Tektronix®

TekScope Analysis Datasheet

Analyze Anywhere Anytime

TekScope brings the power of the oscilloscope analysis environment to the PC. Users have the flexibility to perform analysis tasks including serial decode, power analysis, as well as timing, eye, and jitter analysis outside the lab. You can continue your session from your oscilloscope at any place and share the results. Reduces efforts to see screenshots when you need to dive deeper or while sharing. Reload the session on your 4/5/6 oscilloscope if you want to re-do the measurement.

Waveform data and setup in sessions from Tektronix 4/5/6 Series MSO, 5LP/6LPD Series MSO, and waveform data from 3 Series MDO, DPO/MSO/MDO3000, DPO/MSO/MDO4000, DPO7000C, or DPO/MSO70000C/D/DX/SX Series Oscilloscopes can quickly be shared between team members and remote sites, resulting in improved efficiency.

Key features

- **Collaborate**
  - TekScope runs on your PC - Enables better time and resource utilization; view, measure, and analyze data captured in your lab, independent of the oscilloscope hardware.
  - Compatible with most common save/recall waveform files - common analysis tools independent of the hardware acquisition, including:
    - .tss (4/5/6 Series Session files – setups and waveforms)
    - .wfm, .isf (Tektronix)
    - .bin (Keysight)
    - .trc (Lecroy)
    - .tr0 (Spice)
    - .csv (general purpose).
- **Analyze**
  - Cursors: Waveform, V Bars, H Bars, and V&H Bars
  - Measurements: 34 standard
  - Plots: Time Trend, Histogram, Spectrum, XY, and XYZ
  - Math: Basic waveform arithmetic, FFT, and advanced equation editor
  - Search: Quickly find events in your data based on specified criteria
  - Clocked/unclocked Parallel Bus Decode
  - Optional Analysis Packages:
    - Multi-Scope Analysis [1]: Remotely connect and acquire data directly from your oscilloscopes to view and analyze the data from all channels simultaneously on the same screen.
    - Low Speed Protocol Decode: Protocol Decode and Search Analysis – I2C, I3C, SPI, CAN, CAN-FD, LIN, FlexRay, SENT, 100Base-T1 Automotive Ethernet, Mil-STD-1553, ARINC-429, RS-232, USB, Ethernet, I2S, LJ, RJ, TDM, and SPMI.
    - Jitter Measurements and Analysis: Jitter, Eye, Amplitude, and Time Measurements.
    - Power Electronics Analysis:
      - Input Measurements, Amplitude Measurements, Timing Measurements, Switching Measurements, and Output Measurements.
      - Inductance Measurements, Magnetic Property Plot, Magnetic Loss Measurements, and Current vs. Integral of Voltage Plot.

1 Available only for 4/5/6 Series MSO and 5LP/6LPD Series MSO.

- Power Integrity Analysis:
  - Ripple Analysis, Transient Analysis, Power Sequence Analysis, and Jitter Analysis
  - SPMI Protocol Decode and Search
- PAM3/Signal Separation/ Automotive Ethernet Protocol - Analysis:
  - Software Clock Recovery, PAM3 Eye Height and Width, PAM3 Linearity, Jitter Separation, Bathtub curve (BER), and Eye Mask test.
  - Performes Signal Analysis or Protocol Decode testing without effecting the ECU system or installing a direct coupler by cutting the Ethernet cable.
  - 100Base-T1 Automotive Ethernet Protocol Decode.
  - Jitter Analysis.
- SpectrumView Analysis:

  You can perform Spectrum Analysis from your PC. Refer http://www.tek.com/document/application-note/spectrum-view-new-approach-frequency-domain-analysis-oscilloscopes for SpectrumView Datasheet.

- **Document**
  - Waveform and plot annotations - Share detailed analysis results; measurements, anomalies and points of interest for future reference, collaboration with suppliers, or communicating with the team.
  - Reports - Easily document measurement results and configuration details with detailed test report.
  - Custom Display configuration - Group plots in multiple configurations with stacked or overlaid waveform view.

