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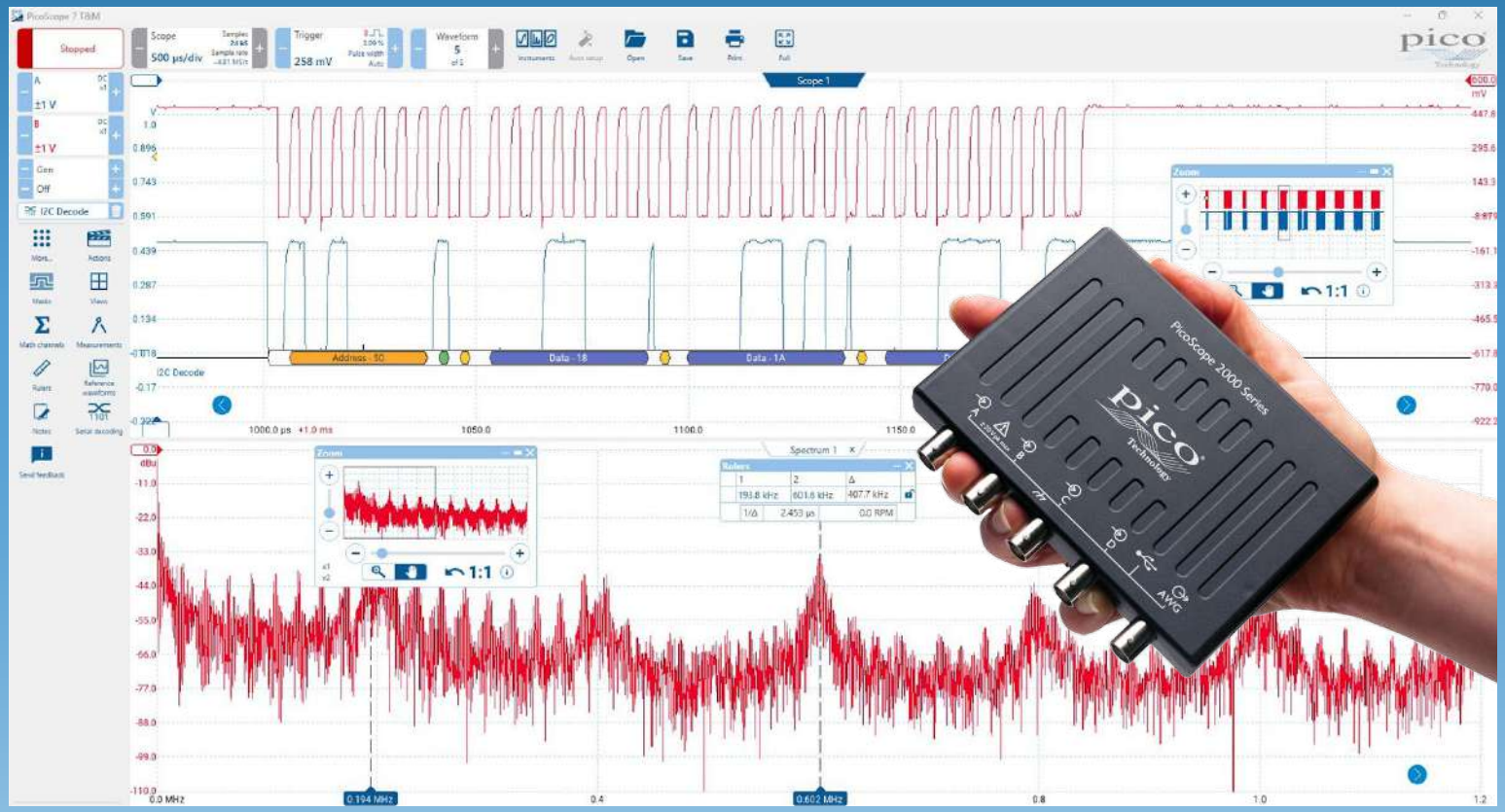
pico® Technology

PicoScope® 2000 Series

Ultra-compact PC oscilloscopes
The compact alternative to a benchtop oscilloscope



- 2 or 4 analog channels
- MSO models with 16 digital channels
- Up to 100 MHz bandwidth
- Up to 1 GS/s sampling rate
- Up to 128 MS capture memory
- Built-in arbitrary waveform generator
- USB-connected and powered
- Decode over 38 serial protocols as standard

Introducing the PicoScope 2000 Series

The PicoScope 2000 Series offers you a choice of 2-channel and 4-channel oscilloscopes, plus mixed-signal oscilloscopes (MSOs) with 2 analog + 16 digital inputs. All models feature a spectrum analyzer, function generator, arbitrary waveform generator and serial bus analyzer, and the MSO models also include a logic analyzer.

The PicoScope 2000A models all deliver unbeatable value for money, with excellent waveform visualization and measurement to 25 MHz for a range of analog and digital electronic and embedded system applications. They are ideal for education, hobby and field service use.

The PicoScope 2000B models have the added benefits of deep memory (up to 128 MS), higher bandwidth (up to 100 MHz) and faster waveform update rates, giving you the performance you need to carry out advanced analysis of your waveform, including serial decoding and plotting measurements against time.

2-channel oscilloscope: 2204A and 2205A

4-channel oscilloscope

2-channel oscilloscope: 2206B, 2207B and 2208B

2+16-channel mixed-signal oscilloscope (MSO)

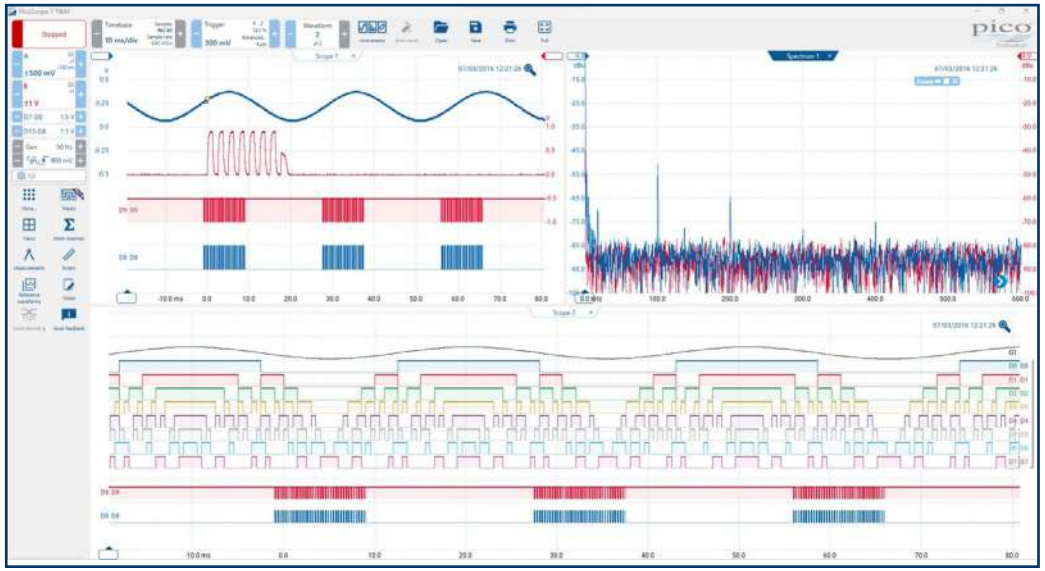
Advanced oscilloscope display

One of the biggest differences between using a PicoScope and a benchtop scope is the display. After a few minutes of viewing waveforms on a laptop or PC monitor you will not want to go back to the small, cluttered low-resolution display of a benchtop.

PicoScope software dedicates almost all of the display area to the waveform. This ensures that the maximum amount of data is seen at once.

With a large display area available, you can also create a customizable split-screen display, and view multiple channels or different views of the same signal at the same time. As the example shows, the software can even show multiple oscilloscope and spectrum analyzer traces at once. Additionally, each waveform shown works with individual zoom, pan, and filter settings for ultimate flexibility.

The PicoScope software can be controlled by mouse, touchscreen or keyboard shortcuts.



Powerful, portable and super-small

The PicoScope 2000 Series oscilloscopes are compact enough to fit easily into your laptop bag along with all their probes and leads. These modern alternatives to bulky benchtop devices are ideal for a wide range of applications including design, test, education, service, monitoring, fault-finding and repair, and are perfect for engineers on the move.

High signal integrity

At Pico Technology we're proud of the dynamic performance of our products. Careful front-end design and shielding reduce noise, crosstalk and harmonic distortion. Decades of oscilloscope design experience can be seen in improved pulse response and bandwidth flatness.

The result is simple: when you probe a circuit, you can trust in the waveform you see on the screen.

Fast sampling

The PicoScope 2000 Series oscilloscopes provide fast real-time sampling rates of up to 1 GS/s on the analog channels. This represents a timing resolution of 1 ns.

For repetitive analog signals, equivalent-time sampling (ETS) mode can boost the maximum effective sampling rate up to 10 GS/s, allowing even finer resolution down to 100 ps. All scopes support pre-trigger and post-trigger capture using the full memory depth.

High-end features as standard

Buying a PicoScope is not like making a purchase from other oscilloscope companies, where increased functionality can considerably raise the price. PicoScopes are all-inclusive instruments, with no need for expensive upgrades to unlock the hardware. Other advanced features such as resolution enhancement, mask limit testing, serial decoding, advanced triggering, automatic measurements, math channels (including the ability to plot measurements against time), XY mode and segmented memory are all included in the price.

USB connectivity

The USB connection makes printing, copying, saving, and emailing your data from the field quick and easy. The high-speed USB interface allows fast data transfer, while USB powering removes the need to carry around a bulky external power supply.

Flexibility

The PicoScope software offers a breadth of advanced features with a user-friendly interface. PicoScope software is available for Windows, Linux and macOS systems with full feature parity across all three, giving you the freedom to operate your PicoScope from your chosen platform.

Unique commitment to product support

Your PicoScope gets better the longer you use it, thanks to the regular free updates we supply for both the PC software and the oscilloscope firmware throughout the life of the product. The performance and functionality of the scope both keep improving, without you paying a penny more than the purchase price.

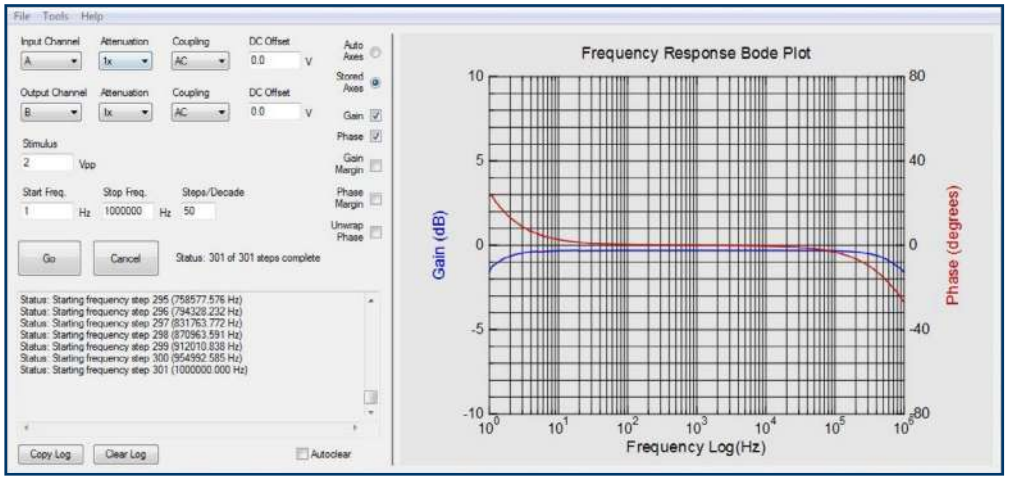
This level of support, combined with the personal service provided by our technical and sales support teams, is reflected in consistently excellent customer feedback.

PicoSDK - write your own apps

Our free software development kit, PicoSDK, allows you to write your own software and includes drivers for Windows, macOS and Linux. Example code supplied on our GitHub organization page shows how to interface to third-party software packages such as National Instruments LabVIEW and MathWorks MATLAB, as well as programming languages including C/C++, C# and Python.

Among other features, the drivers support data streaming, a mode that captures continuous gap-free data directly to your PC or host computer at rates of up to 80 MS/s, so you are not limited by the size of your scope's capture memory. Sampling rates in streaming mode are subject to PC specifications and application loading.

