# KickStart Software as a Bench Companion for Education

APPLICATION NOTE
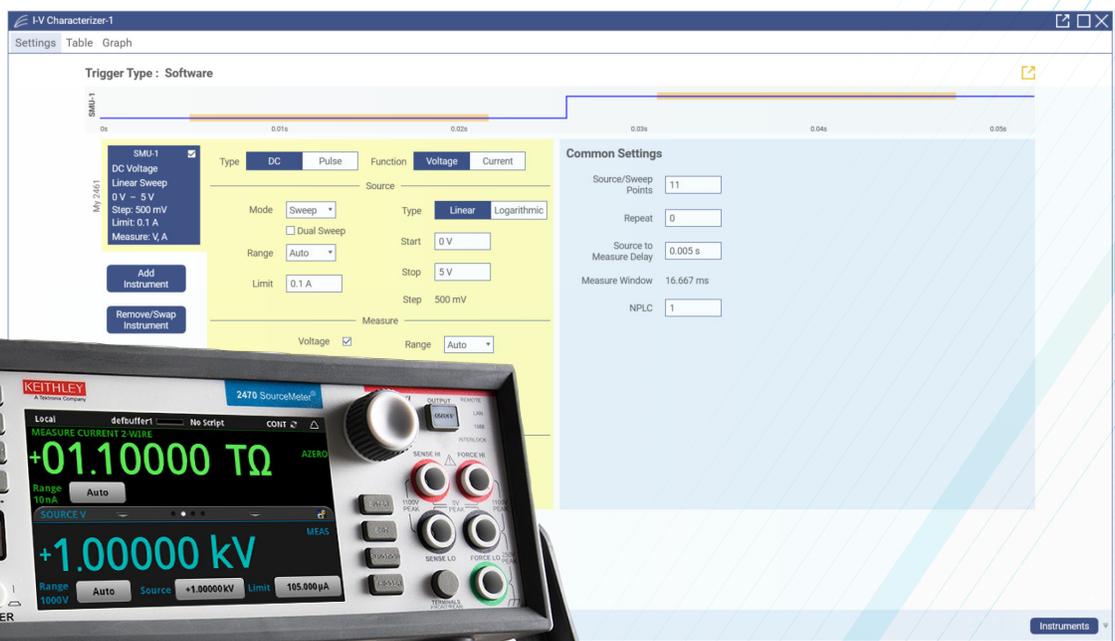
Introduction

As the remote work paradigm becomes more popular and students readjust to in-person coursework and hybrid learning structures, there is a growing popularity for the flexibility to choose where and when work and learning occur. This means that in-person coursework may occur in a limited capacity, so tools that help students make the most of their non-remote time are becoming more of a necessity.

Unfamiliar instrumentation can be a major obstacle to learning and a time sink during laboratory sessions. Students will often spend more time struggling with the equipment than they will applying the information that they have learned in the classroom. This can result in frustrated students, late nights unsupervised in the lab, and little actual learning.

Keithley KickStart Software offers various features that not only streamline test setup, but also make collecting and analyzing data a breeze – even remotely!

KickStart is a Total Solution for Any Bench

From introductory circuits courses for undergraduate students to graduate research, KickStart provides the tools necessary to automate and simplify any lab bench. All the major bench instruments are supported by KickStart – including digital multimeters (DMMs), data acquisition systems (DAQs), power supplies (PSUs), arbitrary waveform generators (AFGs), oscilloscopes, and source measure units (SMUs).