Applications and uses

- Offline Analysis: Analyze your waveform files from any location at any time to improve your working efficiency without any internet or intranet connection.
- Online/Real-Time Analysis: Remotely connect to your 4/5/6/5LP/6LPD Series Oscilloscopes to acquire data directly from the oscilloscope in real-time. Save time and eliminate unnecessary trips to the lab with data available at your desk, at home or while traveling.
- Multi-Scope Analysis: View and analyze data from multiple oscilloscopes on the same screen. Rearrange channel information, stack group, zoom, add cursors or measurements in a seamless interface. Increase your ability to look at a greater number of channels, all in a single view to accelerate your analysis efficiency.
- Data Sharing: Share waveforms, measurements, and configuration details among distributed team members or suppliers to root cause the source of failures. Dive into the actual data rather than eyeballing images.
- Enhance your measurements and Analysis options: Not every oscilloscope has the latest and most modern software options, TekScope enables you to leverage our award-winning 4/5/6 Series user interface and software options and apply them to any Tektronix Oscilloscope and to most of competitors' oscilloscopes as well.

TekScope overview

The systems become more complex and teams are more distributed across geographies, functional areas of expertise, even partners and suppliers. The solutions that enables clear common understanding of setup and measurement by sharing raw data which enables the faster insight and the debug iterations. The ease of operating in our environment alongside other tools you use every day allows faster correlation and insight. These needs range from easy ways to share data, the ability to run measurements outside the lab, and methods to correlation lab measurements with simulation results.

Collaborate - The TekScope runs on your PC, enabling analysis of data captured in your lab. Sessions can easily be saved on your Tektronix Oscilloscope and recalled. In addition to Tektronix waveforms, other file formats are supported including wfm, .isf, .tss,, .bin, .trc, .csv, and .tr0, which enables correlation.

Analyze - Measurement results uses a common measurement library with 4/5/6 Series Tektronix Oscilloscope to correlate the results. TekScope supports a range of measurements including power, jitter, and eye measurements. Plots can be customized and are interactive with zoom and cursor controls allowing custom views to share.

Document - Results and views can be saved as a session file and archived for later use or sent to a colleague or supplier for a debug session. Alternatively, results can be archived and saved in the .pdf or the .mht format using the report generator. The report can be customized to include the information of interest including: configuration details, measurement results, and plots. Plot and measurement data can also be saved to a .csv format file for archiving or data analysis in external applications.

Collaboration and setup sharing

Sharing data acquired on the oscilloscope for use with the TekScope is as simple as saving 4/5/6 Series session and recalling in the application. Waveforms captured on the Tektronix DPO/ MSO5000, DPO7000C, or DPO/MSO70000C/D/DX/SX Series Oscilloscope can also be loaded using the TekScope and supports other file types also.

Workflow improvements

Sessions from the 4/5/6 Series Oscilloscope, enables improvements to your workflow. Saving a session from your oscilloscope is easily recalled in the TekScope for further analysis and annotations. Using the data to tell your data story improves the ability to provide clarity over static images like screenshots. With a 4/5/6 Series Oscilloscope, you can also make changes to settings and restore your session back on your oscilloscope to resume where you left off without needing to reconfigure the oscilloscope from the beginning.

Analysis

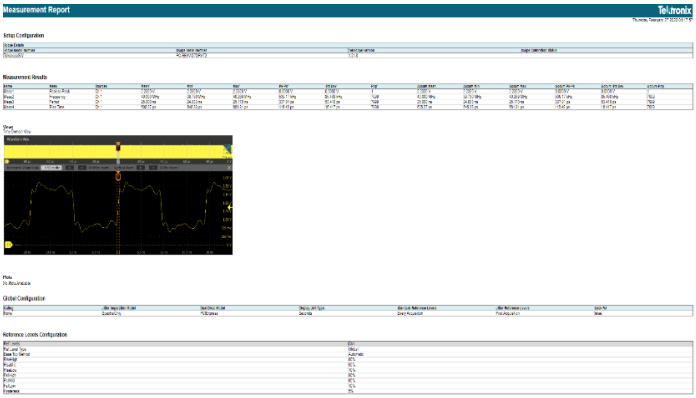
Start to add annotations, measurements, decode, and plots after capturing your data. Free up your oscilloscope for colleagues, work from the comfort of your desk or even from home. By adding analysis when you want to, your data story unfolds for more flexibility in creating presentations and sharing results than relying only on static screenshots. Post-analysis lets you go back to past captures to double check results without needing to set up the oscilloscope again. Rather than starting from scratch when you do need to re-measure, simply reload your session file on the 4/5/6 Series MSO with any changes you need in settings and rapidly get back to work.

