

10MHz controller - Graphical User Interface and Basic Commands



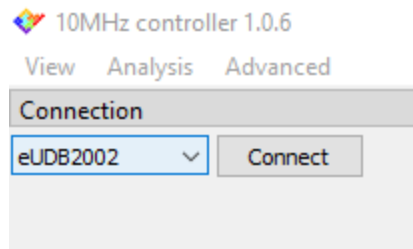
Revision History

Date	Version	Description
18/08/2022	1.1	Version 1.0.8: added digital filters
29/03/2022	1.0	First version of document

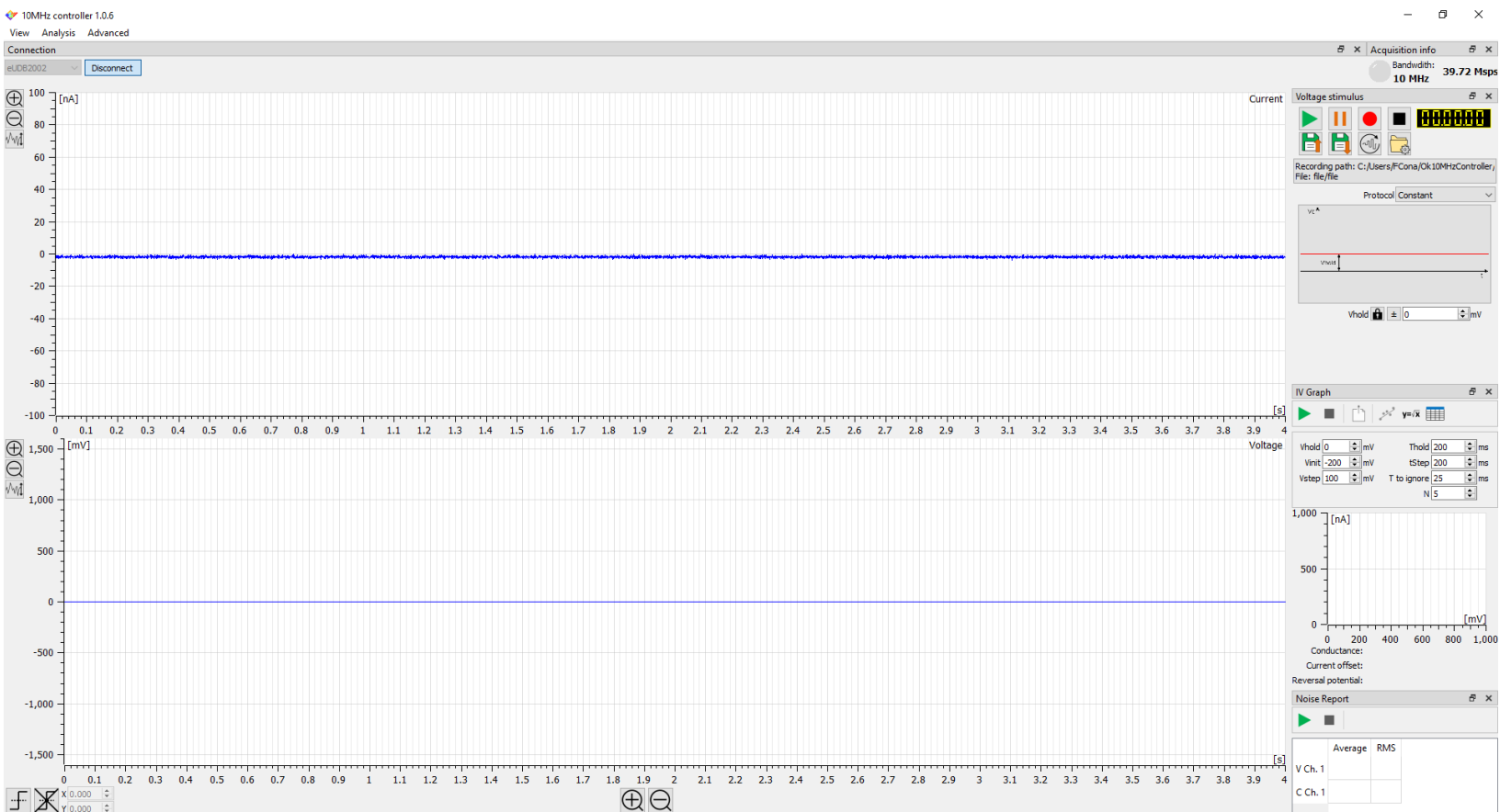


Connection

In order to control your device connect it to the power supply and to the pc via the provided USB3 cable. Run the software: when the device is recognized its serial number will appear and the connect button will be enabled. Click it to start controlling the device. It might take a while for the FW to completely load, so please wait at least 1 minute.



