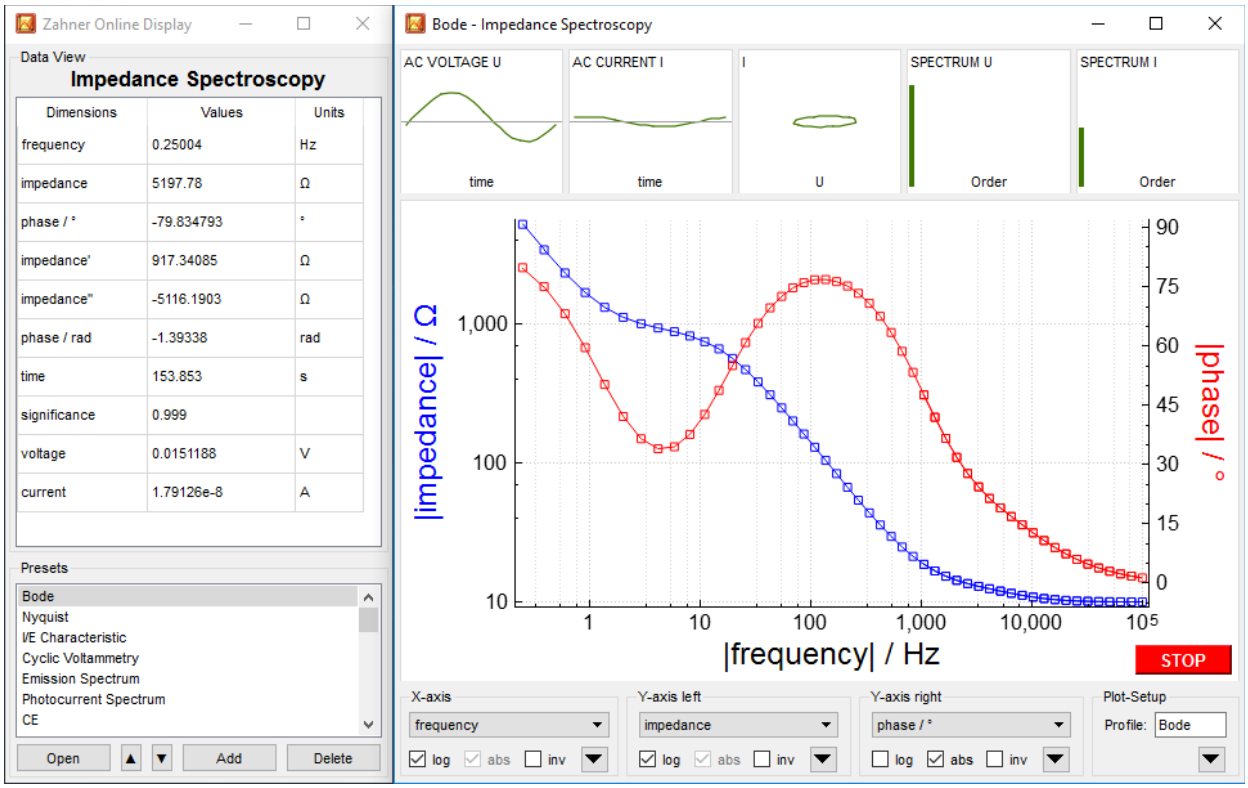
Online Display

Flexible Live Visualization of Measurements



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2. Introduction

The *Zahner Online Display* is part of the *Thales XT* Software Suite. Its main purpose is to show the live data of a running measurement. It also allows a basic inspection of the data before proceeding to advanced analysis methods.

The *Online Display* will be automatically present when *Thales XT* is started. It can also be launched in standalone mode to connect via TCP/IP which makes it possible to monitor measurements remotely via network.

3. Overview

After Starting *Thales XT,* the main Window of the *Online Display* will be visisble in Idle mode.