Measurements

Most oscilloscopes measure only on the first cycles of the waveform. TekScope measurement system allows measurements on all occurrences in the record. This improvement increases your measurement insights from all other waveforms and from other oscilloscopes. To gather measurement statistics, generates statistics from a single waveform rather than requiring multiple waveforms. Our measurement algorithms are also clearly documented in our Help system, which ensures the confidence in your results.

Reports for data archive

After completion of analysis, a report is generated to share or archive. Options, including the ability to include plots or configuration details, allow the user to specify the information that goes in the report. Reports can be archived as an .mht or .pdf file.



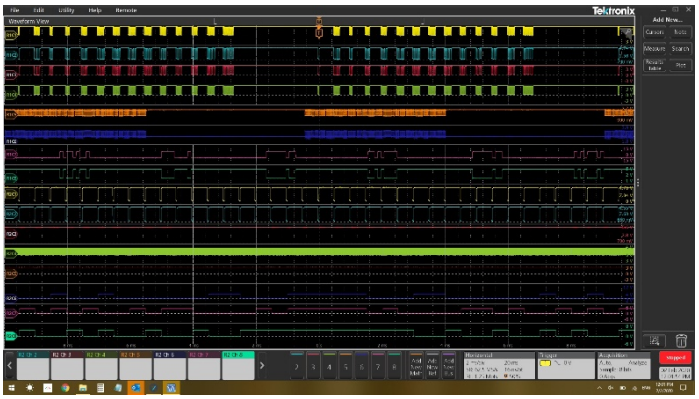
Complete test report includes setup details, measurement configuration and results, and plots

Waveform correlation between lab or simulation results

A common issue that arises when taking lab measurements is correlation between instrumentation and simulation. The source of differences can be related to a difference in measurement algorithms. TekScope allows the user to import multiple waveform formats from different sources, including .wfm, .isf, .tss, .csv, .bin, .trc, and .tr0, enabling the use of common analysis tools, eliminating the differences due to differing analysis tools. For example, the user can simultaneously compare the eye opening of a waveform captured in the lab vs. a simulated waveform or waveform captured on a different oscilloscope.

Multi-scope remote analysis

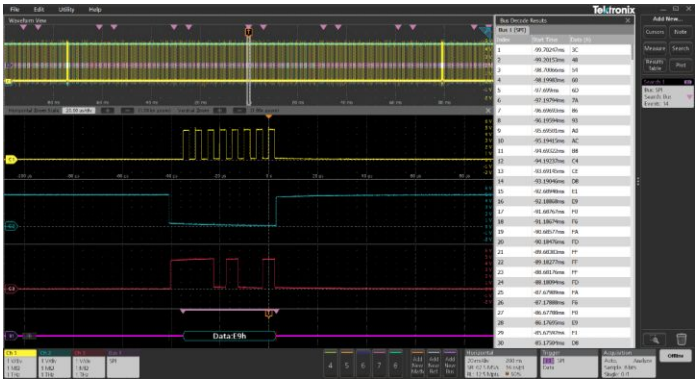
You can now add more channels to your testing environment while setting the multi-scope system to behave as one unit. View and analyze data from multiple oscilloscopes on the same screen. Rearrange channel information, stack group, zoom, add cursors or measurements in a seamless interface. This capability support upto two oscilloscopes and 16 channels.