There is also an active community of PicoScope users who share both code and whole applications on our Test and Measurement Forum and the PicoApps section of the website. The Frequency Response Analyzer shown here is a popular application on the forum.




```
ScopeSettingsPropTree.clear();
    wstring appVersionStringW = wstring_convert<codecvt_utf8<wchar_t>>().from_bytes(appVersionString);
    ScopeSettingsPropTree.put( L"appVersion", appVersionStringW );
    ScopeSettingsPropTree.put( L"picoScope.inputChannel.name", L"A" );
    ScopeSettingsPropTree.put( L"picoScope.inputChannel.attenuation", ATTEN_1X );
    ScopeSettingsPropTree.put( L"picoScope.inputChannel.coupling",PS_AC );
    ScopeSettingsPropTree.put( L"picoScope.inputChannel.dcOffset", L"0.0" );
    ScopeSettingsPropTree.put( L"picoScope.inputChannel.startingRange", -1 ); // Base on stimulus
    ScopeSettingsPropTree.put( L"picoScope.outputChannel.name", L"B" );
    ScopeSettingsPropTree.put( L"picoScope.outputChannel.attenuation", ATTEN_1X );
    ScopeSettingsPropTree.put( L"picoScope.outputChannel.coupling", PS_AC );
    ScopeSettingsPropTree.put( L"picoScope.outputChannel.dcOffset", L"0.0" );
    ScopeSettingsPropTree.put( L"picoScope.outputChannel.startingRange", pScope->GetMinRange(PS_AC) );

    midSigGenVpp = floor((pScope->GetMinFuncGenVpp() + pScope->GetMaxFuncGenVpp()) / 2.0);

    stimulusVppSS << fixed << setprecision(1) << midSigGenVpp;
    maxStimulusVppSS << fixed << setprecision(1) << pScope->GetMaxFuncGenVpp();
    startFreqSS << fixed << setprecision(1) << (max(1.0, pScope->GetMinFuncGenFreq())); // Make frequency at least 1.0 since 0.0 (DC) makes no sense for FRA
    stopFreqSS << fixed << setprecision(1) << (pScope->GetMaxFuncGenFreq());
```


Convert PicoScope files from the command line interface (CLI)

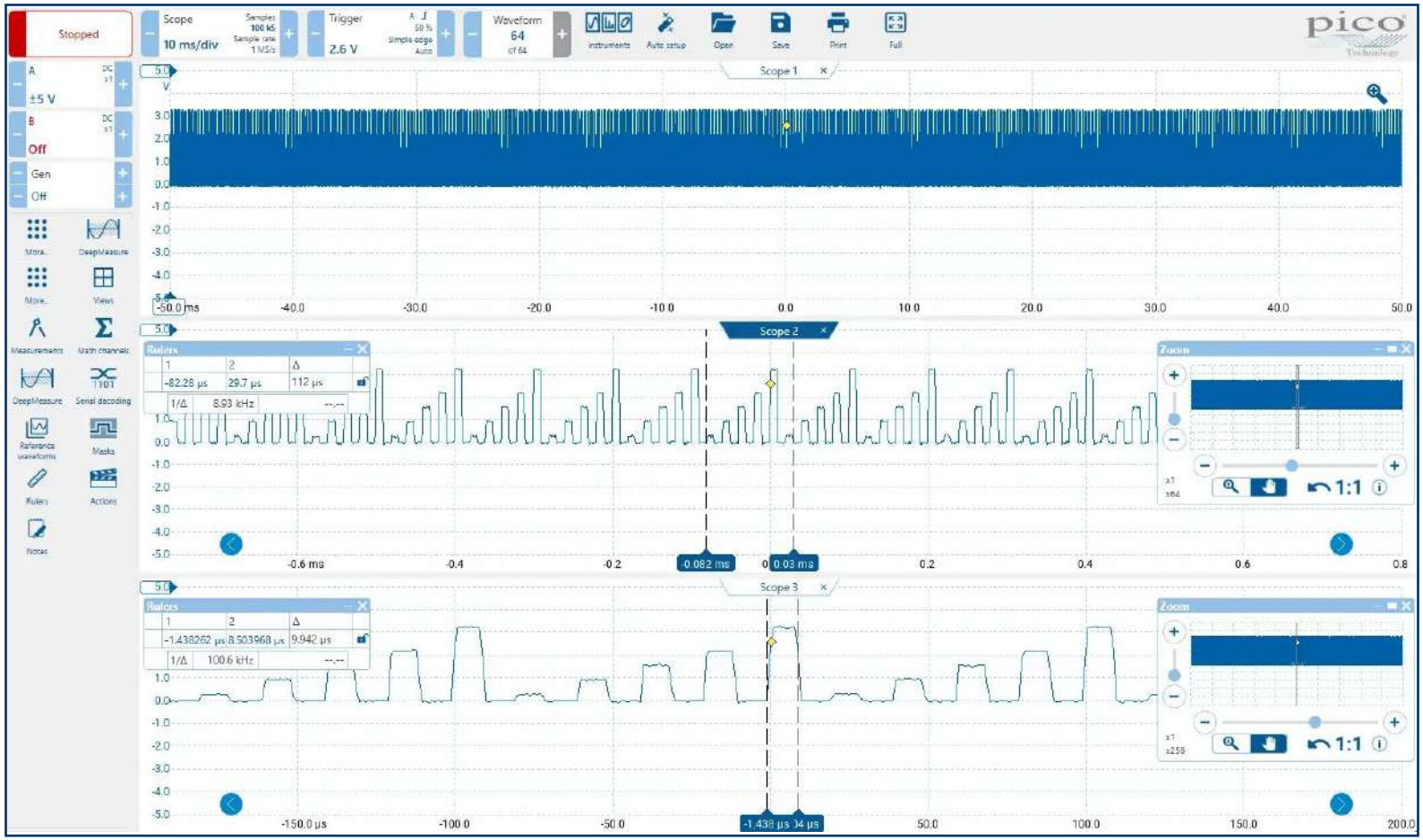
PicoScope can be invoked from the Windows, macOS or Linux command line to convert PicoScope data (.psdata) files in an input folder into CSV, text or MATLAB files in an output folder. This enables bulk conversion of saved PicoScope files into other formats for further analysis or processing in external programs.

Deep capture memory

PicoScope 2000 Series “B” models have waveform capture buffers ranging from 32 to 128 megasamples – many times larger than competing scopes. Deep memory enables the capture of long-duration waveforms at maximum sampling speed. In fact, some PicoScope 2000 Series models can capture 100 ms waveforms with 1 ns resolution. In contrast, the same 100 ms waveform captured by an oscilloscope with a 10 megasample memory would have just 10 ns resolution.

Deep memory can be useful in other ways too: PicoScope lets you divide the capture memory into a number of segments, up to a maximum of 40 000. You can set up a trigger condition to store a separate capture in each segment, with as little as 1 µs dead time between captures. Once you have acquired the data, you can step through the memory one segment at a time until you find the event you are looking for.

Powerful tools are included to allow you to manage and examine all of this data. As well as functions such as mask limit testing and color persistence mode, the PicoScope software enables you to zoom into your waveform by a factor of several million. The Zoom Overview window allows you to easily control the size and location of the zoom area. Other tools, such as the waveform buffer, serial decoding and hardware acceleration work with the deep memory, making the PicoScope 2000 Series some of the best-value oscilloscopes on the market.



PicoScope software - time domain view

Running/Stopped control: Click to start displaying waveforms. Click again to stop. The keyboard space bar has the same function.

Timebase sampling controls: Set the timing of an acquisition using the seconds/division control. **Sampling** controls provide a choice of timebase operating modes: **Buffer memory** priority adjusts the sampling rate to maintain a fixed capture memory depth. **Sample rate** priority adjusts memory depth to maintain a fixed sampling rate.

Trigger controls: Quick access to main controls and advanced triggers.

Waveform buffer navigator: PicoScope can store the last 40 000 oscilloscope or spectrum waveforms in a circular waveform buffer. The buffer navigator provides an efficient way of navigating and searching through waveforms.

Zoom: Zoom-in to magnify and click or drag to pan around.

Channel controls: Each channel corresponds to one of the PicoScope input connectors. Use controls to manage probe types, assign channel names, set vertical scaling, offset, input coupling and other signal conditioning parameters before making measurements on the DUT.

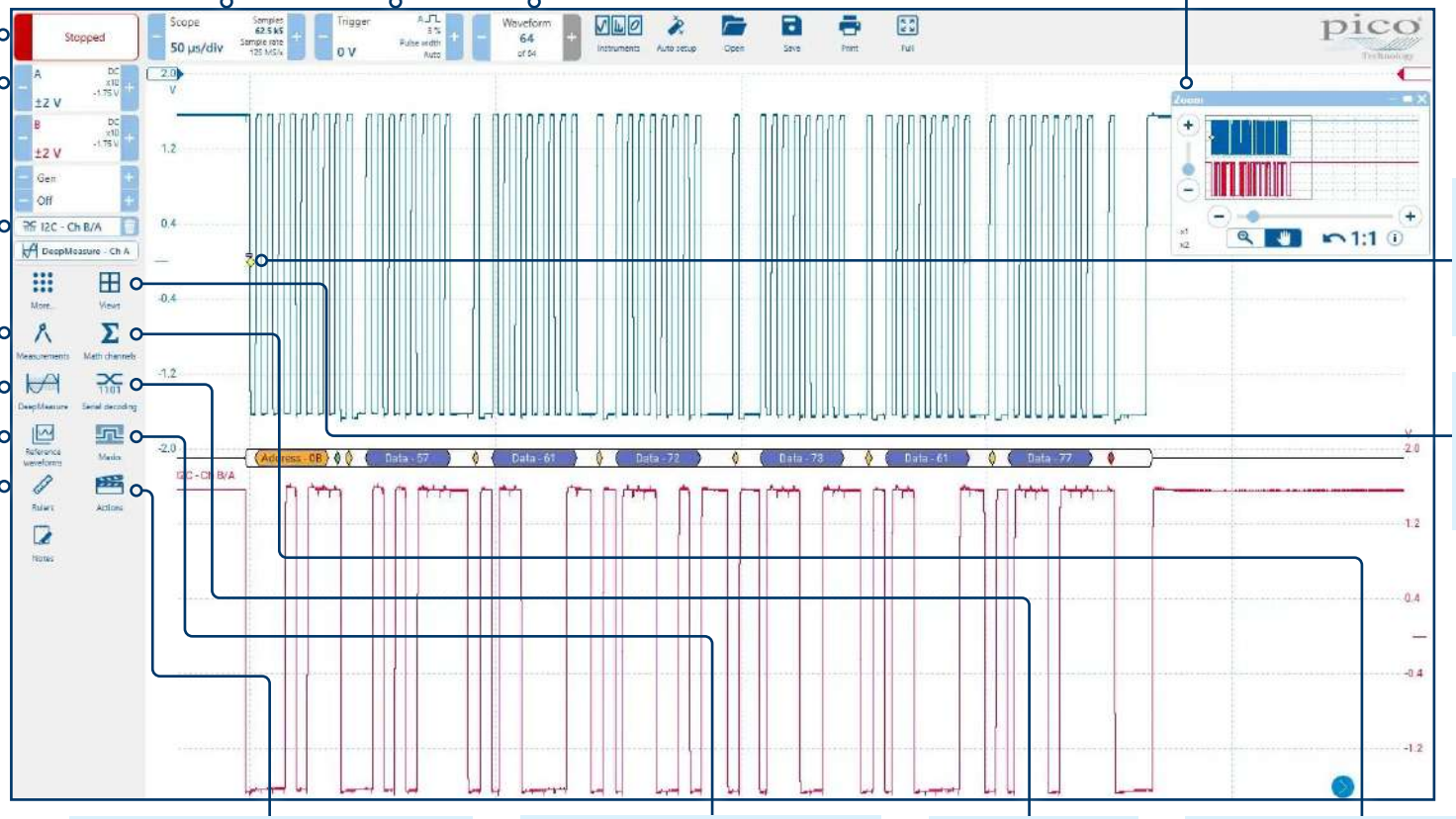
Serial protocol decoding: Serial decoders in use are listed here.

Automatic measurements: Display calculated measurements for troubleshooting and analysis. You can add as many measurements as you need on each view. Each measurement includes statistical parameters showing its variability.

