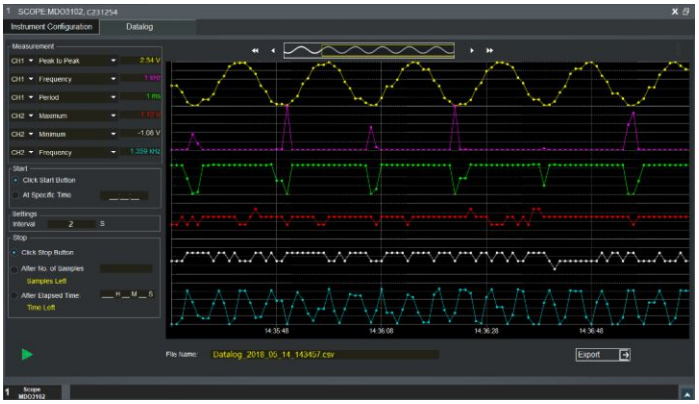
Control Software For Oscilloscopes and Arbitrary Function Generators

TekBench™ Software Datasheet



TekBench™ is PC software that controls Tektronix oscilloscopes and arbitrary function generators. It offers intuitive instrument control, automated measurement data logging, automated frequency response measurements, and easy waveform exporting with required format to eliminate extra time and effort. It allow users to focus on their experiment rather than learning the instrument.

Key features

- Simple connection to instruments
- Intuitive interface to control and monitor instruments
- Easily capture and export results in required formats
- Automated measurement data logging
- Automated frequency response measurements

Application

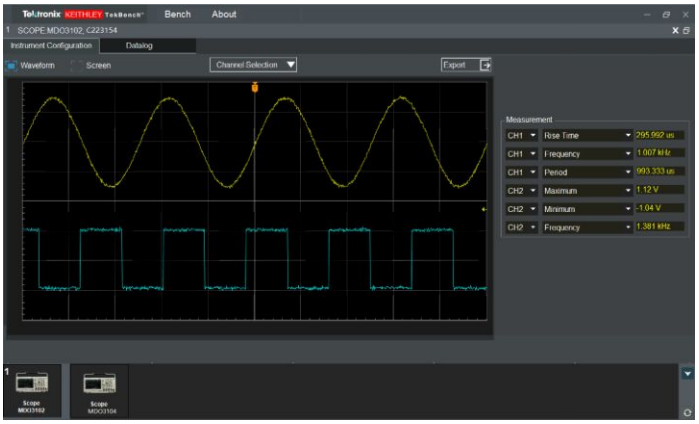
- Project laboratories and senior design laboratories

Simple connection to instruments

Because of the plug and play USB interface, only a USB cable is needed to connect the instrument to the computer. Without any configuration, the instrument is detected by the software within seconds.

The instrument connected to a computer through the USB interface

Once connected, double click the instrument icon and the selected instrument will be loaded into the software automatically.



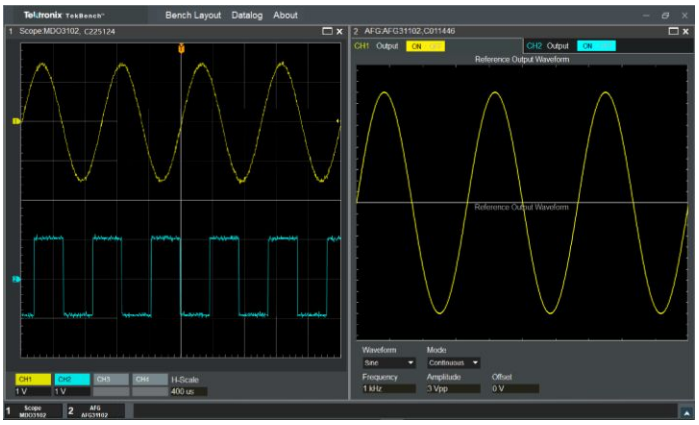
The selected oscilloscope loaded into the software

Intuitive interface to control and monitor instruments

When loaded into the software, the instrument has a full screen interface. Instead of spending time studying the user manual, users can find and change parameters at a glance. The following example shows how easy it is to select different measurements on each channel of the oscilloscope in the full screen interface.