3.1 Main Window

While no measurement is running, relevant information about the connected appliance is shown in the *Status* area on the top part of the Window.

During a running measurement, the *Data View* will show all values of the current datapoint in real time. The exact values of each point can also later be viewed in crosshair mode, after the measurement was finished.

In the bottom area of the window a list of available presets for plot windows is displayed. They can be sorted and own user defined presets may be added or deleted.

Once a measurement has been started, a suitable preset is selected automatically. This behaviour and the presets itself can be edited later in the plot windows.

Click on *Open* or just double click on the desired preset name to open a plot window having the desired Setup.

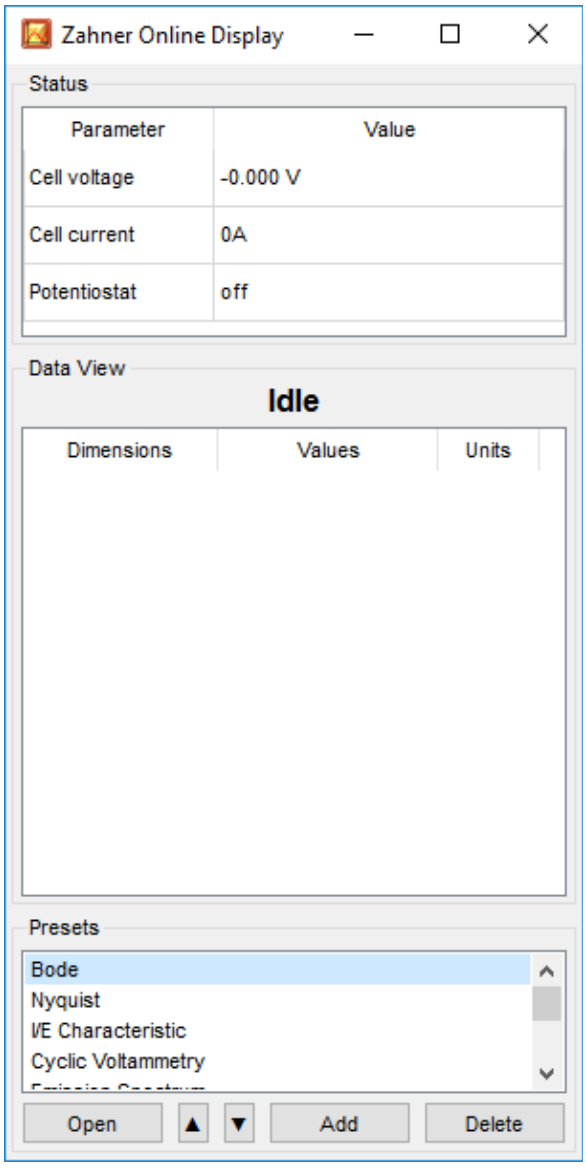


figure 1: The main window

3.2 Plot Windows

The plot windows are opened from the main window by selecting one of the presets. Each preset contains all possible settings for options like colour or thickness of the graphs, window and axis configuration.