DeepMeasure: Delivers automatic measurement of important waveform parameters on up to a million waveform cycles on each triggered acquisition.

Reference waveforms: Waveforms can be saved and displayed for comparison with live data.

Rulers: Help to make on-screen waveform measurements without having to count graticule marks.



Trigger marker: Shows the channel, signal level and time of the trigger event. Drag to adjust.

Views: Display separate scope, spectrum or XY views which can also be moved to different screens.

Actions: These are things that the PicoScope can be programmed to do when certain events occur. Actions include: **Stop capture**, **Save waveform**, **Play sound**, **Trigger signal generator** and **Run application.**

Masks: Mask limit testing allows the comparison of live signals against known good signals and is designed for production and debugging environments. Simply capture a known good signal, generate a mask around it and then monitor the device under test.

Serial decoding: PicoScope has 38 built-in serial protocol decoders which are included as standard at no extra cost.

Math channels: Advanced scientific, trigonometric, buffer, filter and coupler functions as well as basic arithmetic.

PicoScope software - frequency domain (spectrum analyzer) view

Spectrum controls: Set the frequency range, window functions (**Blackman**, **Gaussian**, **Triangular**, **Hamming**, **Hann**, **Blackman-Harris**, **Flat-top** or **Rectangular**), number of bins (bin width and collection time are calculated and displayed) and XY axis settings.

Trigger controls: The full advanced trigger capabilities of the scope are available in spectrum mode, to capture the frequency spectrum of a single event.

Instruments: Switches between the following modes: scope, spectrum, XY and persistence.

Auto setup: Click this first to find your signal, then adjust using the other controls.

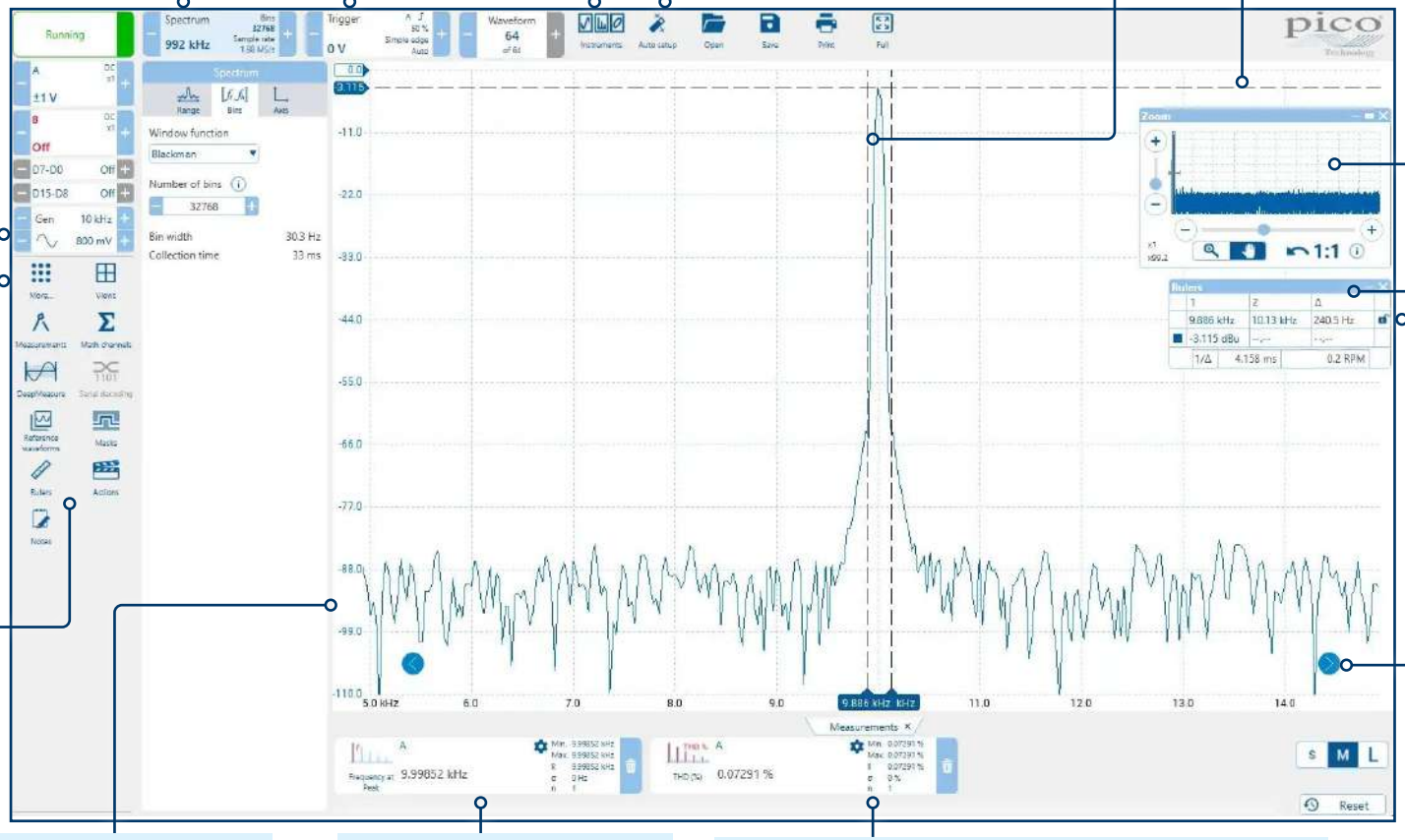
Frequency rulers: Drag ruler from left to right to mark a point on the axis. The ruler legend displays the frequency at each ruler and the difference between them.

dB/voltage rulers: Drag up or down to mark a point on the axis. The ruler legend will display the decibel/voltage value at each ruler and the difference between them.

Signal generator: For oscilloscopes with a built-in arbitrary waveform generator (AWG). Generates standard signals or arbitrary waveforms. Includes frequency sweep mode.

More: Click to display all available tools to select and favorite for quick access.

Favorite tools or functions such as **Measurements**, **Math channels**, **Serial protocol decoding**, **Rulers**, **Reference waveforms**, **Masks**, **Annotations** and **Actions** are one touch away in a custom UI panel.



Zoom window: Shows the full waveforms on all active channels. The grey rectangle indicates the area that is visible in the current view.

Ruler legend: Displays the positions of all the rulers you have placed on the view. It appears automatically whenever you position a ruler on the view.

Lock rulers: When two rulers have been positioned on one channel, the unlocked padlock button appears next to that ruler in the legend. Clicking this button locks the two rulers together so they track each other: dragging one causes the other to follow it, maintaining a fixed separation. The button changes to a "locked padlock" when the rulers are locked.

Channel axis: Each channel has a color-coded axis. Drag it up or down to position the channel. Selecting or dragging also brings the associated waveform to the front if it overlaps others. You can also roll your mouse scroll wheel to adjust the scaling.

Measurement statistics: The minimum, maximum, average and standard deviation of each measurement are calculated and displayed.

Measurements window: Dynamically updated automatic measurements. Choose from a rich set of time-domain and frequency-domain measurement types. The measurements window can be un-docked from the main display, and even moved to another monitor.

Navigate waveform: When zoomed-in, click to pan up or down the frequency range.

PicoScope software: mixed-signal (MSO) models

PicoScope 2000 MSO models include digital channels, enabling you to accurately time-correlate analog and digital signals. Digital channels may be grouped and displayed as a bus, with each bus value displayed in hex, binary or decimal or as a level (for DAC testing). You can set advanced triggers across both the analog and digital channels.

Advanced digital trigger: Triggers on a combination of the state of the digital inputs and a transition (edge) on one digital input.

Packet summary: Hover your mouse or touch-and-hold packet data to view summary.

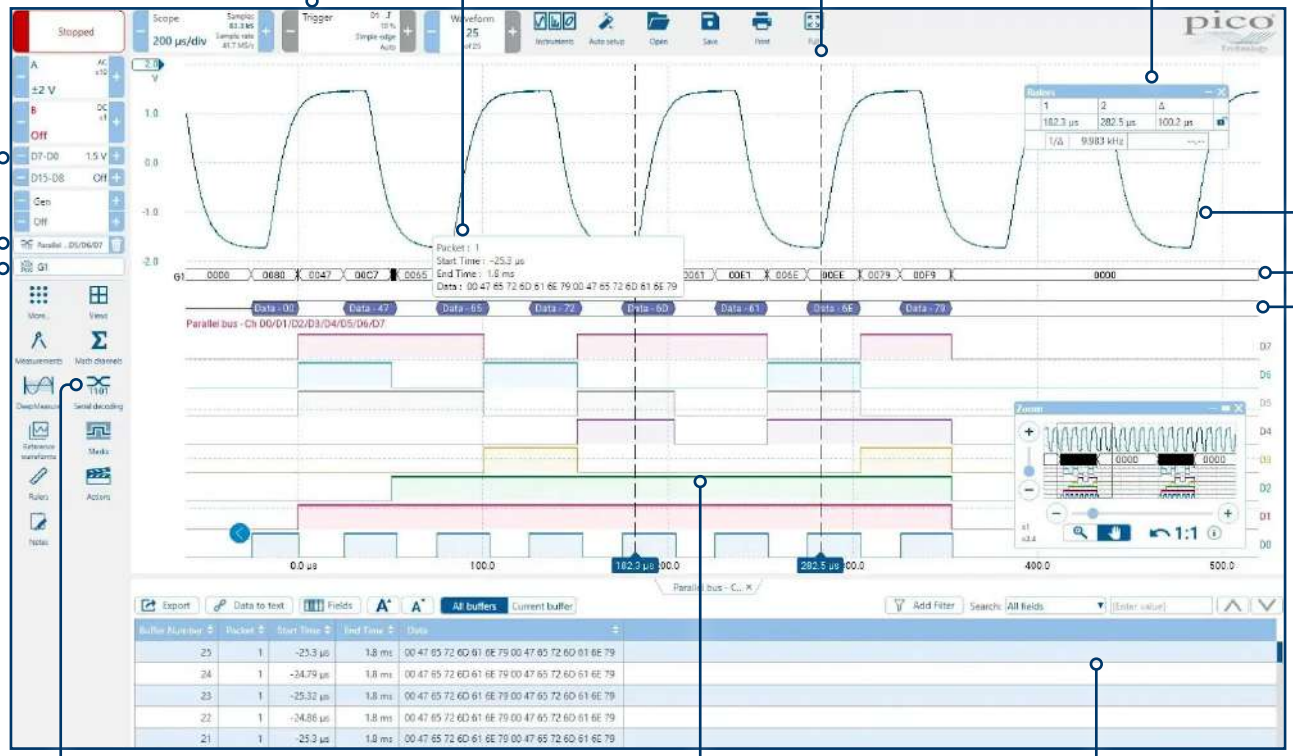
Rulers: Drawn across both analog and digital waveforms so signal timings can be compared.

Ruler legend: Absolute and differential ruler measurements are listed here.

Digital channel controls: Display a digital signal as either a logic high or logic low, depending on whether the voltage on that channel is above or below a set threshold. You can switch digital channels on and off, add and edit labels, channel names, invert the channel, change colors, set the threshold voltage, choose a waveform display size and create digital groups.

Serial protocol decoding: Serial decoders currently in use are listed here. You can edit the configuration and display options for each decoder. For example, you can choose a format for the decoded data: **Hex**, **Binary**, **Decimal** or **ASCII**.

Digital channel group control: Channels added to a group are placed with the most significant bit at the top of the list.



Analog waveforms: Drawn on the same time axis as digital waveforms. Waveforms can be dragged up and down to show related signals near each other, whether analog or digital.

Digital group: Group bits into fields and optionally display as an analog level. Choose either hex, binary, decimal or signed display formats.

Serial Decoding: Data packets displayed in logic-analyzer style, on the same time axis as the analog waveform. Click and drag the decoded data up or down the scope view.
If the table display is visible, double click on any packet to highlight it in the table.