After the connection, if the device is working properly you should see around 40Mbps in the acquisition info widget. It might take a few seconds for the data stream to start after connection.

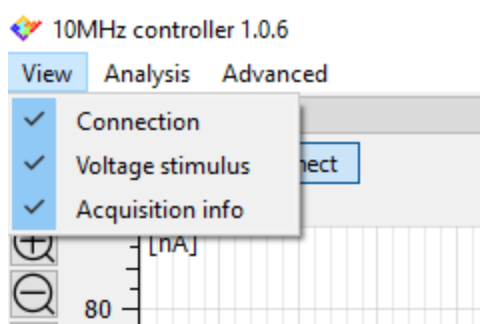




Introduction to the GUI

The default GUI is organized in multiple menus all embedded in a single window; however single menus can be removed from the main window and split in different windows to be placed where preferred on the screen.

Click on the “View” menu or “Analysis” menu to select which widgets should be shown or hidden.




Current/voltage plots window

The central window of the Graphical User Interface displays the acquired input current channel (or channels for multichannel devices) and the control voltage in an oscilloscope-like fashion.

Vertical zoom and offset



The vertical zoom controls let you interact with the current and voltage plots in terms of scale. The full trace button  will try to rescale y-axis so that the data fits well the plot window.

The offset can be modified using the mouse scroll wheel.

Horizontal zoom

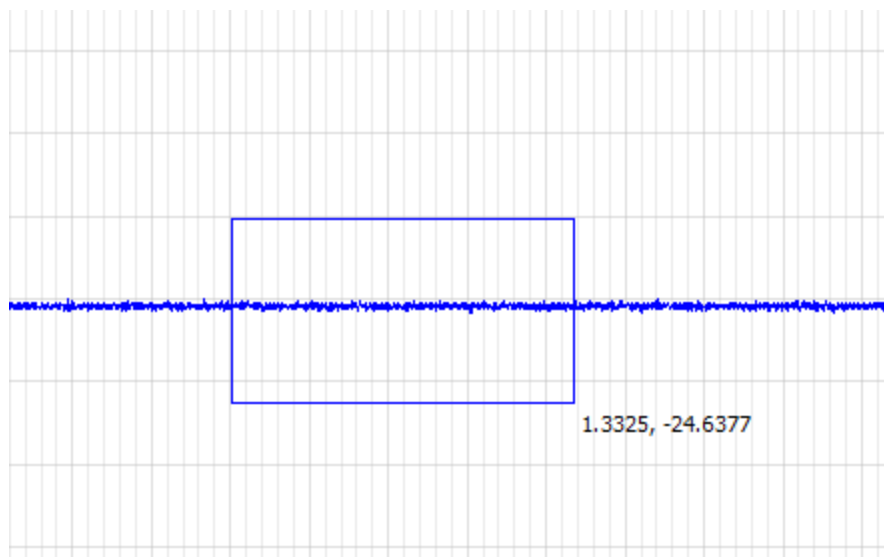
The horizontal scale is always synchronized among all plots. The zoom buttons



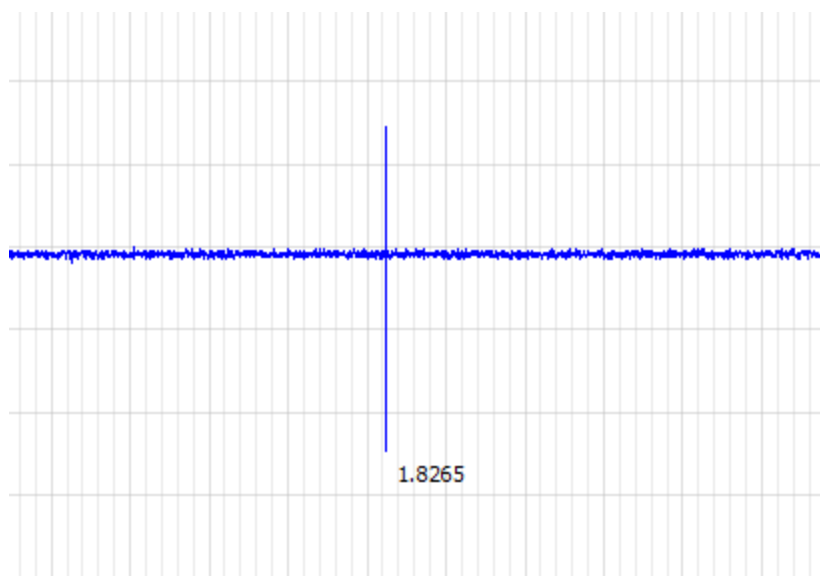


Rectangular zoom

It is also possible to select a rectangular area to zoom manually. To do it simply left click in one corner of the rectangular area you want to zoom, drag the mouse cursor to the opposite corner of the area and finally release the left button of the mouse.