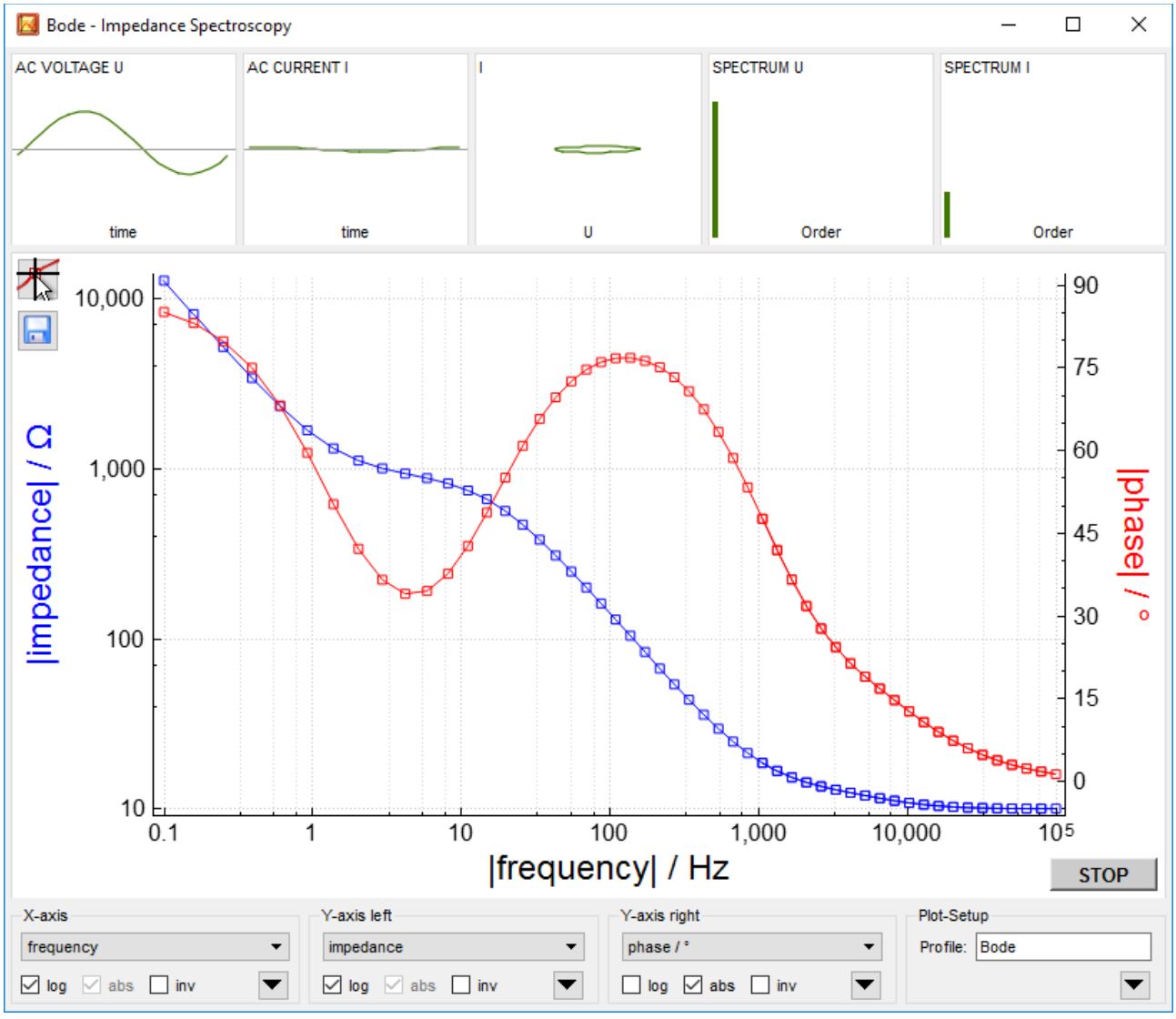


figure 2: The plot window

During AC measurements real time displays show information about the exitation and response signal. On the left hand side voltage and current is displayed in the time domain. Both are combined to a Lissajous curve in the center. On the right hand side the Fourier spectra of the signals are shown.

The actual plot of the measured data fills the main area of the window. The top left hand corner contains two buttons, which provide the user the option to further inspect the data in crosshair mode or save it for later analysis.

The *STOP* button in the bottom right hand corner is only active during measurement. Once pressed it will interrupt the currently running measurement.

The bottom area of the plot window holds the control panel, which is mainly used to modify the plot type. It is possible to freely select which data to display for each axis. The scaling can be set to logarithmic (*log*), absolute values (*abs*) and the axis can be inverted (*inv*). Additionally preset related settings can be done with the panel and menu on the right hand side. The buttons with the arrow down key hold more detailed menus with more options related to each panel.

