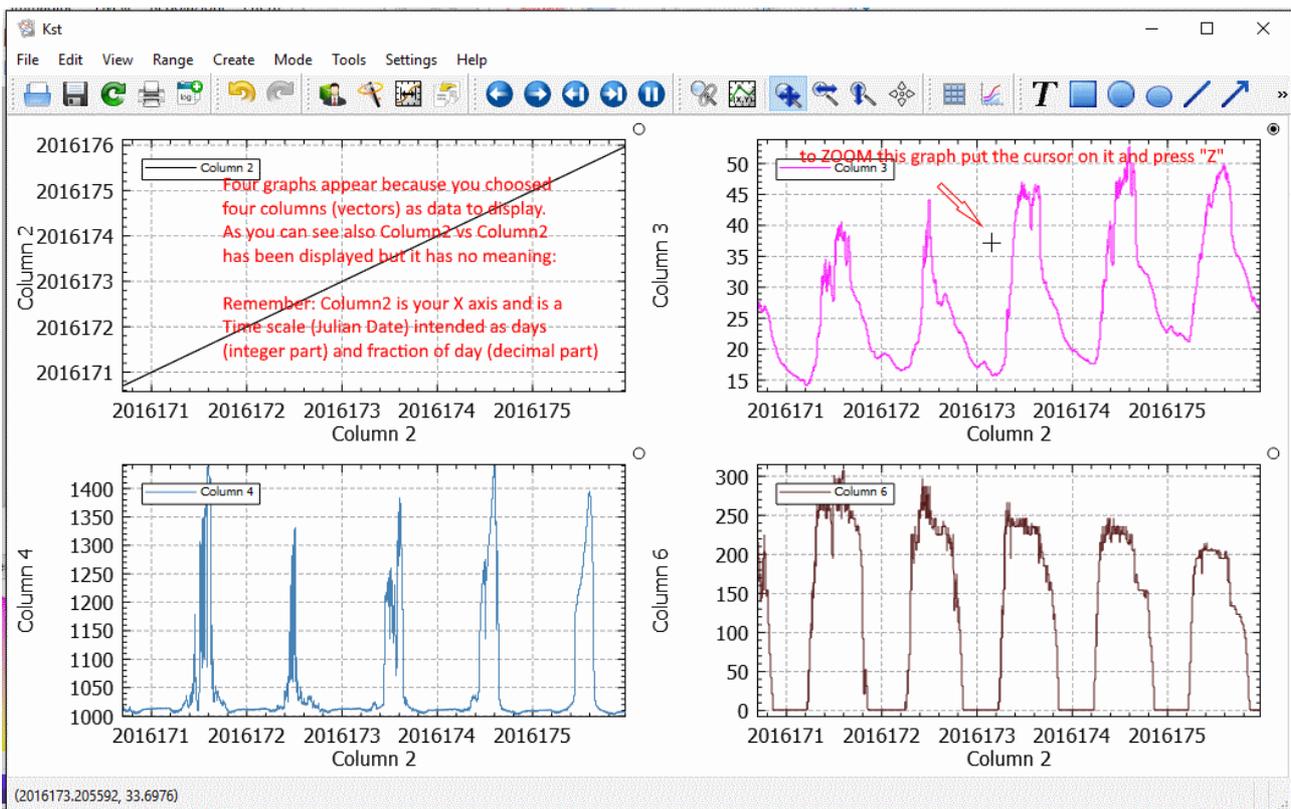
In this case <u>four</u> graphs will be shown on screen, because I've choosen <u>four</u> "Columns" or "vectors" of data.

As you can see also graph "Column2 vs. Column2" has been displayed, but it has no practical meaning and so forget it.