Performing two-unit remote scope analysis and viewing on the same screen

Serial protocol decode and analysis

Enhance your productivity through serial protocol decode tools to rapidly decode and search on results in your waveforms. Recognizing errors or correlating control results to other behaviors rapidly speeds up your ability to identify and resolve issues in your system.



Performing bus decode analysis and generating results table

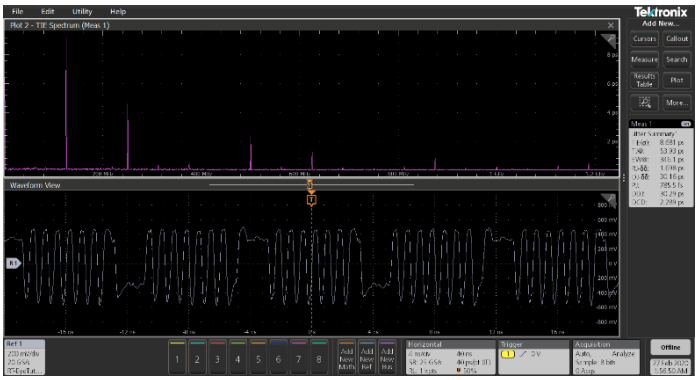
Customizable display

Waveform analysis is no longer constrained to a single oscilloscope display. TekScope allows you to control their analysis environment.

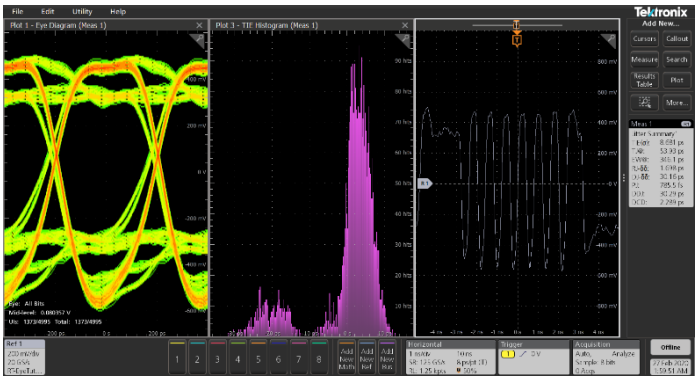
Two options are available for waveform viewing, either overlay mode or stacked mode. You can simply toggle between the two modes based on the required analysis. For example, when looking at edge crossings between two data signals, overlay mode may be preferred. As the number of waveforms grows, stacked mode is typically preferred.

Other scenarios require the evaluation of waveforms and plot data, including eye diagrams, spectrums, bathtub plots, or histograms. Plots can be viewed in the same window as the waveform or in cases where additional screen real estate is needed a group of plots can be created and displayed on a second monitor. Within the group of plots, the user has the flexibility to customize the layout by simply dragging and dropping the plots within the display. For example, as shown below when viewing the jitter spectrum or FFT of a waveform, a stacked view is preferred.

You can have a side-by-side view too.



Stacked view of time domain waveform and jitter spectrum



Side-by-side view of eye diagram, TIE histogram and waveform shown in individual views

When a single display is not sufficient to view the necessary plots, they can quickly be grouped and moved to a second monitor. Once grouped, the user has the flexibility to customize the layout and the ability to view the plots in either tabbed or grid mode. Tab mode provides a maximized view of an individual plot while allowing you to click on the other tabs to toggle between the plots. Grid mode provides a single view of all the plots in the group.

Waveform zoom and cursors

Interactive plots with zoom and cursors – Plots provide a deep level of understanding of system behavior. It is often desired to zoom in on plot data, some common reasons to zoom on plots include placing cursors to take measurements at precise locations. Zooming enables precise viewing of the portion of the plot of interest. While zoomed in the overview window, it always provides context of the zoomed area in relation to the entire plot.