4. Managing Presets

All avaliable presets are displayed in the List on the bottom of the main window (figure 1). They can be sorted using the arrow buttons.

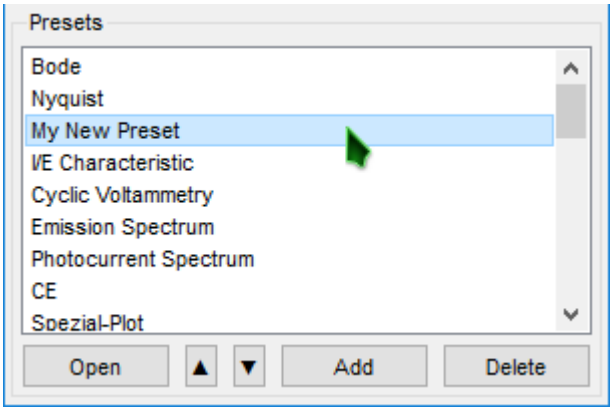
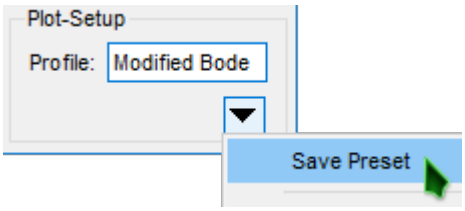


figure 3: List of presets

4.1 Add new Presets

To add a new preset, simply click on the *Add* button below the list of presets. The newly created preset will appear at the end of the list.

Alternatively presets can be created directly from the plot window by changing the settings of an existing preset and saving it with a new name.



4.2 Deleting a Preset

To delete a preset, just select it in the List and click the *Delete* Button. Only presets created by the user can be deleted.

4.3 Display and Edit Presets

To view or use presets, just select the desired preset in the list and click the *Open* Button. Alternatively it is possible to just double click on the preset name in the list.

A plot window (figure 2) will open. If a measurement is running or was ended, the current data is displayed accordingly to the preset. For example, after an impedance spectrum was measured, the preset *Bode* may display the data in Bode representation, while *Nyquist* will display the plot in Nyquist representation.

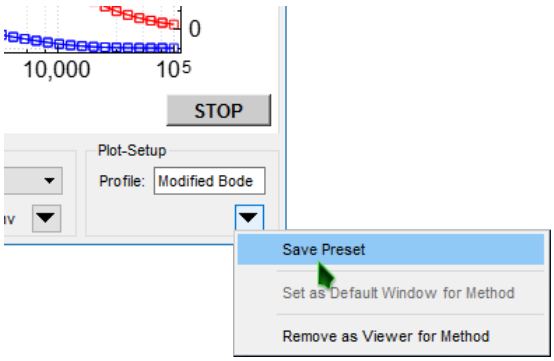
The preset contains all kind of information about the window or plot configuration which can be altered by the user.

To make the changes permanent the preset needs to be saved!

4.4 Save Changes in the Preset

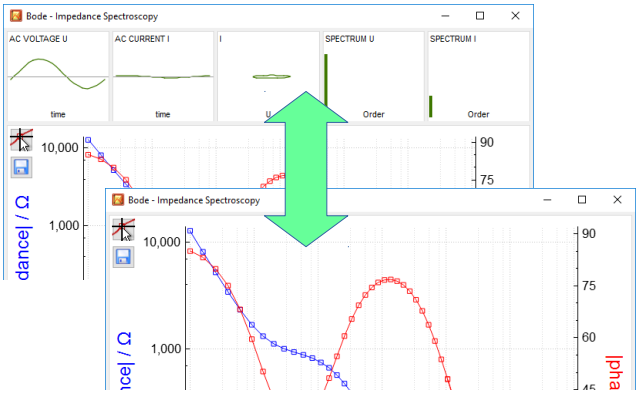
To save all the settings done on a preset, just click on the arrow-Button ( ) in the *Plot-Setup* Panel on the bottom right hand corner.