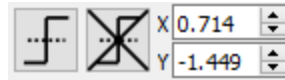
In order to zoom only along the x-axis or y-axis draw a thin rectangle, elongated along the horizontal or vertical axes respectively. When done properly the rectangle will become a horizontal or vertical line.




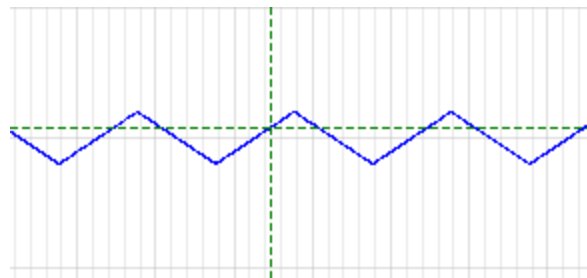


To go back to the previous zoom setting right click anywhere within the plot areas.

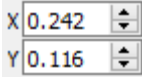
Displayed data trigger



When the trigger button  is pressed the mouse cursor will change and resemble the trigger icon. In this condition click in any plot to set a triggering point that will be marked by two dashed lines on the triggered plot: now the plot will refresh so that the selected trace crosses the triggering point with a rising edge.



Use the right button to set the triggering point in order to set a falling edge trigger.

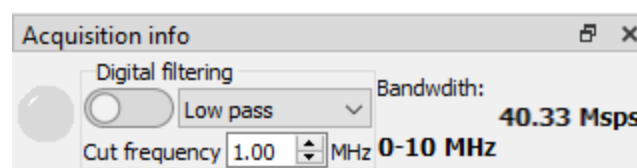
Once a triggering point is set the trigger location controls  will be enabled: using these controls the triggering point position can be fine tuned.

Use the remove triggers button  to disable the triggering function.

Setting a second triggering point will disable a previously set triggering point.

If the trace does not cross the triggering point the plots will stop refreshing. This condition will persist until the trace finally crosses the triggering point or the triggering point is changed, moved or disabled.

Acquisition info widget





The acquisition info widget reports some runtime information about the data being acquired.

On the left is the saturation LED, which will blink anytime one of the current channels is saturating the selected current range.

The digital filter controls can be used to filter the acquired data with low pass or high pass digital filter (4th order butterworth). The filter cut-off frequency can be set in the range $[SR/100, SR/4]$, where SR is the selected sampling rate. The range is limited to ensure that the filter does not become numerically unstable.

When the filter is enabled filtered data is used for real time visualization, recording and analyses, so original data is lost.

On the right of the widget is displayed the current amount of data acquired in terms of samples per second.

Voltage stimulus

The Voltage stimulus widget contains a complete set of parametric voltage stimulus protocols. For each voltage protocol the different parameters represented in figure can be set (see device specific guides for the complete list of voltage protocols available for each device and the “Voltage Protocols” guide for further details).

Recording

The voltage stimulus widget hosts also the controls for recording the acquired data. More info on this on the “Record, display and read data” guide.

Online Analyses

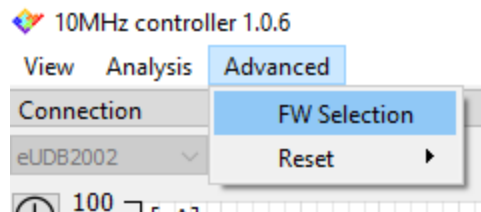
Each online analysis has its own widget that can be shown, hidden, moved around or docked as any other widget. More info on specific analyses can be found in the “Online Analyses” guide.

Advanced menu

The advanced menu contains features that are not commonly used.

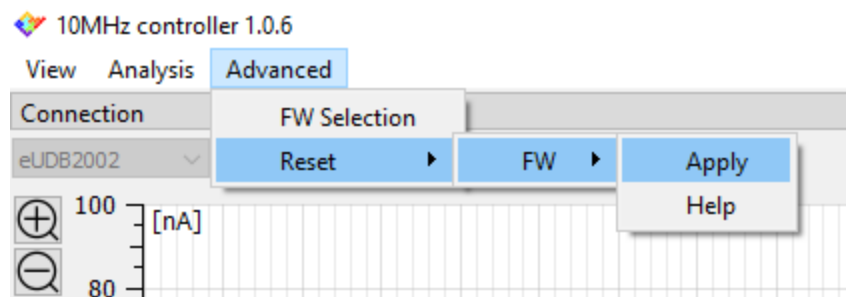


Firmware selection



The firmware selection button lets you select a different FW file to be loaded, but this command should be used only for debug reasons under the supervision of Elements' support personnel.

Firmware reset



The firmware reset can be used to restore the device functionality if it seems unresponsive. More information on this is available by clicking the Help button.