With KickStart, students will spend less time struggling with unfamiliar instrumentation and spend more time learning from their lab assignments. With KickStart's user-friendly interface (**Figure 1** and **Figure 2**), setting up and running tests and collecting data is a straightforward process. Simply choose the settings and press the run button! No programming or tedious setup from the front panel are required.
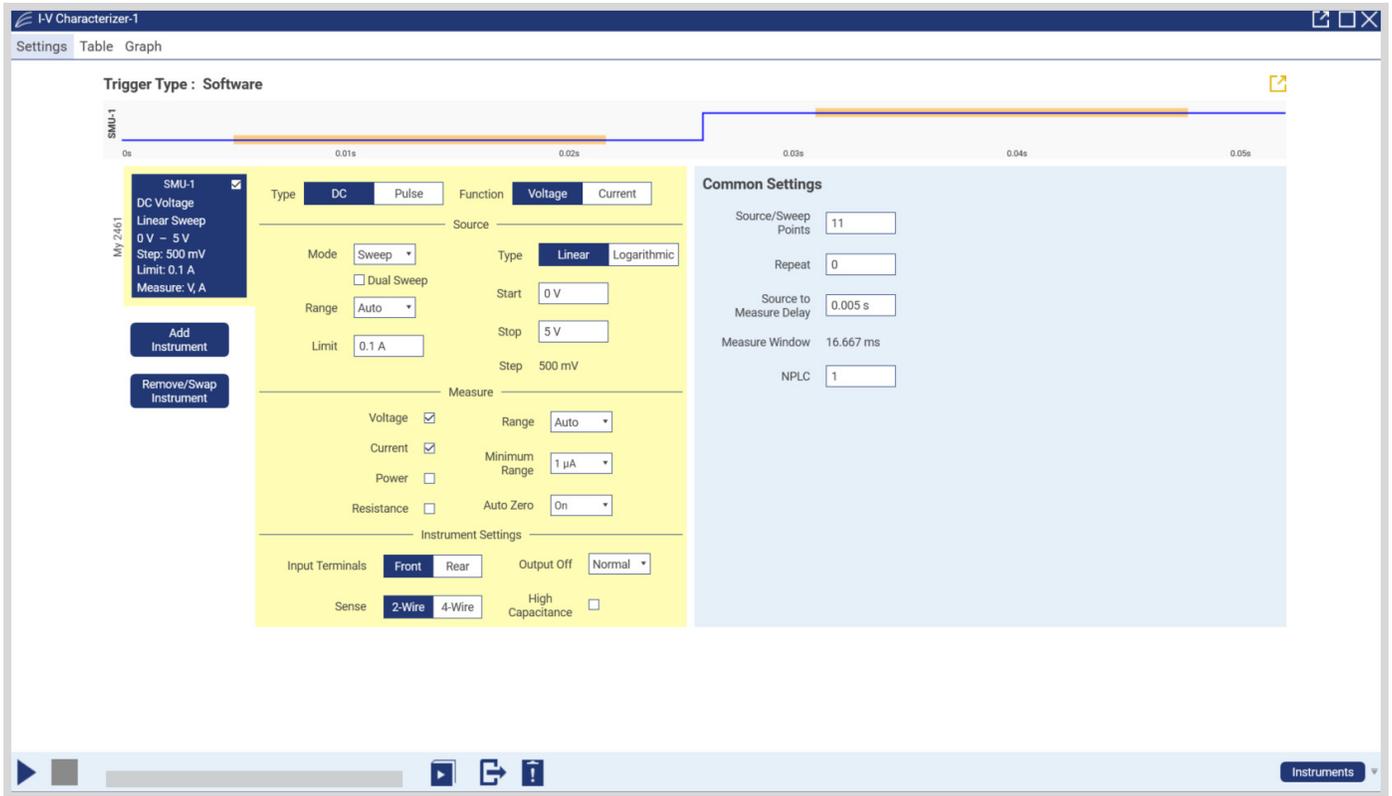
Figure 1: KickStart IV-Characterizer App.
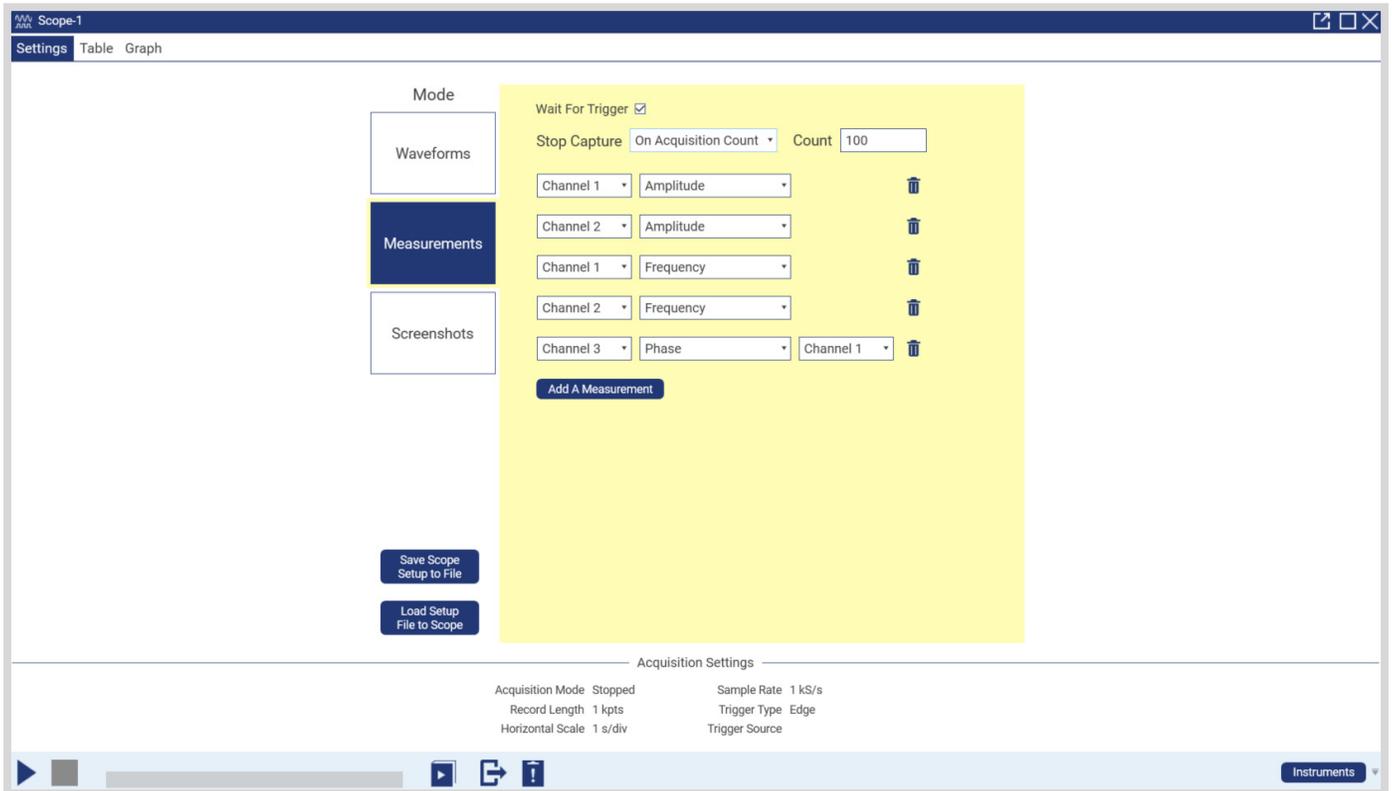
Figure 2: KickStart Scope App Measurements Tab.