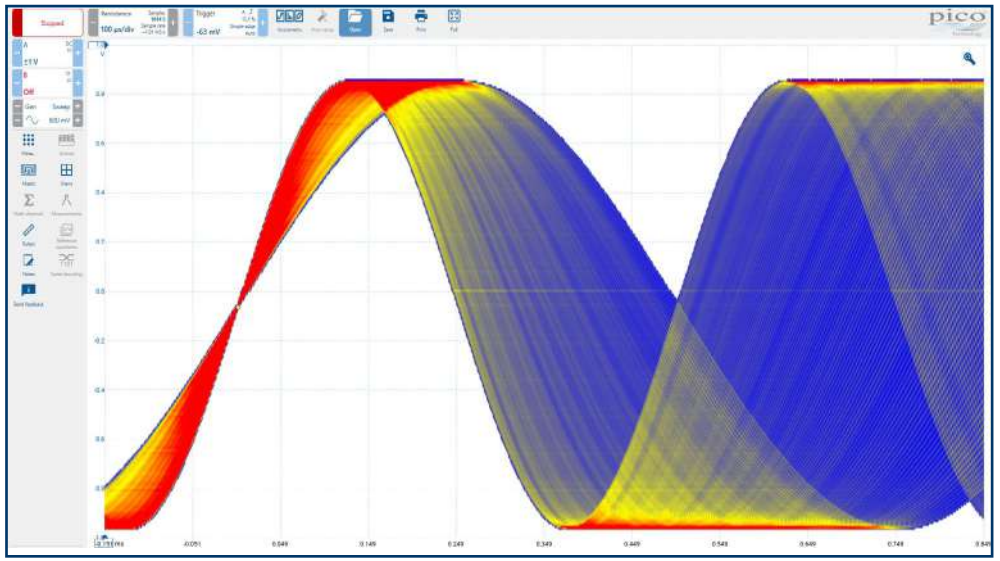
Serial decoding: To start decoding, select **Serial decoding** from the tools menu. PicoScope has 38 built-in serial protocol decoders (with more in development) which are included as standard at no extra cost. You can use PicoScope to decode data from a serial bus such as I2C or CAN Bus. Unlike a conventional bus analyzer, PicoScope lets you see the high-resolution electrical waveform, on analog channels, at the same time as the data. The data is integrated into the scope view, with color coded packets.

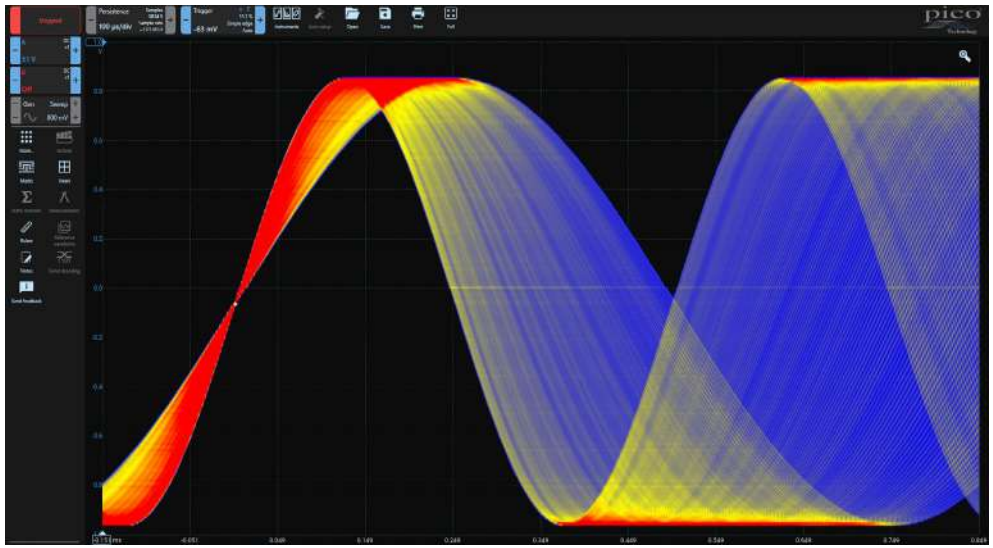
Digital channel traces: These can be arranged on-screen individually or in groups to best show the relationship between signals being measured.

Table: Displays the decoded data in an alphanumeric format in a table with advanced search and filtering functions. You can sort the data by any of the fields and double-click a row in the table to zoom to the corresponding frame in the scope view.

Persistence mode

Advanced display modes allow you to see old and new data superimposed, with new data in a brighter color or shade. This makes it easy to see glitches and dropouts and to estimate their relative frequency. Choose between time persistence mode, where the newest waveforms are drawn with highest intensity and fade gradually over time, or frequency persistence mode as shown below, where those waveform elements which repeat most often are shown in a brighter color and infrequent or intermittent events in a cooler color.





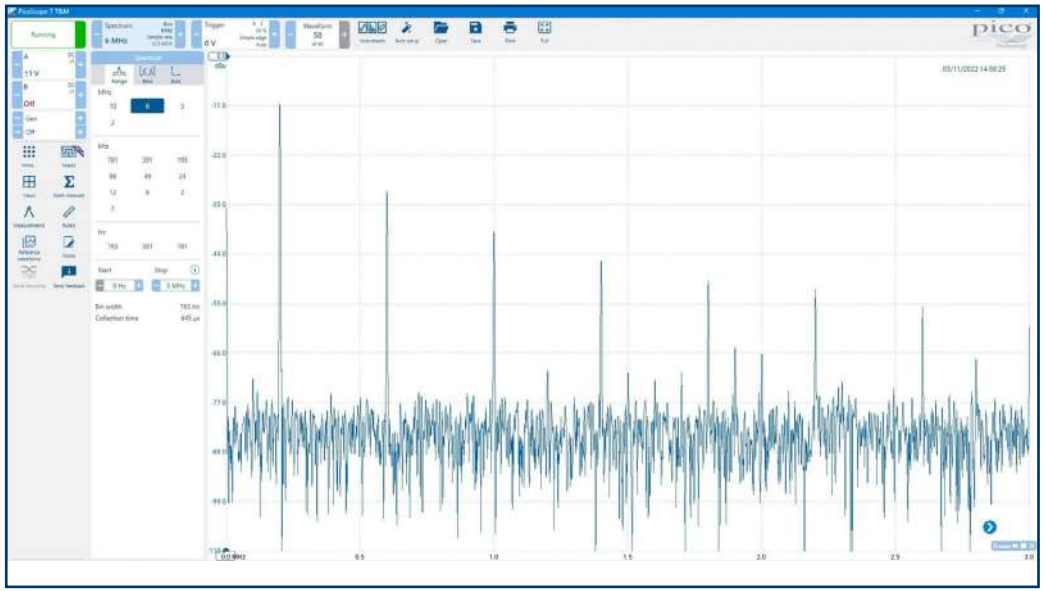
Spectrum analyzer

The spectrum view plots amplitude against frequency, revealing details that would otherwise be hidden in an oscilloscope view. It is ideal for finding noise, crosstalk or distortion in signals. The spectrum analyzer in PicoScope is of the Fast Fourier Transform (FFT) type that, unlike a traditional swept spectrum analyzer, can display the spectrum of a single, non-repeating waveform.

With a click of a button, you can display a spectrum plot of the active channels, with a maximum frequency up to the bandwidth of your scope. To focus on a specific frequency range, you can directly set the start and stop values of the analyzer frequency axis. A full range of settings gives you control over the number of spectrum bands (FFT bins), start/stop frequencies, scaling (including log/log) and display modes (instantaneous, average, or peak-hold). A selection of window functions allows you to optimize for selectivity, accuracy or dynamic range.

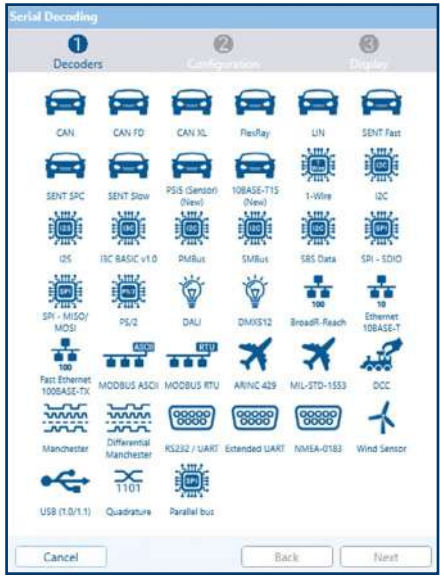
You can display multiple spectrum views alongside oscilloscope views of the same data. A comprehensive set of automatic frequency-domain measurements can be added to the display, including THD, THD+N, SNR, SINAD and IMD. You can even use the AWG and spectrum mode together to perform swept scalar network analysis.

The spectrum works with the waveform buffer so you can capture and rewind through thousands of spectrum plots or why not use the mask limit tests to scan through them all automatically? Spectrum masks can also work with PicoScope actions so you can leave the spectrum running continuously and choose to save mask fails to disk or even sound an alarm.



Serial decoding and analysis

PicoScope includes more serial decoders than any other oscilloscope on the market. All decoders are included as standard with no optional extras required or licenses to be purchased. Our regular free software updates provide new decoders as they are released.



Decode and display multiple protocols:

You can decode multiple different protocols at the same time (e.g. CAN, LIN and FlexRay). The only limit is the number of available channels, on MSO models you can use all 18 analog and digital inputs for serial decoding at once. The high resolution of a PC display is perfect for visualizing multiple complex waveforms alongside decoded serial bus data and more.

Data visualization

View decoded data in hex, binary, decimal or ASCII directly beneath the waveform on a common time axis. Error frames are highlighted in red for quick identification and can be zoomed in for a detailed investigation of noise or signal integrity issues.

Detailed table format

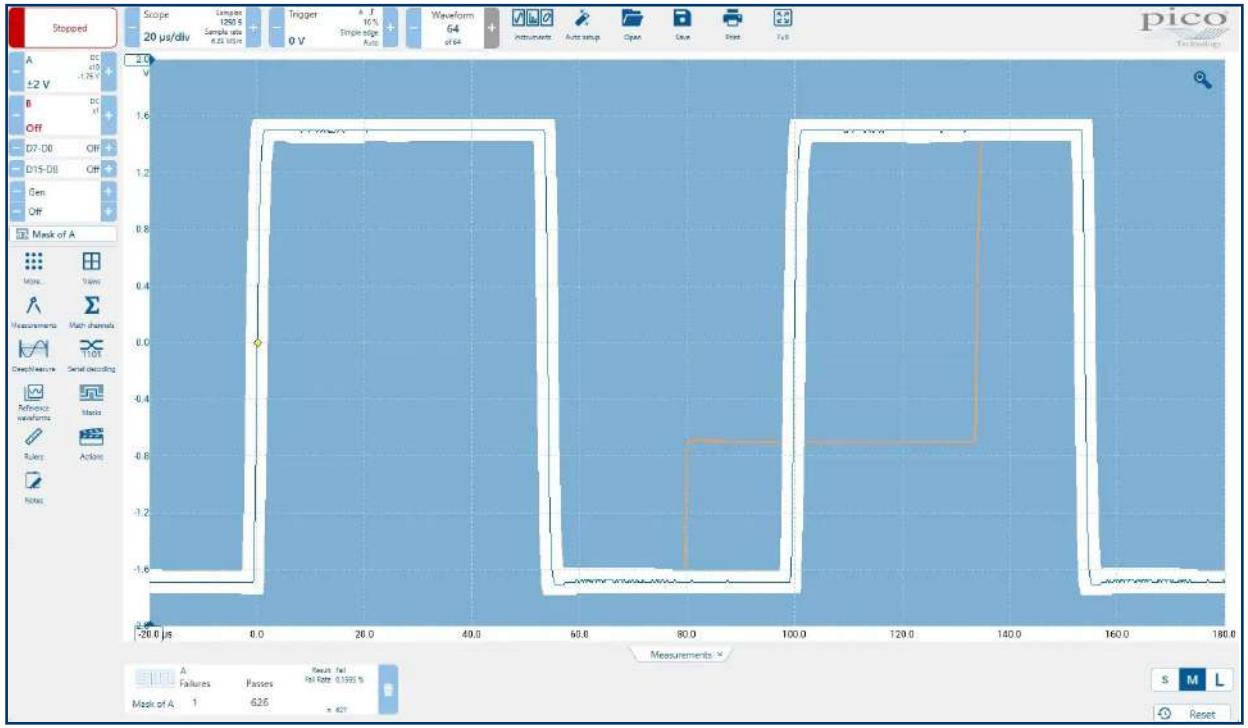
See a comprehensive list of decoded frames, including all data, flags and identifiers. Use filtering to focus on specific frames or search for frames with particular properties. The statistics option gives deeper insight into the physical layer, revealing frame times and voltage levels. Click any frame in the table to zoom into its corresponding waveform.