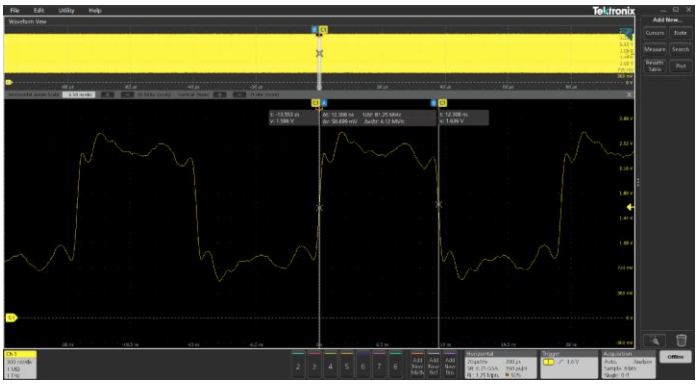
Cursor support for plots and waveforms can provide additional measurement details. For example, the amplitude and period of a waveform can be determined using cursors, or measurement results variation can be determined by evaluating the trend plot.

Key capabilities

TekScope is available as a Free Base version with options to expand your analysis capabilities. The table summarizes the base capabilities:

Capabilities
View and annotate unlimited waveforms and plots
Zoom on waveforms and plots
View in stacked or overlay modes
Share sessions
34 Amplitude and timing measurements with statistics
Math: Basic waveform arithmetic, FFT, and Equation Editor
Plots: Time Trend, Histogram, Spectrum, and XY/XYZ
Import from and Export to a wide range of file formats
Decode Clocked and Unclocked Parallel Bus
Generate reports
Edit your session file for recall on your oscilloscope - resume where you left off
Multiple-Language support

Options	Capabilities Included
Multi-Scope Analysis	Remote connection to the oscilloscopes. Real-time remote data acquisition. Support remote connection to two oscilloscopes and 16 channels. Shared view for all channels from different oscilloscopes simultaneously.
PAM3 / Signal Separation / Automotive Ethernet Protocol - Analysis	Software Clock Recovery, PAM3 Eye Height and Width, PAM3 Linearity, Jitter Separation, Bathtub curve (BER), and Eye Mask test. Performing Signal Analysis or Protocol Decode testing without effecting the ECU system or installing a direct coupler by cutting the Ethernet cable. 100Base-T1 Automotive Ethernet Protocol Decode. Jitter Analysis.
Low Speed Protocol Decode	Protocol Decode and Search Analysis – I2C, I3C, SPI, CAN, CAN-FD, LIN, FlexRay, SENT, 100Base-T1 Automotive Ethernet, Mil-STD-1553, ARINC-429, RS-232, USB, Ethernet, I2S, LJ, RJ, TDM, and SPMI.
Jitter Measurements and Analysis	Jitter, Eye, Amplitude, and Time Measurements.
Power Electronics Analysis	Input Measurements, Amplitude Measurements, Timing Measurements, Switching Measurements, and Output Measurements. Inductance Measurements, Magnetic Property Plot, Magnetic Loss Measurements, and Current vs. Integral of Voltage Plot.
Power Integrity Analysis	Ripple Analysis, Transient Analysis, Power Sequence Analysis, and Jitter Analysis. SPMI Protocol Decode and Search.
SpectrumView Analysis	You can perform Spectrum Analysis from your PC. Refer http://www.tek.com/document/application-note/spectrum-view-new-approach-frequency-domain-analysis-oscilloscopes for SpectrumView Datasheet.



Cursor measurements with prominent readouts provide quick results for both plot and waveform data

Add analysis packages for the capabilities you need. Powerful additions are designed to save your time in protocol decode, power measurements, and jitter analysis ensure that you have the tools you need at your fingertips.

Multi-Scope Analysis provides you with the ability to remotely connect to two oscilloscopes and acquire 16-channel data directly from them without the need to manually load/recall waveforms.

Serial Protocol enables faster time to answer by highlighting packet information and errors that can be correlated with events in your acquisitions. Decoded serial data may also be searched, enabling rapid identification of events in longer captures.

Power analysis enables deeper insight into the performance of your system with measurements and plots created with a power designer in mind.