Data Visualization Tools

The built-in graph and data tables will save students time and allow them to interpret their data more accurately. The risk of errors is minimized because there is no longer a need to manually copy data points on pen and paper or tediously transfer that data into a plotting software such as Microsoft Excel.

Instead, KickStart provides an interactive graph (**Figure 3**) with the ability to add cursors, compare statistics, see the area under a curve, and adjust the axes – so finding pertinent information for class assignments is simpler than ever. Students can also select multiple runs from the run history to compare the different trends all on a single graph.
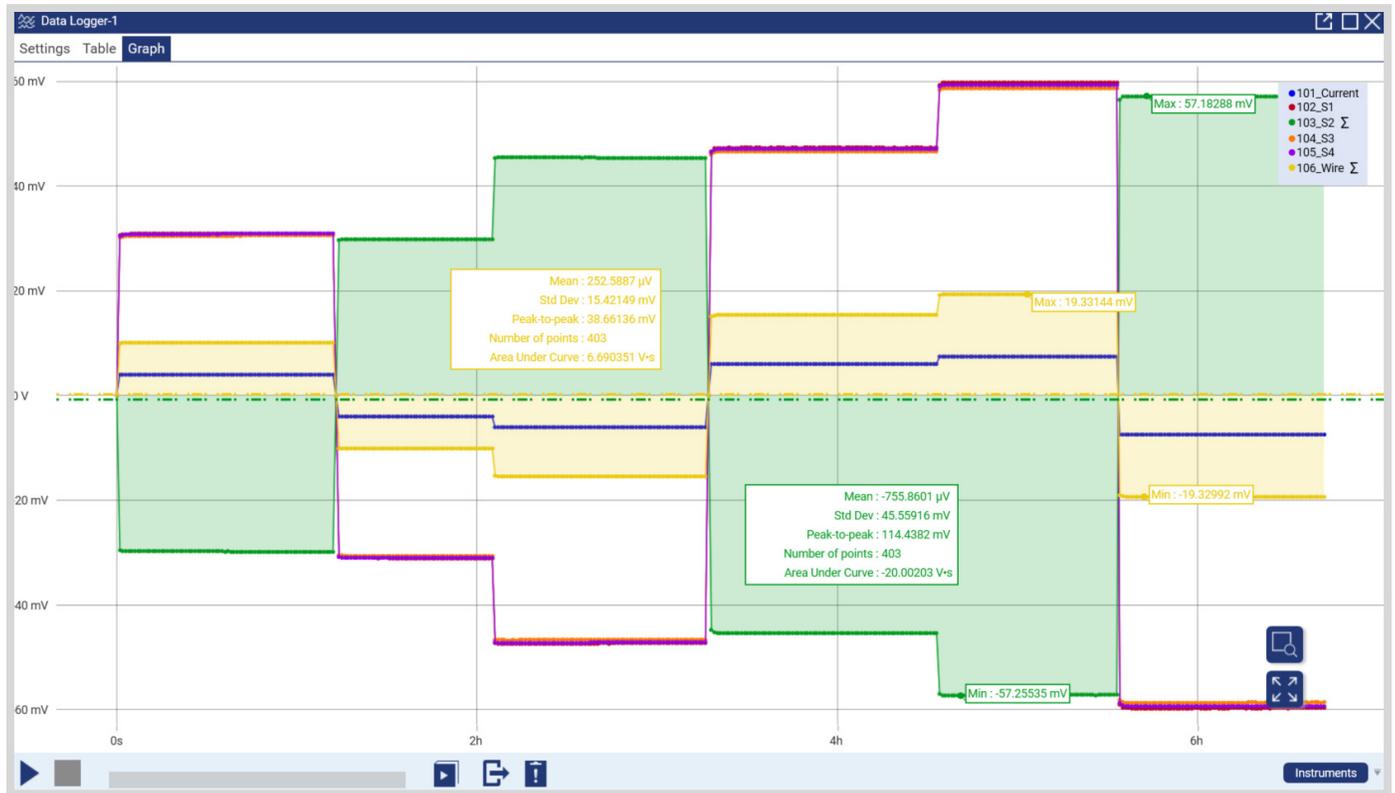

Figure 3: KickStart graph view with statistics.

The built-in Table function (**Figure 4**) is also interactive, allowing the user to show and hide individual columns, rename them, view statistics for each channel, and copy any data points as needed.