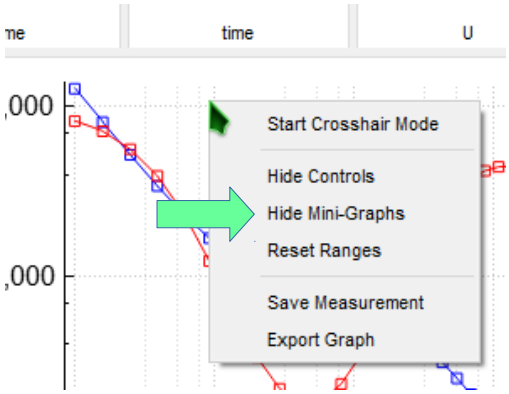
A Menu will open. Choose *Save Preset* here.



4.5 Enable / Disable the *Mini-Graphs* for AC Measurements

Select the Option *Show / Hide Mini-Graphs* in context menu.





***Hint**: Of course the control panel can be hidden in the same way (Hide Controls) but this is not stored in the preset.*

4.6 Automatically Open Preset Window (Default Presets)

It is possible to change the preset, which is automatically selected when a certain type of measurement is started (or opened in standalone mode).

While the measurement in question is started, open the desired preset from the list. Open the menu in the *Plot-Setup* panel by clicking on the arrow button. In the menu select *Set as Default Window for Method* to let the software open a plot window with the current preset every time this kind of measurement is started.

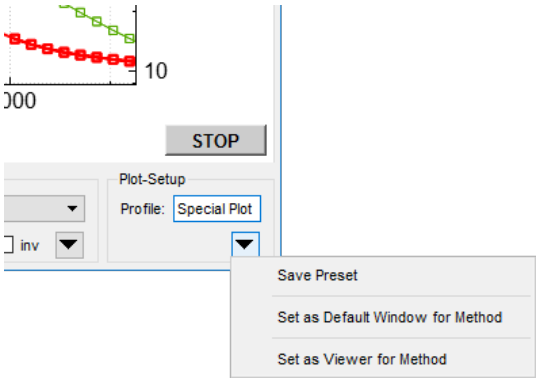


figure 4: Plot Setup Menu

4.7 Prevent Preset Windows from being Closed

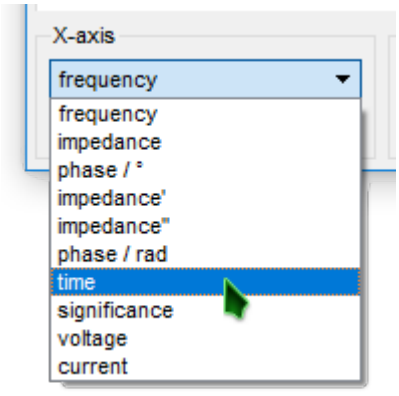
To prevent a window from being closed because it is not the default window for another kind of measurement, it can be registered as viewer for this method. For example the Nyquist-preset can be set as viewer for CIMPS spectra to prevent it from being closed when measuring CIMPS transfer functions after doing normal Impedance Spectroscopy.

To register a preset as a viewer, just select the option *Set as Viewer for Method* in the plot setup menu (figure 4).

5. Customizing the Plot

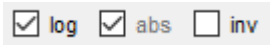
5.1 Choosing Axis

To select which dimension of the measured data will be selected on each axis, go to the panel for the Axis in the control area on the bottom of the window and select the desired dimension from the menu.



5.2 Modify Axis Scaling mode.

For each axis three scaling modifiers are supported. Just click on the checkbox to select the desired behaviour. It is possible to combine several options.