TekScope with Jitter Analysis uses the same DPOJET measurement framework available on Tektronix Oscilloscopes. Comprehensive jitter and eye-diagram analysis, along with decomposition algorithms, simplify the discovery of signal integrity and jitter problems in today's high-speed serial, digital, and communication system designs.

Tektronix innovative solution for automotive and our brand new SpectrumView software is now applicable on your PC environment as well. Perform PAM3 Signal Analysis as well as SpectrumView Analysis from your local machine while having the option to work anywhere and apply these analysis capabilities on any historical data files.

Specifications

General

Specification Type	Subtypes		Description
Time Measurements	22		Period, Frequency, Unit Interval, Data Rate, Positive Pulse Width, Negative Pulse Width, Skew, Delay, Rise Time, Fall Time, Phase, Rising Slew Rate, Falling Slew Rate, Burst Width, Positive Duty Cycle, Negative Duty Cycle, Time Outside Level, Setup Time, Hold Time, Duration N-Periods, High Time, and Low Time
Amplitude Measurements	12		Amplitude, Maximum, Minimum, Peak-to-Peak, Positive Overshoot, Negative Overshoot, Mean, RMS, AC RMS, Top, Base, and Area
Power Electronics Measurements and Analysis	4	Input Analysis	Power Quality, Harmonics, Inrush Current, and Input Capacitance
	6	Amplitude Analysis	Cycle Amplitude, Cycle Top, Cycle Base, Cycle Peak-to-Peak, Cycle Maximum, and Cycle Minimum
	5	Timing Analysis	Period, Frequency, Positive Duty Cycle, Negative Duty Cycle, Positive Pulse Width, and Negative Pulse Width
	5	Switching Analysis	Switching Loss, dv/dt, di/dt, SOA, and RDS(on)
	4	Magnetic Analysis	Inductance, Magnetic Property, Magnetic Loss, and Current vs. Integral of Voltage Plot
	5	Output Analysis	Line Ripple, Switching Ripple, Efficiency, Turn On Time, and Turn Off Time
Power Integrity Measurements and Analysis	1	Ripple Analysis	Ripple
	4	Transient Analysis	Overshoot, Undershoot, Turn on Overshoot, and DC Rail Voltage
	2	Power Sequence Analysis	Turn On Time and Turn Off Time
	8	Jitter Analysis	TIE, PJ, RJ, DJ, Eye Height, Eye Width, Eye High, and Eye Low
	1	Protocol Decode and Search Analysis	SPMI Protocol
Jitter Measurements and Analysis	18	Jitter Measurements	Jitter Summary, TIE, Phase Noise, TJ@BER, RJ-δδ, DJ-δδ, PJ, RJ, DJ, DDJ, DCD, SRJ, J2, J9, NPJ, F/2, F/4, and F/8
	7	Eye Measurements	Eye Height, Eye Width, Eye High, Eye Height@BER, Eye Width@BER, Eye Low, and Q-Factor
	7	Amplitude Measurements	Bit High, Bit Low, Bit Amplitude, DC Common Mode, AC Common Mode (Pk-Pk), Differential Crossover, and T/nT Ratio
	2	Time Measurements	SSC Freq Deviation, SSC Modulation Rate