Data Logger-1

Settings | **Table** | Graph

	101_Current		102	103	104	105	106_Wire
	Time (s)	Voltage (V)	Voltage (V)	Rename channel...	Voltage (V)	Voltage (V)	Voltage (V)
				Hide			
				Show Time (s)			
1	0.000000	-41.14935e-6	-298.0210e-		-6 -293.9175e-6	-296.8067e-6	-98.79214e-6
2	59.995117	-41.37407e-6	-299.9300e-		-6 -295.6586e-6	-298.9484e-6	-99.11681e-6
3	119.890625	-41.57835e-6	-300.8039e-6	282.7680e-6	-296.0990e-6	-299.4683e-6	-99.30180e-6
4	179.890625	-41.23912e-6	-300.7751e-6	283.0149e-6	-296.1734e-6	-299.1705e-6	-99.52443e-6
5	239.890625	-41.73268e-6	-301.1149e-6	283.2491e-6	-297.0352e-6	-299.9982e-6	-99.57189e-6
6	299.890625	-41.34465e-6	-301.0066e-6	283.3190e-6	-296.5888e-6	-299.9149e-6	-99.91822e-6
7	359.897461	35.63912e-6	284.2858e-6	-279.8320e-6	280.5387e-6	283.9125e-6	90.63811e-6
8	419.896484	35.86834e-6	285.6884e-6	-281.3708e-6	282.2828e-6	285.2810e-6	91.68099e-6
9	479.909180	35.89554e-6	286.7605e-6	-282.1399e-6	283.4321e-6	286.3872e-6	91.53564e-6
10	540.028320	35.98753e-6	287.3807e-6	-282.7293e-6	283.8116e-6	287.3863e-6	91.90121e-6
11	599.890625	35.86950e-6	287.9503e-6	-282.9404e-6	284.3143e-6	287.1639e-6	92.20873e-6
12	659.890625	36.13383e-6	288.0564e-6	-283.2134e-6	284.5396e-6	287.5696e-6	92.04172e-6
Min	0.000000	-41.73268e-6	-301.1149e-6	-283.2134e-6	-297.0352e-6	-299.9982e-6	-99.91822e-6
Max	659.890625	36.13383e-6	288.0564e-6	283.3190e-6	284.5396e-6	287.5696e-6	92.20873e-6
Mean	329.922526	-2.752030e-6	-6.794122e-6	270.5735e-9	-6.379446e-6	-6.383882e-6	-3.851575e-6
StdDev	216.319688	40.37007e-6	306.5337e-6	294.8634e-6	302.4096e-6	305.6836e-6	99.76773e-6
CV	65.57 %	-1.46692e+3 %	-4.51175e+3 %	108.97721e+3 %	-4.74037e+3 %	-4.78837e+3 %	-2.59031e+3 %

Auto Scroll

Instruments

Figure 4: KickStart Table Tab.

Easy Data and Screenshot Export

While KickStart allows for the ability to save, share, and reopen whole projects containing multiple runs worth of test setups, data tables, and graphs, there are also export tools included in the software.

KickStart's built-in Export tools (**Figure 5**) make it easy to retrieve data from the PC for grading and additional analysis for more in-depth assignments. The supported data export formats include both *.csv and *.xlsx, which are compatible with Microsoft Office tools and can be used with programming languages such as MATLAB and Python.