Export and offline analysis

Easily export table view data for offline viewing and analysis, ensuring you can work with your data whenever and wherever you need.

Link file feature

Accelerate your analysis by cross-referencing values to human readable text. PicoScope can import a spreadsheet to decode the hexadecimal data into user-defined text strings.



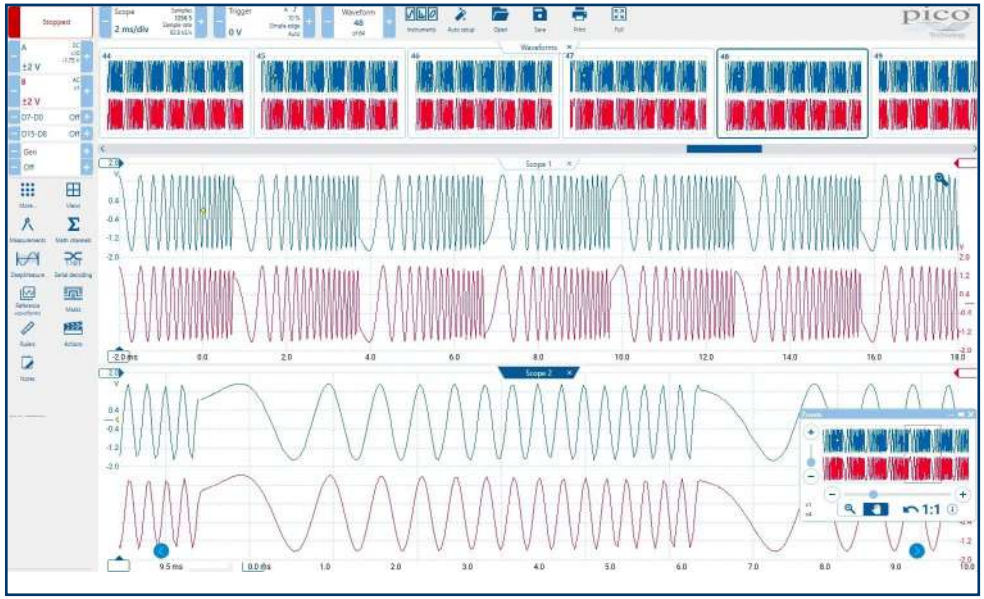
Mask limit testing

Mask limit testing allows you to compare live signals against known good signals, and is designed for production and debugging environments. Simply capture a known good signal, draw a mask around it, and then attach the system under test. PicoScope will check for mask violations and perform pass/fail testing, capture intermittent glitches, and can show a failure count and other statistics in the Measurements window.

Waveform buffer and navigator

Ever spotted a glitch on a waveform, but by the time you've stopped the scope it has gone? With PicoScope you no longer need to worry about missing glitches or other transient events. PicoScope can store the last 40000 oscilloscope or spectrum waveforms in its circular waveform buffer.

The buffer navigator provides an efficient way of navigating and searching through waveforms, effectively letting you turn back time. Tools such as mask limit testing can also be used to scan through each waveform in the buffer looking for mask violations.



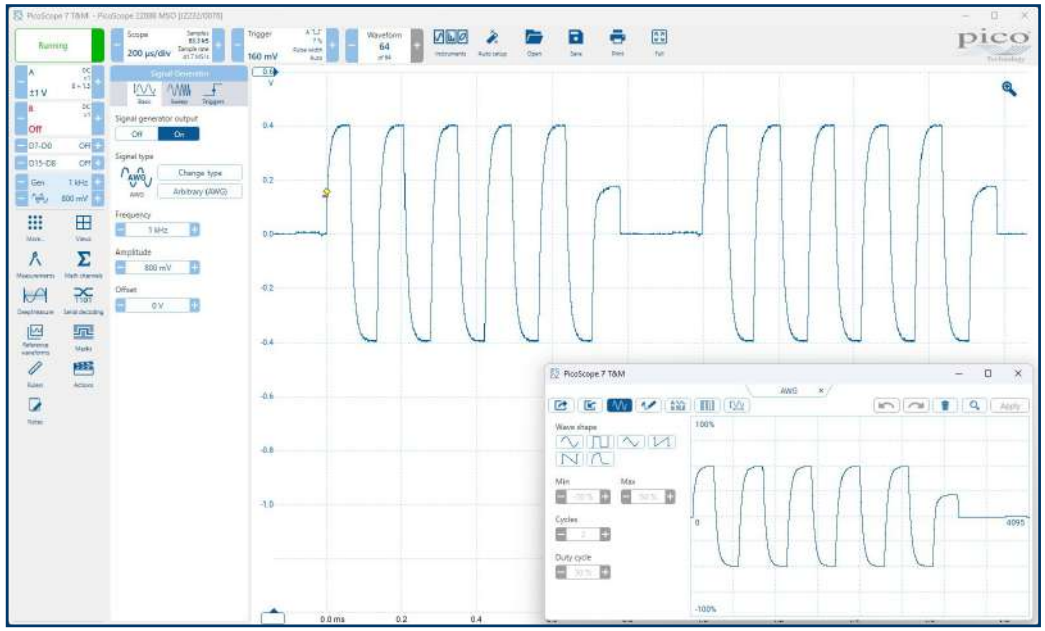
Arbitrary waveform and function generator

All PicoScope 2000 Series oscilloscopes have a built-in function generator and arbitrary waveform generator (AWG) which output signals on a front panel BNC.

The function generator can produce sine, square, triangle and DC level waveforms, and many more besides, while the AWG allows you to import custom waveforms from data files or create and modify them using the built-in graphical AWG editor.

As well as level, offset and frequency controls, advanced options allow you to sweep over a range of frequencies. Combined with the advanced spectrum mode, with options including peak hold, averaging and linear/log axes, this creates a powerful tool for testing amplifier and filter responses.

PicoScope 2000B models have trigger options that allow one or more cycles of a waveform to be output when various conditions are met, such as the scope triggering or a mask limit test failing.

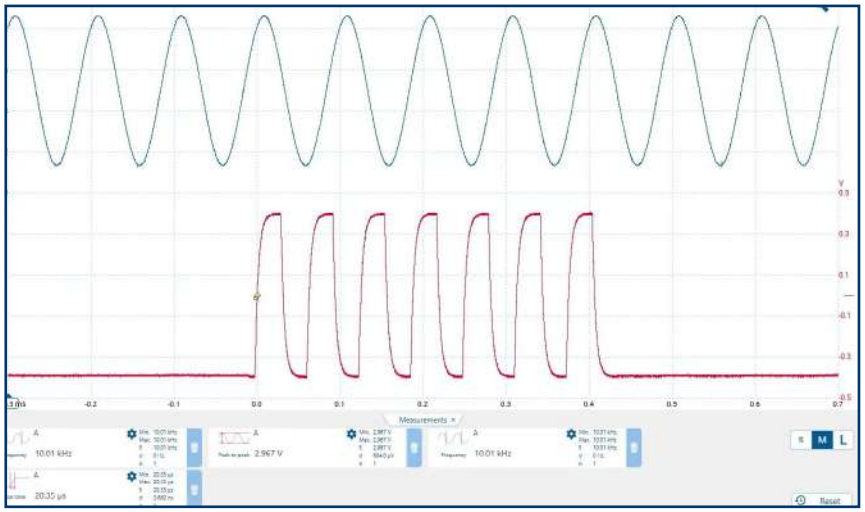


Automatic measurements

PicoScope provides many built-in, pre-defined measurements that can be applied to waveforms displayed on the graph. Advanced DSP technology ensures that the measurements are made with high accuracy and repeatability.

Furthermore, if the DUT waveform characteristics change over time, the measurements track and display current results based on the live waveform.

Statistics can be displayed to show Average, Mean, Maximum, Minimum and Standard Deviation values for the duration of a test.



Measurements: pass/failure limits

PicoScope software offers pass/failure limits for any measurement. This gives a visual indication within the measurement window whenever the measurement result goes above or below a specified value. Pass/failure limits can be combined with actions to immediately alert the user or execute other actions when a measurement threshold has been exceeded, either above or below set limits. By filtering the waveform buffer to show only those waveforms failing a measurement limit, you can quickly identify points of interest out of the thousands of waveforms captured in the deep memory of your PicoScope.

Measurements: logging (trending)

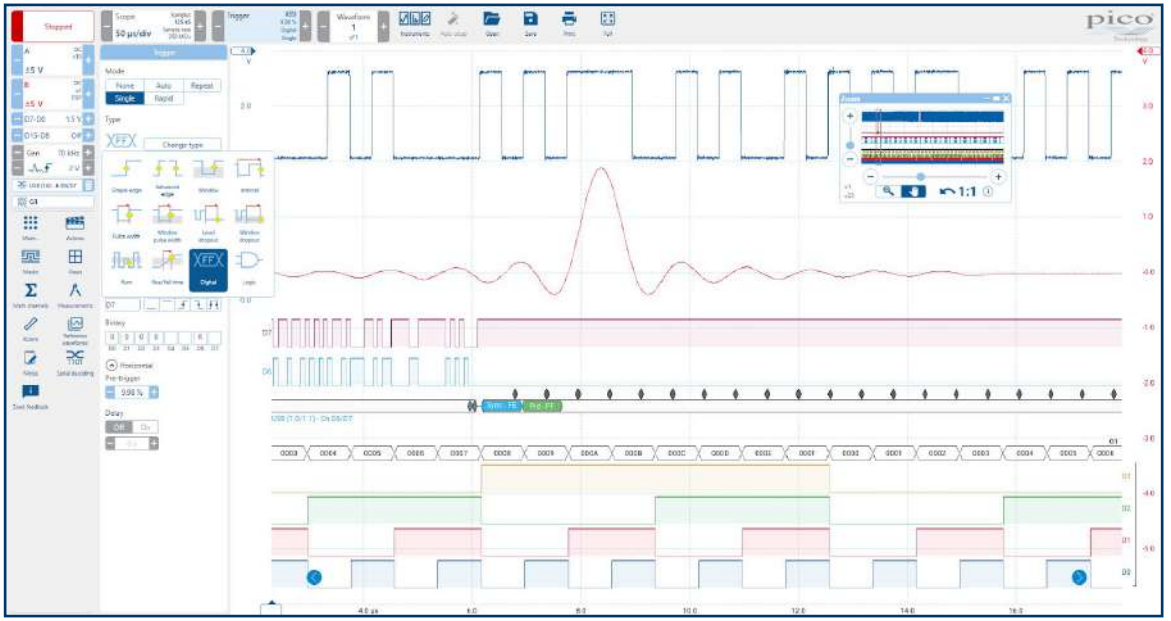
PicoScope allows the results of measurements to be recorded in a file for later analysis. The resulting log can be used to characterize the performance of a circuit over medium or long-duration tests – such as when evaluating drift due to thermal and other effects, or can be used to check functionality against an externally controlled variable such as supply voltage.

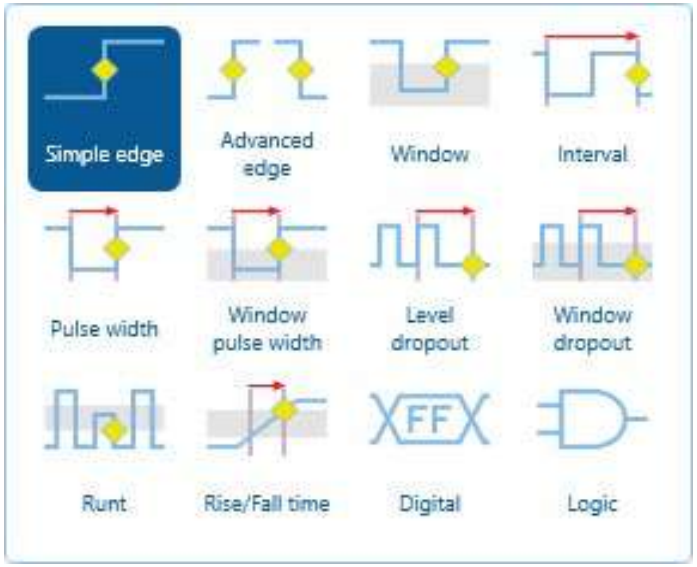
Digital triggering architecture

The majority of digital oscilloscopes still use an analog trigger architecture based on comparators. This causes time and amplitude errors that cannot always be calibrated out and often limits the trigger sensitivity at high bandwidths.