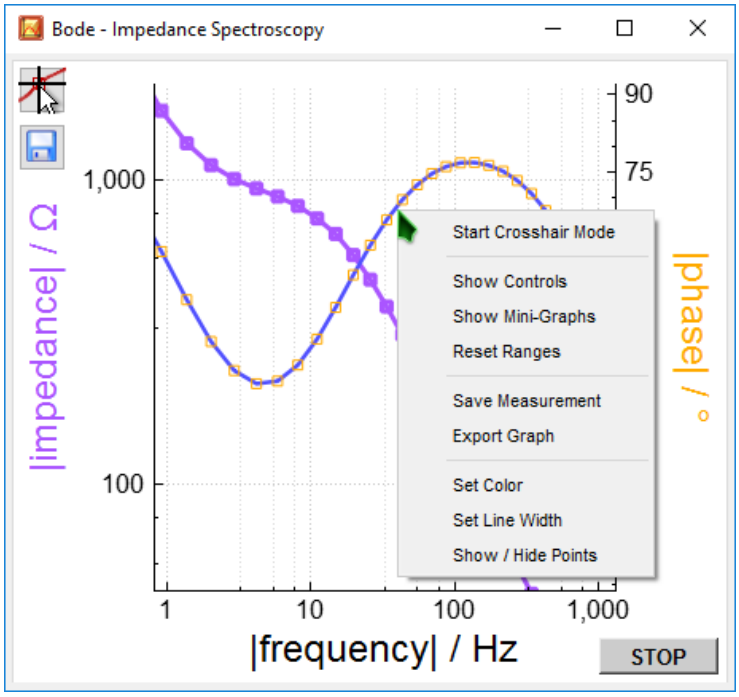
- *log*: The axis will have a logarithmic scale. It is required that the data is available in absolute values, so the *abs* modifier is automatically enabled whenever log is active.
- *abs*: All values on the axis will be in absolute values only. Simply put: All negative values will be inverted.
- *inv*: The values on this axis will be plotted inverted.

5.3 Styling the Graphs

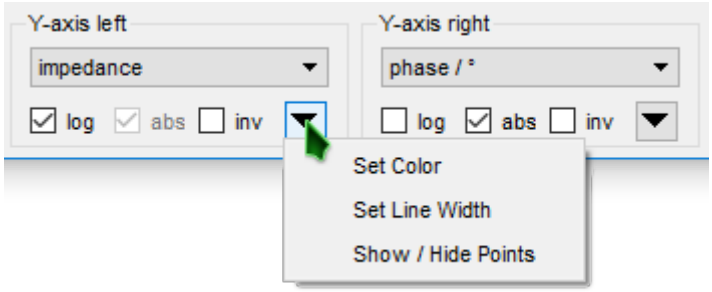
There are three options for changing the appearance of the graphs:

- Color
- Width
- Data Points Highlighted / Invisible

The graphs can simply be selected by clicking on them in the graph area. To change the color or width, just select *Set Color* or *Set Line Width* from the context menu which is accessible via right click. To Show or hide the data point highlight, select *Show / Hide Points* at the bottom of the menu.



Alternatively those settings are also accessible via the menu of the arrow button in the axis panels. This way they are also usable if no data is being plotted currently.



6. Data Inspection

6.1 Zoom

To zoom in and out on the plot, just turn the mouse wheel. By default only the scaling of the X-axis and the left Y-Axis is rescaled.

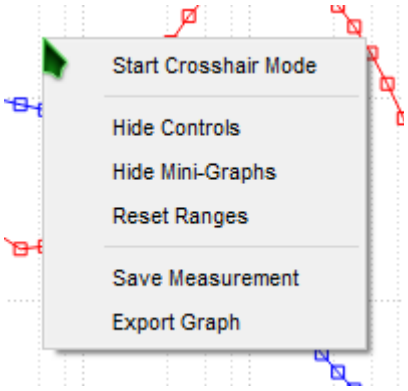
- To zoom the **right Y-Axis** just hold down the [**CTRL**]-key.
- To zoom only the Y-**Axis**, hold down the [**SHIFT**]-key.

6.2 Navigation

To navigate and inspect the plot in detail, drag and drop can be used. This is especially useful at higher zoom rates.