The graph, as well as any cursors or statistics that are applied, can be exported and saved as *.png files, eliminating the need to use additional software to take and edit screenshots for grade submissions.
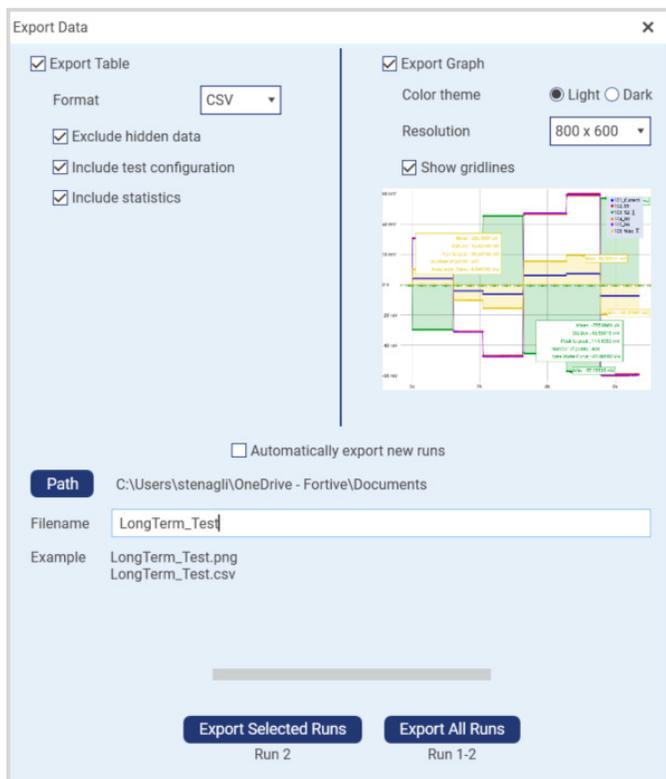

Figure 5: KickStart Export Menu.

KickStart Apps such as the Scope App can even retrieve hundreds of screenshots from the front panel of an oscilloscope when a trigger is in use (**Figure 6**).
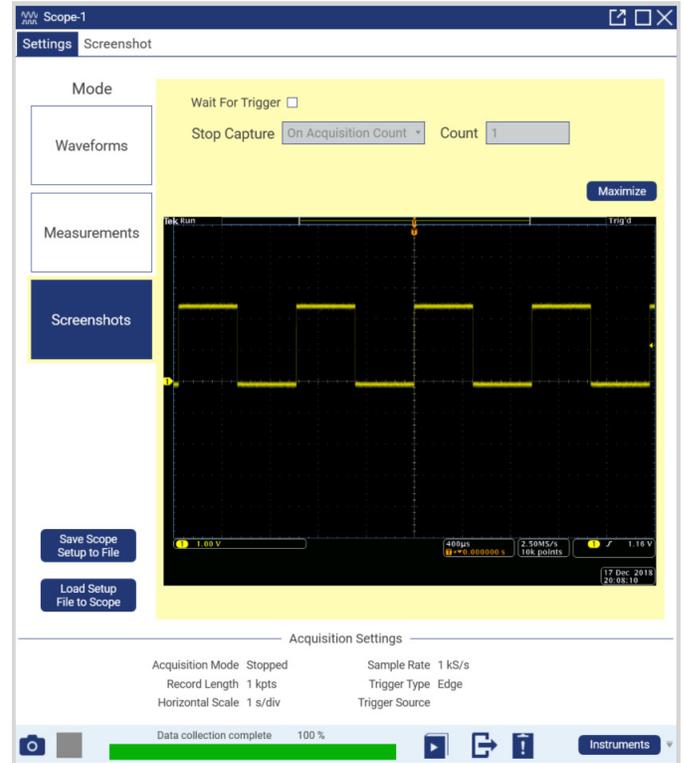
Figure 6: KickStart Scope App Screenshot Function.

Remote Control

Students will no longer need to work late nights in the lab or borrow delicate equipment. KickStart allows for remote instrument control and data collection when connecting to a test bench via LAN or through accessing a lab PC via remote desktop.

Conclusion

KickStart is a versatile software platform that can meet a variety of different needs – which is incredibly beneficial for education applications due to the broad spectrum of topics covered in undergraduate and postgraduate studies. The ability to use the software to run tests in the lab or remotely adds to its versatility. The built-in data visualization tools allow for quick analysis of results, saving students time and aiding them in determining the next steps for their projects.

Visit the KickStart Software product page to learn more.

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Rev. 02.2022

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