In 1991 Pico pioneered the use of fully digital triggering using the actual digitized data. This technique reduces trigger errors and allows our oscilloscopes to trigger on the smallest signals, even at the full bandwidth. Trigger levels and hysteresis can be set with high precision and resolution.

The reduced rearm delay provided by digital triggering, together with segmented memory, allows the capture of events that happen in rapid sequence. On many of our products, rapid triggering can capture a new waveform every microsecond until the buffer is full.





Advanced triggers

The PicoScope 2000 Series offers a set of advanced trigger types including pulse width, runt pulse, windowed, rise/fall time[1], logic and dropout that function across the full scope bandwidth.

Each advanced trigger type includes controls to precisely configure the events to be triggered on. For example, with the pulse width trigger you can select positive, negative, or either-direction pulses, and the time condition to be applied:

- Less than a minimum duration
- Greater than a maximum duration
- Inside the range between two user-specified time limits
- Outside the range between two user-specified time limits

The digital trigger available on MSO models allows you to trigger the scope when any or all of the 16 digital inputs match a user-defined pattern. You can specify a condition for each channel individually, or set up a pattern for all channels at once using a hexadecimal or binary value.

The logic trigger function also allows you to trigger on combinations of edge or window triggers on any of the analog inputs, for example to trigger on edges on channel A only when channel B is also high, or to trigger when any of the channels goes outside a specified voltage range.

[1] Runt pulse and rise/fall time triggers are only available on certain models, see the specifications table for details.

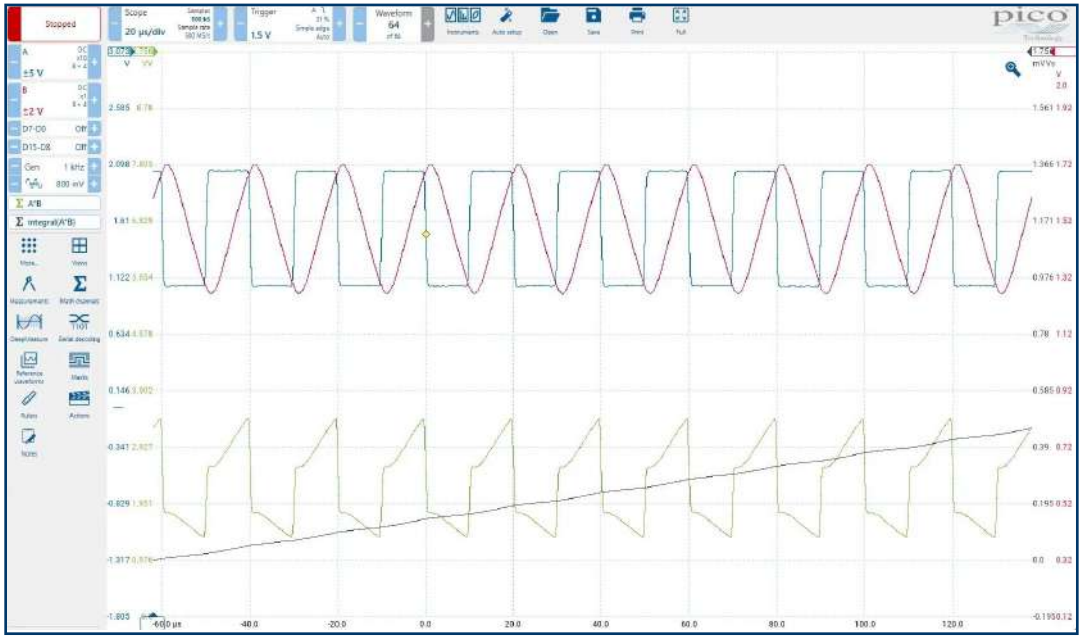
Math channels and filters

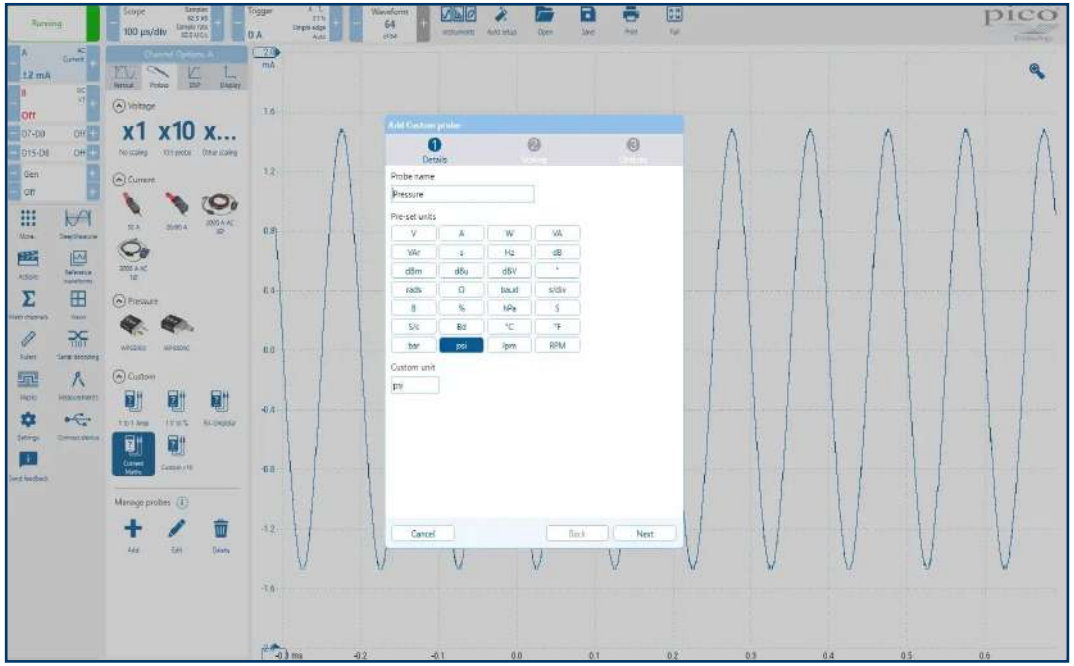
On many oscilloscopes waveform math just means simple calculations such as A + B. With a PicoScope it means much, much more.

With PicoScope software you can select simple functions such as addition and inversion, or open the equation editor to create complex functions involving filters (lowpass, highpass, bandpass and bandstop filters), trigonometry, exponentials, logarithms, statistics, integrals and derivatives.

Waveform math also allows you to plot live signals alongside historic peak, averaged or filtered waveforms.

You can also use math channels to reveal new details in complex signals. An example would be to graph the changing duty cycle or frequency of your signal over time.





Custom probes

The custom probes feature allows you to correct for gain, attenuation, offsets and nonlinearities in probes, sensors or transducers that you connect to the oscilloscope. This could be used to scale the output of a current probe so that it correctly displays amperes. A more advanced use would be to scale the output of a nonlinear temperature sensor using the table lookup function.

Definitions for standard Pico-supplied oscilloscope probes and current clamps are included. User-created probes may be saved for later use.

PicoLog® 6 software

PicoLog 6 allows sample rates of up to 1 kS/s per channel, and is ideal for long-term observation of general parameters, such as voltage or current levels, on several channels at the same time. It is less suitable for waveshape or harmonic analysis: use the PicoScope software for these tasks.

You can also use PicoLog 6 to view data from your oscilloscope alongside a data logger or other device. For example, you could measure voltage and current with your PicoScope and plot both against temperature using a **TC-08 thermocouple data logger**.

PicoLog 6 is available for Windows, macOS and Linux, including Raspberry Pi OS.

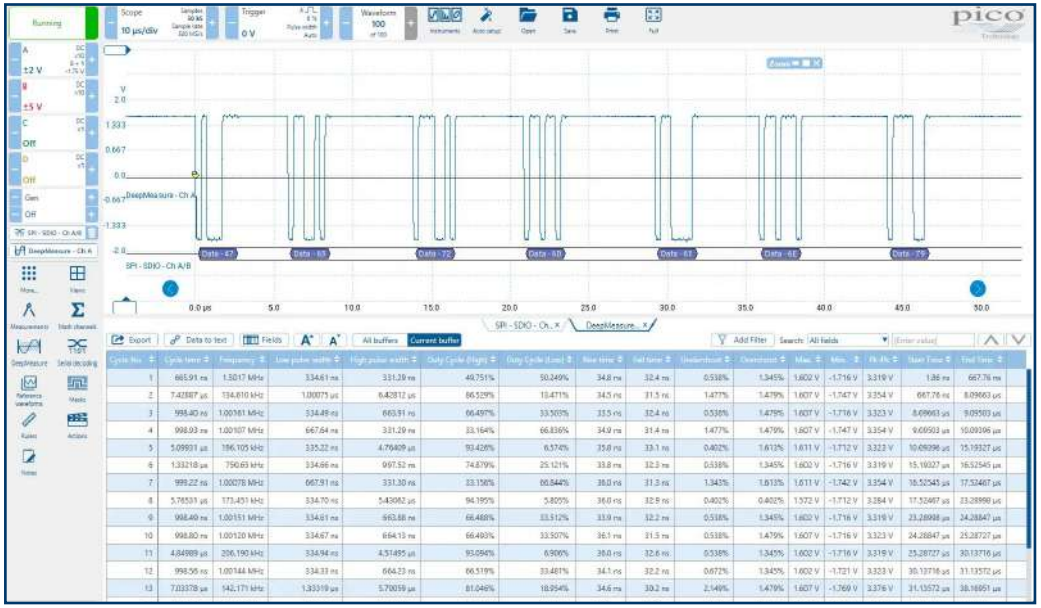
DeepMeasure™

One waveform, millions of measurements.

Measurement of waveform pulses and cycles is crucial for verifying the performance of electrical and electronic devices. DeepMeasure delivers automatic measurements of key waveform parameters, including pulse width, rise time and voltage.

Up to a million cycles can be displayed with each triggered acquisition, or combined across multiple acquisitions. Results can be easily sorted, analyzed and correlated with the waveform display or exported as a .CSV file or spreadsheet for further analysis.

For example, use DeepMeasure to capture up to 40 000 pulses and quickly find those with the largest or smallest amplitude, or use the scope's deep memory of a PicoScope 2000B to record a million cycles of one waveform and export the rise time of every single edge for statistical analysis.



Kit contents and accessories

The PicoScope 2000 Series oscilloscope kit contains the following items:

- Two or four x1/x10 passive probes (except kits specified as without probes)
- Digital input cable (MSO models only)
- 20 logic test clips (MSO models only)
- USB-C® to USB-B (2.0) cable, 1.2 m
- USB-A to USB-B (2.0) cable, 1.8 m
- Quick Start Guide

Probes, cables and clips

Your PicoScope 2000 Series oscilloscope kit comes with probes trimmed to match the performance of your oscilloscope.

MSO models are also supplied with an MSO cable and 20 test clips.

Oscilloscope probe

20-way 25 cm digital MSO cable

MSO test clips

Quick product selector

VIEW your waveform with a low-cost USB-powered and connected oscilloscope.

All standard PicoScope features are included: automatic measurements, serial decoding, persistence displays, mask limit testing, spectrum analysis, arbitrary waveform generator and more.

ANALYZE your waveform with a high-performance USB-powered and connected oscilloscope.

Deep memory allows you to capture over long time periods at high sampling rates. You can then zoom in on your data without having to recapture. This is essential when you need to analyze one-off events with detailed timing resolution.

The arbitrary waveform generator can store complex waveforms in its large memory buffer, allowing you to test your design with realistic inputs.