6.3 Restore Zoom and Position

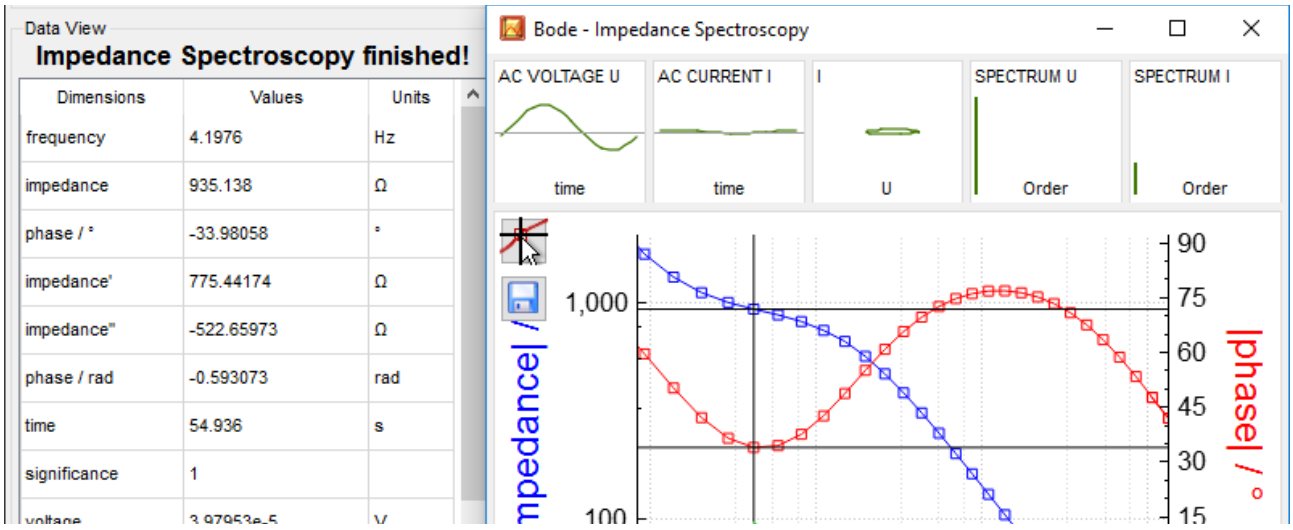
The initial zoom rate and position can easily be restored by right clicking on the plot area and selecting the option *Reset Ranges*.



6.4 Read single data points: Crosshair Mode



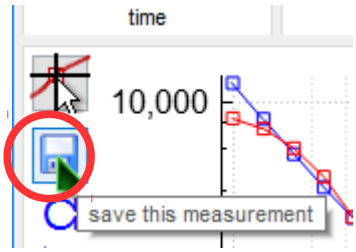
The *Crosshair Mode* can be started and stopped by pressing the Crosshair button on the top left corner in the plot area. Alternatively you can right click anywhere on the plot and select *Start Crosshair Mode* from the context menu. The Crosshair mode is not available while a measurement is running.



7. File Operations

7.1 Save Measurement

After a measurement was finished, the data can be saved in binary format for later analysis. To save the currently displayed data, click on the save icon located below the crosshair mode button in the top left hand corner of the plot area. This will trigger the save dialog where details about the measured objects and comments can be added before writing the file.



7.2 Graphical Export

The plot can be exported at any time. An image file of the current display is created. There are two possible formats supported:

- Bitmap (PNG)
- Vector (PDF)

PNG files are bitmap images which can easily be edited with any graphics editor. It is also very easily pasted into any text processor and widely supported. The downside is the fixed resolution which limits quality if the image is magnified.

PDF files are in vector format and can be scaled infinitely without any quality loss. Some programs even allow editing those PDFs, so they can be altered later. Before pasting them into any word processor it might be needed to convert the PDF file into a graphics file first.