If you want to display only one of graphs in a bigger scale you simply put the cursor on it (the black dot appears on the upper-right side of this graph as seen in the previous image) and then PRESS "Z" to "ZOOM" in the graph. The following appears.....
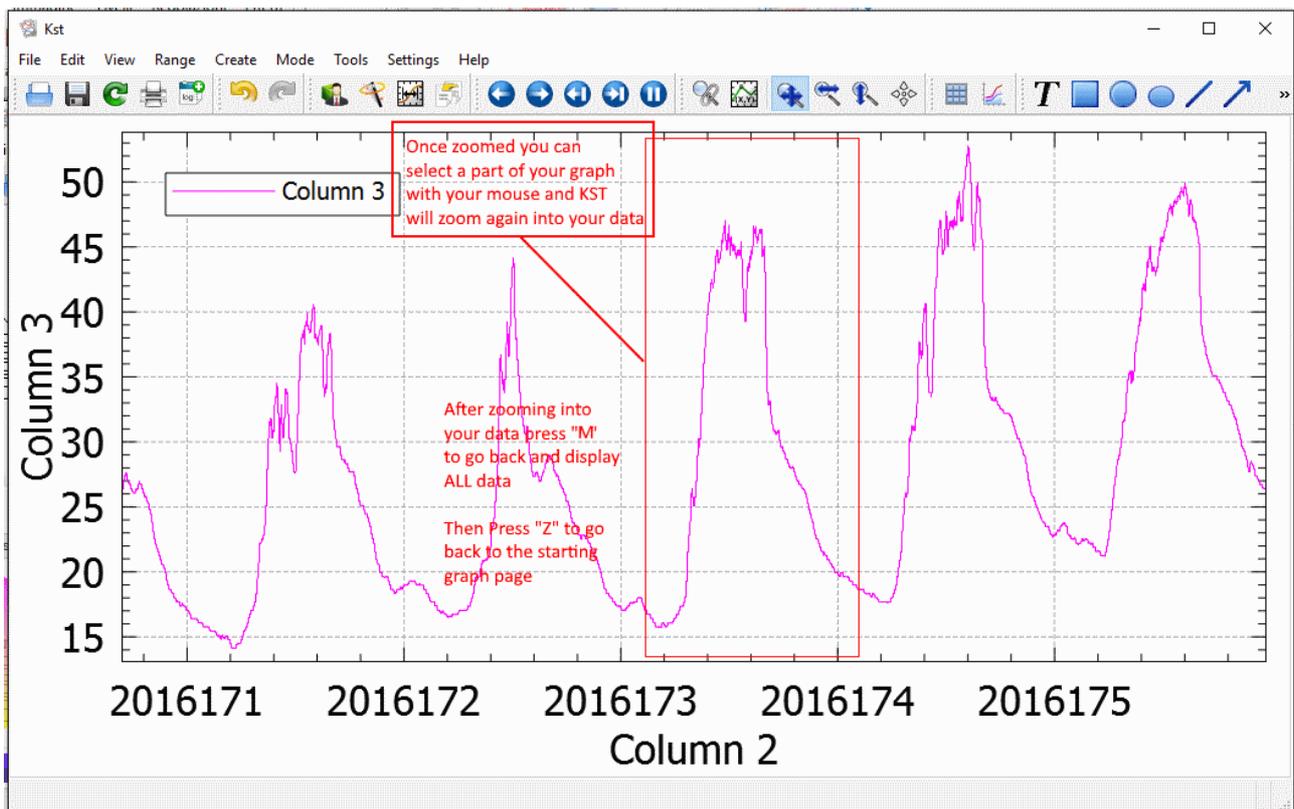
Now only one graph is displayed. You can use the mouse to drag a window around part of your data

Remember that the X-Axis is the "Julian Day" according to the new version of Theremino Logger (from version 3.2)

Note: in the above graphs and examples X values are NOT real Julian Day but a Pseudo-Julian date format that is no more used.

Please read the above image comments in **red** to learn some basic functions to zoom back and forth into your data and show every detail of the recorded values.

I hope these few notes will help you into understanding how simple is to transform your .CSV data coming from Theremino Logger into nice graphs and plots that can be used for various aims and can be easily transformed into professional plot images and prints.

Best regards!

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