2-channel oscilloscopes

Model	PicoScope 2204A	PicoScope 2205A	PicoScope 2206B	PicoScope 2207B	PicoScope 2208B
Bandwidth	10 MHz	25 MHz	50 MHz	70 MHz	100 MHz
Maximum sampling rate	100 MS/s	200 MS/s	500 MS/s	1 GS/s	1 GS/s
Capture memory	8 kS	16 kS	32 MS	64 MS	128 MS
AWG bandwidth	100 kHz	100 kHz	1 MHz	1 MHz	1 MHz

4-channel oscilloscopes

Model	PicoScope 2405A	PicoScope 2406B	PicoScope 2407B	PicoScope 2408B
Bandwidth	25 MHz	50 MHz	70 MHz	100 MHz
Maximum sampling rate	500 MS/s	1 GS/s	1 GS/s	1 GS/s
Capture memory	48 kS	32 MS	64 MS	128 MS
AWG bandwidth	1 MHz	1 MHz	1 MHz	1 MHz

Mixed-signal oscilloscopes

2 analog + 16 digital inputs

Model	PicoScope 2205A MSO	PicoScope 2206B MSO	PicoScope 2207B MSO	PicoScope 2208B MSO
Bandwidth	25 MHz	50 MHz	70 MHz	100 MHz
Maximum sampling rate	500 MS/s	1 GS/s	1 GS/s	1 GS/s
Capture memory	48 kS	32 MS	64 MS	128 MS
AWG bandwidth	1 MHz	1 MHz	1 MHz	1 MHz

PicoScope 2000 Series specifications – 2-channel oscilloscopes					
	PicoScope 2204A	PicoScope 2205A	PicoScope 2206B	PicoScope 2207B	PicoScope 2208B
Vertical					
Bandwidth (–3 dB)	10 MHz	25 MHz	50 MHz	70 MHz	100 MHz
Rise time (calculated)	35 ns	14 ns	7 ns	5 ns	3.5 ns
Software lowpass filter	Not applicable		Configurable software lowpass filter		
Vertical resolution	8 bits		8 bits		
Enhanced vertical resolution	Up to 12 bits		Up to 12 bits		
Input ranges	±50 mV, ±100 mV, ±200 mV, ±500 mV, ±1 V, ±2 V, ±5 V, ±10 V, ±20 V		±20 mV, ±50 mV, ±100 mV, ±200 mV, ±500 mV, ±1 V, ±2 V, ±5 V, ±10 V, ±20 V		
Input sensitivity	10 mV/div to 4 V/div (10 vertical divisions)		4 mV/div to 4 V/div (10 vertical divisions)		
Input coupling	AC / DC		AC / DC		
Input connector	Single-ended, BNC(f)		Single-ended, BNC(f)		
Input characteristics	1 MΩ ± 1% ‖ 15 pF ± 2 pF		1 MΩ ± 1% ‖ 16 pF ± 1 pF		
Analog offset range (vertical position adjustment)	None		±250 mV (20 mV to 200 mV ranges) ±2.5 V (500 mV to 2 V ranges) ±20 V (5 V to 20 V ranges)		
Analog offset control accuracy	Not applicable		±1% of offset setting, additional to basic DC accuracy		
DC accuracy	±3% of full scale ±200 µV		±3% of full scale ±200 µV		
Overvoltage protection	±100 V (DC + AC peak) up to 10 kHz		±100 V (DC + AC peak) up to 10 kHz		
Horizontal (timebase)					
Maximum sampling rate (real-time) 1 ch. 2 ch.	100 MS/s 50 MS/s	200 MS/s (Ch. A) 100 MS/s	500 MS/s 250 MS/s	1 GS/s 500 MS/s	
Equivalent-time sampling rate (ETS)	2 GS/s	4 GS/s	5 GS/s	10 GS/s	
Maximum sampling rate (USB streaming)	1 MS/s		9.6 MS/s (31 MS/s with PicoSDK)		
Shortest timebase	10 ns/div	5 ns/div	2 ns/div	1 ns/div	
Longest timebase	5000 s/div		5000 s/div		
Capture memory (block mode, shared between active channels)	8 kS	16 kS	32 MS	64 MS	128 MS
Capture memory (USB streaming mode, PicoScope 7)	100 MS (shared between active channels)		250 MS (shared between active channels)		
Capture memory (USB streaming mode, PicoSDK)	Up to available PC memory		Up to available PC memory		
Waveform buffers (PicoScope 7)	10 000		40 000		
Maximum waveforms per second	2000		80 000		

PicoScope 2000 Series specifications – 2-channel oscilloscopes					
	PicoScope 2204A	PicoScope 2205A	PicoScope 2206B	PicoScope 2207B	PicoScope 2208B
Initial timebase accuracy	±100 ppm		±50 ppm		
Timebase drift	±5 ppm/year		±5 ppm/year		
Sample jitter	30 ps RMS typical		20 ps RMS typical	3 ps RMS typical	
ADC sampling	Simultaneous sampling on all enabled channels		Simultaneous sampling on all enabled channels		
Dynamic performance (typical)					
Crosstalk (full bandwidth, equal ranges)	Better than 200:1		Better than 300:1		
Harmonic distortion	< –50 dB at 100 kHz, full-scale input, typical		< –50 dB at 100 kHz, full-scale input, typical		
SFDR (100 kHz, full-scale input, typical)	> 52 dB		±20 mV range: > 44 dB ±50 mV range and higher: > 52 dB		
Noise	< 150 µV RMS (±50 mV range)		< 220 µV RMS (±20 mV range)	< 300 µV RMS (±20 mV range)	
Bandwidth flatness	(+0.3 dB, –3 dB) from DC to full bandwidth		(+0.3 dB, –3 dB) from DC to full bandwidth		
Triggering					
Sources	Ch A, Ch B		Ch A, Ch B		
Trigger modes	None, auto, repeat, single		None, auto, repeat, single, rapid (segmented memory)		
Advanced triggers	Edge, window, pulse width, window pulse width, dropout, window dropout, interval, logic		Edge, window, pulse width, window pulse width, dropout, window dropout, interval, runt pulse, logic, rise/ fall time		
Trigger types, ETS	Rising or falling edge		Rising or falling edge (available on Ch A only)		
Segmented memory buffers (PicoSDK)	N/A		128 000	256 000	500 000
Segmented memory buffers (PicoScope software)	N/A		40 000		
Trigger sensitivity, real-time	Digital triggering provides 1 LSB accuracy up to full bandwidth		Digital triggering provides 1 LSB accuracy up to full bandwidth		
Trigger sensitivity, ETS	10 mV p-p, typical, at full bandwidth		10 mV p-p, typical, at full bandwidth		
Maximum pre-trigger capture	100% of capture size		100% of capture size		
Maximum post-trigger delay	4 billion samples		4 billion samples		
Trigger rearm time	PC-dependent		< 2 µs at 500 MS/s sampling rate	< 1 µs at 1 GS/s sampling rate	
Maximum trigger rate	PC-dependent		10 000 waveforms in a 12 ms burst, at 500 MS/s sampling rate, typical	10 000 waveforms in a 6 ms burst, at 1 GS/s sampling rate, typical	

PicoScope 2000 Series specifications – 4-channel oscilloscopes				
	PicoScope 2405A	PicoScope 2406B	PicoScope 2407B	PicoScope 2408B
Vertical				
Bandwidth (–3 dB)	25 MHz	50 MHz	70 MHz	100 MHz
Rise time (calculated)	14 ns	7 ns	5 ns	3.5 ns
Software lowpass filter	Not applicable	Configurable lowpass filter		
Vertical resolution	8 bits	8 bits		
Enhanced vertical resolution	Up to 12 bits	Up to 12 bits		
Input ranges	±20 mV, ±50 mV, ±100 mV, ±200 mV, ±500 mV, ±1 V, ±2 V, ±5 V, ±10 V, ±20 V	±20 mV, ±50 mV, ±100 mV, ±200 mV, ±500 mV, ±1 V, ±2 V, ±5 V, ±10 V, ±20 V		
Input sensitivity	4 mV/div to 4 V/div (10 vertical divisions)	4 mV/div to 4 V/div (10 vertical divisions)		
Input coupling	AC / DC	AC / DC		
Input characteristics	1 MΩ ± 1% ‖ 16 pF ± 1 pF	1 MΩ ± 1% ‖ 16 pF ± 1 pF		
Input connector	Single-ended, BNC(f)	Single-ended, BNC(f)		
Analog offset range (vertical position adjustment)	±250 mV (20 mV to 200 mV ranges) ±2.5 V (500 mV to 2 V ranges) ±20 V (5 V to 20 V ranges)	±250 mV (20 mV to 200 mV ranges) ±2.5 V (500 mV to 2 V ranges) ±20 V (5 V to 20 V ranges)		
Analog offset control accuracy	±1% of offset setting, additional to basic DC accuracy	±1% of offset setting, additional to basic DC accuracy		
DC accuracy	±3% of full scale ±200 µV	±3% of full scale ±200 µV		
Overvoltage protection	±100 V (DC + AC peak) up to 10 kHz	±100 V (DC + AC peak) up to 10 kHz		
Horizontal (timebase)				
Maximum sampling rate (real-time) 1 ch. 2 ch. 3 or 4 ch.	500 MS/s 250 MS/s 125 MS/s	1 GS/s 500 MS/s 250 MS/s		
Equivalent-time sampling rate (ETS)	5 GS/s	10 GS/s		
Maximum sampling rate (USB streaming)	8.9 MS/s (31 MS/s with PicoSDK)	9.6 MS/s (31 MS/s with PicoSDK)		
Shortest timebase	2 ns/div	2 ns/div	1 ns/div	
Longest timebase	5000 s/div	5000 s/div		
Capture memory (block mode, shared between active channels)	48 kS	32 MS	64 MS	128 MS
Capture memory (USB streaming mode, PicoScope 7)	250 MS (shared between active channels)	250 MS (shared between active channels)		
Capture memory (USB streaming mode, PicoSDK)	Up to available PC memory	Up to available PC memory		
Waveform buffers (PicoScope 7)	10 000	40 000		
Maximum waveforms per second	2000	80 000		

PicoScope 2000 Series specifications – 4-channel oscilloscopes				
	PicoScope 2405A	PicoScope 2406B	PicoScope 2407B	PicoScope 2408B
Initial timebase accuracy	±50 ppm	±50 ppm		
Timebase drift	±5 ppm/year	±5 ppm/year		
Sample jitter	20 ps RMS, typical	3 ps RMS, typical		
ADC sampling	Simultaneous sampling on all enabled channels	Simultaneous sampling on all enabled channels		
Dynamic Triggering performance (typical)				
Crosstalk (full bandwidth, equal ranges)	Better than 300:1	Better than 300:1		
Harmonic distortion	< –50 dB at 100 kHz, full-scale input, typical	< –50 dB at 100 kHz, full-scale input, typical		
SFDR (100 kHz, full-scale input, typical)	±20 mV range: > 44 dB ±50 mV range and higher: > 52 dB	±20 mV range: > 44 dB ±50 mV range and higher: > 52 dB		
Noise (±20 mV range)	<150 µV RMS	< 220 µV RMS	< 300 µV RMS	
Bandwidth flatness	(+0.3 dB, –3 dB) from DC to full bandwidth, typical	(+0.3 dB, –3 dB) from DC to full bandwidth, typical		
Triggering				
Source	Ch A, Ch B, Ch C, Ch D	Ch A, Ch B, Ch C, Ch D		
Trigger modes	None, auto, repeat, single, rapid (segmented memory)	None, auto, repeat, single, rapid (segmented memory)		
Advanced trigger types	Edge, window, pulse width, window pulse width, dropout, window dropout, interval, runt pulse, logic	Edge, window, pulse width, window pulse width, dropout, window dropout, interval, runt pulse, logic, rise / fall time		
Trigger types, ETS	Rising or falling edge (available on Ch A only)	Rising or falling edge (available on Ch A only)		
Segmented memory buffers (PicoSDK)	96	128 000	256 000	500 000
Segmented memory buffers (PicoScope 7)	96	40 000		
Trigger sensitivity, real time	Digital triggering provides 1 LSB accuracy up to full bandwidth	Digital triggering provides 1 LSB accuracy up to full bandwidth		
Trigger sensitivity ETS	10 mV p-p, typical, at full bandwidth	10 mV p-p, typical, at full bandwidth		
Maximum pre-trigger capture	100% of capture size	100% of capture size		
Maximum post-trigger delay	4 billion samples	4 billion samples		
Trigger rearm time	< 2 µs at 500 MS/s sampling rate	< 1 µs at 1GS/s sampling rate		
Maximum trigger rate	96 waveforms in a 192 µs burst, at 500 MS/s sampling rate, typical	10 000 waveforms in a 6 ms burst, at 1 GS/s sampling rate, typical		