Specification Type	Subtypes		Description
Plots	5		Histogram, Spectrum[2], Eye Diagram[2], Bathtub[2], Time Trend, and XY/XYZ
Low Speed Protocol Decode	19	Protocol Decode and Search Analysis	I2C, I3C, SPI, CAN, CAN-FD, LIN, FlexRay, SENT, 100Base-T1 Automotive Ethernet, Mil-STD-1553, ARINC-429, RS-232, USB, Ethernet, I2S, LJ, RJ, TDM, and SPMI.
Standard Math Functions	9		+, -, *, /, Integral, Derivative, Arbfilt, FFT Magnitude and Phase
Advanced Math Functions	33		^, <, <=, >, >=, ==, !=, Inv, (,), Time Point Gating (GATE {y1,y2} expression), log, ln, Exp, Sqrt, Floor, Ceil, Fabs, Sin, Cos, Tan, Asin, Acos, Atan, Sinh, Cosh, Tanh, Intg, Diff, Min, Max, Avg, and - (negate)
Supported File Types	7	Import	.tss (Tektronix 4/5/6 Series Session) .wfm, .isf (Tektronix) .bin (Keysight) .trc (Lecroy) .tr0 (Spice) .csv (general purpose)
	10	Export	.jpg, .bmp, and .png (Screen Capture - Save to PC drive, not to oscilloscope memory) .wfm (Tektronix Waveform Data) .csv, .mat (Waveform Data to CSV or Matlab format) .set (Setup Information) .tss (Tektronix 4/5/6 Series Session) .pdf, .mht (Reports)
4/5/6 Series MSO Firmware Version Compatibility	---	v.1.24.9	Exclusions: • FRA Analysis. • Inverter & Motor Drive Analysis (IMDA).

Waveform Controls

Zoom	Horizontal and/or Vertical
Cursors	Waveform or Screen

Plot controls

Zoom	Horizontal and/or Vertical
Cursors	Waveform or Screen

2 only available in Jitter Analysis

Number of views

Waveform views	One with the ability to configure in stacked, overlay or mixed modes. Upto 16 waveforms are viewed simultaneously

Available outputs

Report	Comprehensive report with measurement results, plots, and system configuration details are available in .pdf or .mht formats
Composite Setup	Single file for saving waveforms, measurements, and configuration details
Plot and Measurement Data	Export plot and measurement data in .csv formats

Minimum system configuration

System requirements	64-bit Windows 10
	8 GB or higher of RAM recommended
	Intel® Core™ i5 or AMD Athlon® X4 processor (2GHz or faster)
	5 GB of available hard disk space, 10 GB recommended (exact space is dependent on the number of waveforms and their size)
	1920x1080 or greater at 100% scaling recommended
	OpenGL® 2.0, 32-bit color, and 1 GB of VRAM
	TekCloud Internet Browser – Firefox or Chrome

Ordering information

The TekScope software can be downloaded from http://scope.tekcloud.com. Software is enabled by a license, which is automatically provisioned through a software Application Manager with your paid or trial account. The license is a named license associated with your individual account.

Base license

Product	Description	License Option
TekScope	TekScope PC Waveform Analysis Software - Base License	Available by default

Optional premium licenses

Product	Description	License Term	License Option
Multi-Scope Analysis	Optional License; Multi-Scope Analysis Package, View and Analysis of Data from Multiple Scopes Simultaneously; [Available only for 4/5/6 Series MSO, 5 Series Low Profile, and 6 Series Low Profile Digitizer]	One Year	TEKSCOPE-MULTI-1Y
		Three Years	TEKSCOPE-MULTI-3Y
PAM3 / Signal Separation / Automotive Ethernet Protocol - Analysis	Optional License; PAM3 Measurements and Analysis, Automotive Ethernet Signal Separation, and Automotive Ethernet 100Base-T1 Protocol Decode	One Year	TEKSCOPE-PAM3-BND-1Y
		Three Years	TEKSCOPE-PAM3-BND-3Y
Low Speed Protocol Decode	Optional License; Protocol Decode: I2C, I3C, SPI, CAN, CAN-FD, LIN, FlexRay, SENT, 100Base-T1 Automotive Ethernet, Mil-STD-1553, ARINC-429, RS-232, USB, Ethernet, I2S, LJ, RJ, TDM, and SPMI	One Year	TEKSCOPE-DECODE-1Y
		Three Years	TEKSCOPE-DECODE-3Y
Jitter Measurements and Analysis	Optional License; Jitter Measurements and Analysis	One Year	TEKSCOPE-DJA-1Y
		Three Years	TEKSCOPE-DJA-3Y
Power Electronics Analysis	Optional License; Power Electronics: Power Measurements and Analysis, Magnetics Measurements and Analysis	One Year	TEKSCOPE-PWR-ELEC-3Y
		Three Years	TEKSCOPE-PWR-ELEC-3Y
Power Integrity Analysis	Optional License; Power Integrity: DPM Measurements and Analysis, SPMI Protocol Decode	One Year	TEKSCOPE-PWR-INTG-1Y
		Three Years	TEKSCOPE-PWR-INTG-3Y
SpectrumView Analysis	Optional License; SpectrumView Application	One Year	TEKSCOPE-SPECVIEW-1Y
		Three Years	TEKSCOPE-SPECVIEW-3Y