Oscilloscope full screen interface

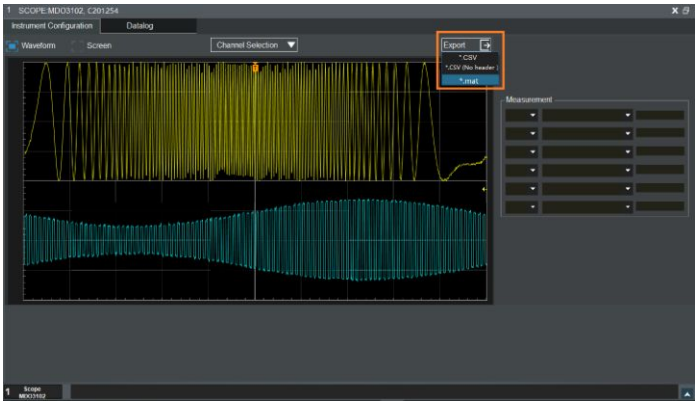
Up to two instruments can be displayed on the same screen and each instrument has an intuitive interface for easy control and monitoring.



Two instruments displayed on the same screen

Easily capture and export results in required formats

Oscilloscope waveform data is one of the most important test results. TekBench™ supports exporting the waveform data into *.csv format, which can be recalled by the oscilloscope directly. [1] It also supports *.csv data with no header for easier analysis in other applications.



The oscilloscope waveform exporting interface

Also, the results can be exported into *.MAT format, which can be opened in MATLAB directly.

A screenshot of the oscilloscope can be saved to your computer with just a few clicks. When auto update is enabled in the software, the screenshot of the oscilloscope can be updated about every second. [2] This allows you to monitor the instrument remotely. The updating screenshot can also be projected in a lab to assist the instructor.

Oscilloscope screenshot auto updating

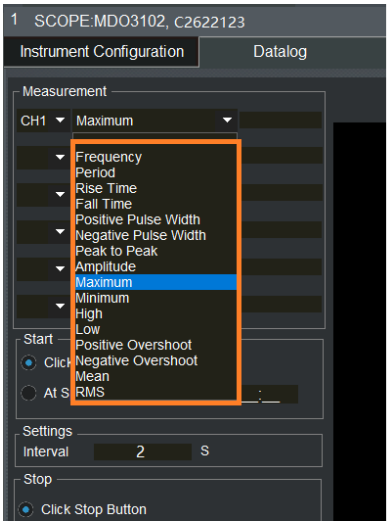
1 This function is only supported by MDO3000 series oscilloscopes.

2 Screenshot updating speed is dependent on the instrument. The MDO3000 series oscilloscope had a one second updating speed during testing.

Automated measurement data logging

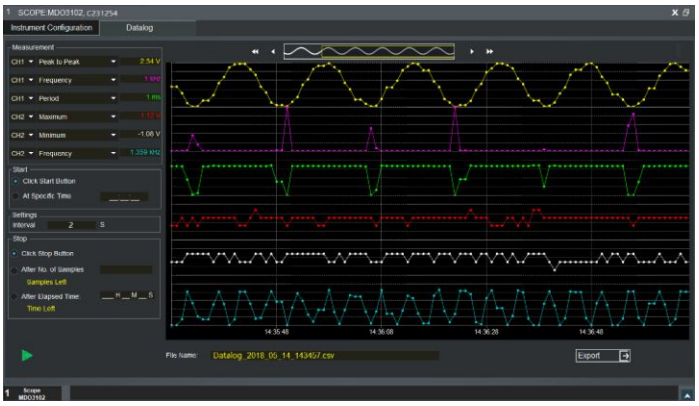
Instead of performing a single measurement, use measurement data logging to track the change of the measurement results for more insight into the design.

TekBench™ gives you the option to select 16 of the most common measurements. Data logging can be performed for up to six measurements at the same time. The interval between each measurement result can be set to as low as 2 seconds with a testing time up to 5 days. [3]



Measurement selection

The results can be displayed in trend plot mode with each measurement color coded. It can also be displayed in list or histogram mode, which can provide more insight into the results.

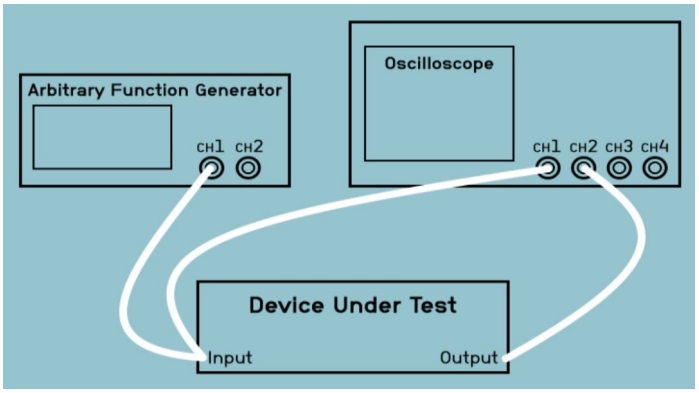


Measurement data logging displayed in trend plot mode

Each of the measurement data logging results are saved automatically in a *.csv file. This file can be exported and imported into the software so previous test results can be accessed for future analysis.

Automated frequency response measurements

Frequency response is a common measurement in a project lab. The following diagram shows the arbitrary function generator connecting to the input of the testing board while the oscilloscope is connected to its input and output to measure the change of the amplitude.



Frequency response testing connection diagram

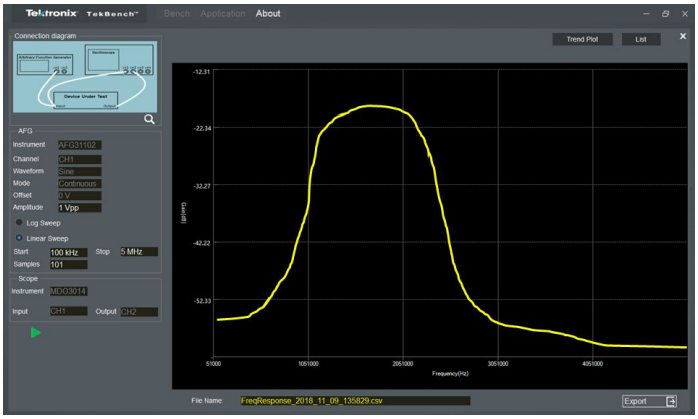
In traditional labs, students have to set the output frequency of the arbitrary function generator and record the measurement of amplitude on the oscilloscope. They then need to change the frequency and record another measurement. The following example takes the Frequency Response testing from a Start of 100 kHz to a Stop of 5 MHz with total 101 samples in Linear Sweep mode. Students would have to create around 100 tests on different frequencies, which will take them more than one hour to finish. This method of testing is time consuming and it is easy to make mistakes.

With TekBench™, Frequency Response testing can be finished with just a few steps:

- Set the AFG output amplitude
- Select the sweep type and input the number of samples
- Click the start button

3 TekBench™ free version supports a testing time of up to 30 minutes. Option TEKBENCHFL-BAS is needed for testing time up to 5 days.

The testing will start automatically and Frequency Response curve, plotted as frequency versus gain [4], is created.



Frequency response curve

4 Gain = 20 $\log_{10}$ (output amplitude / input amplitude).

Specifications

Supported instruments [5]

Oscilloscope models	Tektronix TBS2000 series Tektronix DPO/MSO2000B series (oscilloscope function only) Tektronix MDO3000 series (oscilloscope function only)
Arbitrary function generator models	Tektronix AFG31000 series
Oscilloscope function	
Waveform data exporting format	*.csv (MDO3000 series only), *.csv (no header), *.mat
Snapshot exporting format	*.png, *.bmp, *.jpg, *.tif
Oscilloscope measurement data logging	
Supported measurements	Frequency, Period, Rise time, Fall Time, Positive Pulse Width, Negative Pulse Width, Peak to Peak, Amplitude, Maximum, Minimum, High, Low, Positive Overshot, Negative Overshot, Mean, RMS
Maximum simultaneous measurements	6 (MDO3000 and TBS2000 series) 3 (DPO2000B and MSO2000B series)
Minimal time Interval	2 seconds (MDO3000 and TBS2000 series) 5 seconds (DPO2000B and MSO2000B series)
Result display mode	Trend plot, List, Histogram
Frequency response measurement	
Supported instruments	Tektronix MDO3000 series oscilloscope, Tektronix AFG31000 series arbitrary function generator
Frequency range	100 kHz to 20 MHz
Sweep mode	Linear, Log
Samples	20 to 201
Result display mode	Frequency response curve, List

System requirements

Operating system	Windows 7, Windows 10 32-bit and Windows 7, Windows 10 64-bit
CPU	Dual core 2 GHz or above
RAM	4 GB DDR3 or above
Hard disk	1 GB free disk space (recommended)
Screen resolution	1366 × 768 or above
Instrument communication interface	USB

5 More instruments will be supported in future releases. For a list of the supported instruments and the latest software go to www.tek.com/tekbench

Ordering information

Models

TekBench™

TekBench™ is a free software available at www.tek.com/tekbench with the following features:

- Oscilloscope waveform data and screen snapshot export in required formats
- Oscilloscope measurement data logging with a testing time of up to 30 minutes
- Automated frequency response measurements

Options

TEKBENCHFL-BAS

TekBench™ software, floating license, supports oscilloscope measurement data logging testing time up to 5 days

Tektronix is registered to ISO 9001 and ISO 14001 by SRI Quality System Registrar.

Product(s) complies with IEEE Standard 488.1-1987, RS-232-C, and with Tektronix Standard Codes and Formats.

Product Area Assessed: The planning, design/development and manufacture of electronic Test and Measurement instruments.

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For Further Information. Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit www.tek.com.

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