Installing prerequisite software

Pay special attention to installing the prerequisite software needed in order to run properly any licenses you have subscribed to on TekScope. The updated list for prerequisite software needed is located in: http://scope.tekcloud.com/#/help/prerequisites (you need to sign in first to your account to watch this page).

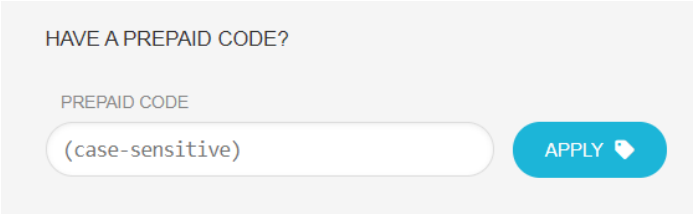
License activation

The Base License is available at no cost[3].

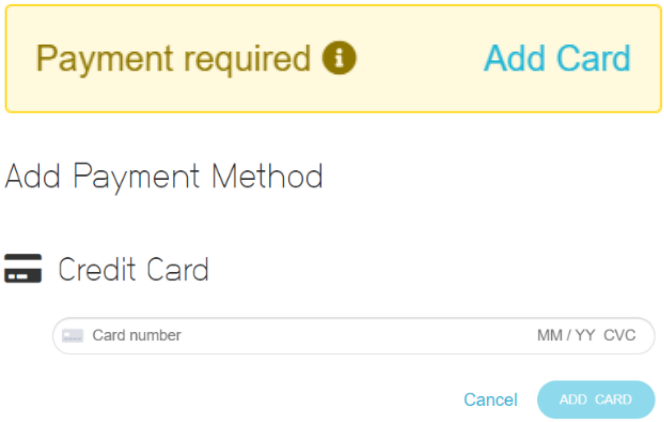
Advanced packages are available for a 14-day trial at no cost. The 14-day trial period will start once you have completed your registration to TekCloud and end after 14 days. At the end of the 14-day trial, upon purchasing, you can continue using the licenses you have subscribed to[4].

Customers can purchase advanced licenses in one of two ways:

- Purchasing an activation key (in your regular purchasing way) and entering it during the sign-up process or after your account is set up.



- Using a credit card [Available only to U.S. Customers] .



Software updates

TekScope software updates are included in the price paid for the license. Once a new update is released, a link to the new release will be shown in the Application Manager. The customer is given the choice to upgrade to the new version or keep working with the existing version.

Certifications

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.

3 Tektronix reserves the right to modify or cancel the free Base License and the 14-day trial offer for the advanced licenses at any time.

4 You may cancel any subscription at any time but will not receive any monetary refund for unused periods.

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Republic of Korea +822 6917 5084, 822 6917 5080
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Central Europe & Greece +41 52 675 3777
France 00800 2255 4835*
India 000 800 650 1835
Luxembourg +41 52 675 3777
The Netherlands 00800 2255 4835*
Poland +41 52 675 3777
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Sweden 00800 2255 4835*
United Kingdom & Ireland 00800 2255 4835*

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Germany 00800 2255 4835*
Italy 00800 2255 4835*
Mexico, Central/South America & Caribbean 52 (55) 56 04 50 90
Norway 800 16098
Portugal 80 08 12370
South Africa +41 52 675 3777
Switzerland 00800 2255 4835*
USA 1 800 833 9200

* European toll-free number. If not accessible, call: +41 52 675 3777

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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www.tek.com

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