PicoScope 2000 Series specifications – mixed-signal oscilloscopes				
	PicoScope 2205A MSO	PicoScope 2206B MSO	PicoScope 2207B MSO	PicoScope 2208B MSO
Vertical (analog inputs)				
Input channels	2	2		
Bandwidth (–3 dB)	25 MHz	50 MHz	70 MHz	100 MHz
Rise time (calculated)	14 ns	7 ns	5 ns	3.5 ns
Software lowpass filter	Not applicable	Configurable software lowpass filter		
Vertical resolution	8 bits	8 bits		
Enhanced vertical resolution	Up to 12 bits	Up to 12 bits		
Input ranges	±20 mV, ±50 mV, ±100 mV, ±200 mV, ±500 mV, ±1 V, ±2 V, ±5 V, ±10 V, ±20 V	±20 mV, ±50 mV, ±100 mV, ±200 mV, ±500 mV, ±1 V, ±2 V, ±5 V, ±10 V, ±20 V		
Input sensitivity	4 mV/div to 4 V/div (10 vertical divisions)	4 mV/div to 4 V/div (10 vertical divisions)		
Input coupling	AC / DC	AC / DC		
Input connector	Single-ended, BNC(f)	Single-ended, BNC(f)		
Input characteristics	1 MΩ ± 1% ‖ 16 pF ± 1 pF	1 MΩ ± 1% ‖ 16 pF ± 1 pF		
Analog offset range (vertical position adjustment)	±250 mV (20 mV to 200 mV ranges) ±2.5 V (500 mV to 2 V ranges) ±20 V (5 V to 20 V ranges)	±250 mV (20 mV to 200 mV ranges) ±2.5 V (500 mV to 2 V ranges) ±20 V (5 V to 20 V ranges)		
Analog offset control accuracy	±1% of offset setting, additional to basic DC accuracy	±1% of offset setting, additional to basic DC accuracy		
DC accuracy	±3% of full scale ±200 µV	±3% of full scale ±200 µV		
Overvoltage protection	±100 V (DC + AC peak) up to 10 kHz	±100 V (DC + AC peak) up to 10 kHz		
Vertical (digital inputs)				
Input channels	16 (two 8-bit ports)	16 (two 8-bit ports)		
Input connector	2.54 mm pitch, 10 x 2 way connector	2.54 mm pitch, 10 x 2 way connector		
Maximum input frequency	100 MHz (200 Mb/s)	100 MHz (200 Mb/s)		
Minimum detectable pulse width	5 ns	5 ns		
Input impedance	200 kΩ ±2% ‖ 8 pF ±2 pF	200 kΩ ±2% ‖ 8 pF ±2 pF		
Input dynamic range	±20 V	±20 V		
Threshold range	±5 V	±5 V		
Threshold grouping	Two independent threshold controls. Port 0: D0 to D7, Port 1: D8 to D15	Two independent threshold controls. Port 0: D0 to D7, Port 1: D8 to D15		
Port threshold accuracy	±350 mV (inclusive of hysteresis)	±350 mV (inclusive of hysteresis)		
Hysteresis	< ±250 mV	< ±250 mV		
Minimum input voltage swing	500 mV pk-pk	500 mV pk-pk		
Channel-to-channel skew	2 ns, typical	2 ns, typical		
Minimum input slew rate	10 V/µs	10 V/µs		
Overvoltage protection	±50 V	±50 V		

PicoScope 2000 Series specifications – mixed-signal oscilloscopes				
	PicoScope 2205A MSO	PicoScope 2206B MSO	PicoScope 2207B MSO	PicoScope 2208B MSO
Horizontal (timebase)				
Maximum sampling rate (real-time) 1 analog ch. 1 digital port 2 channels/ports Other	 500 MS/s 500 MS/s 250 MS/s 250 MS/s	 1 GS/s 500 MS/s 500 MS/s 250 MS/s		
Equivalent-time sampling rate (ETS)	5 GS/s	10 GS/s		
Maximum sampling rate (USB streaming)	8.9 MS/s (31 MS/s with PicoSDK)	9.6 MS/s (31 MS/s with PicoSDK)		
Shortest timebase	2 ns/div	2 ns/div	1 ns/div	
Longest timebase	5000 s/div	5000 s/div		
Capture memory (block mode, shared between active channels)	48 kS	32 MS	64 MS	128 MS
Capture memory (USB streaming mode, PicoScope 7)	250 MS (shared between active channels)	250 MS (shared between active channels)		
Capture memory (USB streaming mode, PicoSDK)	Up to available PC memory	Up to available PC memory		
Waveform buffers (PicoScope 7)	10 000	40 000		
Maximum waveforms per second	2000	80 000		
Initial timebase accuracy	±50 ppm	±50 ppm		
Timebase drift	±5 ppm/year	±5 ppm/year		
Sample jitter	20 ps RMS, typical	3 ps RMS, typical		
ADC sampling	Simultaneous sampling on all enabled channels	Simultaneous sampling on all enabled channels		
Dynamic performance (typical)				
Crosstalk (full bandwidth, equal ranges)	Better than 300:1	Better than 300:1		
Harmonic distortion	< −50 dB at 100 kHz, full-scale input, typical	< −50 dB at 100 kHz, full-scale input, typical		
SFDR (100 kHz, full-scale input, typical)	±20 mV range: > 44 dB ±50 mV range and higher: > 52 dB	±20 mV range: > 44 dB ±50 mV range and higher: > 52 dB		
Noise (±20 mV range)	< 150 µV RMS	< 220 µV RMS	< 300 µV RMS	
Bandwidth flatness	(+0.3 dB, −3 dB) from DC to full bandwidth, typical	(+0.3 dB, −3 dB) from DC to full bandwidth, typical		
Triggering				
Sources	Ch A, Ch B, Digital 0–15	Ch A, Ch B, Digital 0–15		
Trigger modes	None, auto, repeat, single, rapid (segmented memory)	None, auto, repeat, single, rapid (segmented memory)		
Advanced triggers (analog inputs)	Edge, window, pulse width, window pulse width, dropout, window dropout, interval, runt pulse, logic	Edge, window, pulse width, window pulse width, dropout, window dropout, interval, runt pulse, logic, rise / fall time		

PicoScope 2000 Series specifications – mixed-signal oscilloscopes				
	PicoScope 2205A MSO	PicoScope 2206B MSO	PicoScope 2207B MSO	PicoScope 2208B MSO
Advanced triggers (digital inputs)	Edge, pulse width, dropout, interval, logic, pattern, mixed signal	Edge, pulse width, dropout, interval, logic, pattern, mixed signal		
Trigger types, ETS	Rising or falling edge (available on Ch A only)	Rising or falling edge (available on Ch A only)		
Segmented memory buffers (PicoSDK)	96	128 000	256 000	500 000
Segmented memory buffers (PicoScope 7)	96	40 000		
Trigger sensitivity, real-time (analog channels)	Digital triggering provides 1 LSB accuracy up to full bandwidth	Digital triggering provides 1 LSB accuracy up to full bandwidth		
Trigger sensitivity, ETS (analog channels)	10 mV p-p, typical, at full bandwidth	10 mV p-p, typical, at full bandwidth		
Maximum pre-trigger capture	100% of capture size	100% of capture size		
Maximum post-trigger delay	4 billion samples	4 billion samples		
Trigger rearm time	< 2 µs at 500 MS/s sampling rate	< 1 µs at 1 GS/s sampling rate		
Maximum trigger rate	96 waveforms in a 192 µs burst, at 500 MS/s sampling rate, typical	10 000 waveforms in a 6 ms burst, at 1 GS/s sampling rate, typical		

PicoScope 2000 Series specifications – signal generator			
	PicoScope 2204A & 2205A	PicoScope 2405A & 2205A MSO	All B models
Function generator			
Standard output signals	Sine, square, triangle, DC voltage, ramp, sinc, Gaussian, half-sine	Sine, square, triangle, DC voltage, ramp, sinc, Gaussian, half-sine	
Pseudorandom output signals	None	White noise, PRBS	
Standard signal frequency	0.1Hz to 100 kHz	0.03Hz to 1 MHz	
Sweep modes	Up, down, dual with selectable start/stop frequencies and increments	Up, down, dual with selectable start/stop frequencies and increments	
Triggering	None	Free-run or up to 1 billion waveform cycles or frequency sweeps. Triggered from scope trigger or manually.	
Output frequency accuracy	Oscilloscope timebase accuracy ± output frequency resolution	Oscilloscope timebase accuracy ± output frequency resolution	
Output frequency resolution	< 0.02 Hz	< 0.01 Hz	
Output voltage range	±2 V	±2 V	
Output adjustments	Any amplitude and offset within ±2 V range	Any amplitude and offset within ±2 V range	
Amplitude flatness (typical)	< 1 dB to 100 kHz	< 0.5 dB to 1 MHz	
DC accuracy	±1% of full scale	±1% of full scale	
SFDR (typical)	> 55 dB at 1 kHz full-scale sine wave	> 60 dB at 10 kHz full-scale sine wave	
Output characteristics	Front panel BNC, 600 Ω output impedance	Front panel BNC, 600 Ω output impedance	
Overvoltage protection	±20 V	±20 V	
Arbitrary waveform generator			
Update rate	1.548 MS/s	20 MS/s	
Buffer size	4 kS	8 kS	32 kS
Resolution	12 bits	12 bits	
Bandwidth	> 100 kHz	> 1 MHz	
Rise time (10% to 90%)	< 2 µs	< 120 ns	
Spectrum analyzer			
Frequency range	DC to analog bandwidth of oscilloscope		
Display modes	Magnitude, average, peak hold		
Windowing functions	Rectangular, Gaussian, triangular, Blackman, Blackman-Harris, Hamming, Hann, flat-top		
Number of FFT points	Selectable from 128 to half available capture memory in powers of two up to 2^20		
Math channels			
Functions	−x, x+y, x−y, x*y, x/y, x^y, sqrt, exp, ln, log, abs, norm, sign, sin, cos, tan, arcsin, arccos, arctan, sinh, cosh, tanh, delay, average, frequency, derivative, integral, min, max, peak, duty, highpass, lowpass, bandpass, bandstop, coupler, top, base, amplitude, positive overshoot, negative overshoot, phase, delay, moving, deskew, true power, apparent power, reactive power, power factor, area AC, positive area AC, negative area AC, abs area AC, area DC, positive area DC, negative area DC, abs area DC		

Operands		A to D (input channels), D0-D15 (digital channels), T (time), reference waveforms, pi, constants
Automatic measurements		
Scope mode	Amplitude	Minimum, maximum, base, top, negative overshoot, positive overshoot, peak to peak, amplitude, mean, RMS, RMS ripple
	Time	Frequency, cycle time, negative duty cycle, positive duty cycle, edge count (rising, falling, either), high pulse width, low pulse width, rise time, fall time, rising rate, falling rate
	Multi-channel	Phase, delay
	Power	True power, apparent power, reactive power, power factor, DC power, crest factor, area at AC, positive area at AC, negative area at AC, absolute area at AC, area at DC, positive area at DC, negative area at DC, absolute area at DC
Spectrum mode		Frequency at peak, amplitude at peak, THD dB, SNR, SINAD, SFDR, total power, average amplitude at peak, THD %, THD+N, IMD
Statistics		Minimum, maximum, average and standard deviation
Serial decoding		
Protocols		10BASE-T1S, 1-Wire, ARINC 429, BroadRReach, CAN, CAN FD, CAN XL, DALI, DCC, Differential Manchester, DMX512, Ethernet 10BASE-T, Extended UART, Fast Ethernet 100BASE-TX, FlexRay, I2C, I2S, I3C BASIC v1.0, LIN, Manchester, MIL-STD-1553, MODBUS ASCII, MODBUS RTU, NMEA-0183, Parallel Bus, PMBus, PS/2, PSI5 (Sensor), Quadrature, RS232/UART, SBS Data, SENT Fast, SENT Slow, SENT SPC, SMBus, SPI-MISO/MOSI, SPI-SDIO, USB (1.0/1.1), Wind Sensor[2]
[2] Subject to any protocol and application requirements for channel count and bandwidth.		
Mask limit testing		
Statistics		Pass/fail, failure count, total count
Display		
Interpolation		Linear or sin(x)/x
Persistence modes		Fast, time and frequency
General		
PC connectivity		USB 2.0 (USB 3.0 compatible). USB cable included.
Power requirements		Powered from USB port
Dimensions (including connectors and feet)		142 x 92 x 18.8 mm (PicoScope 2204A and 2205A only) 130 x 104 x 18.8 mm (all other models, including PicoScope 2205A MSO)
Weight		< 0.2 kg (7 oz)
Temperature range, operating		0 °C to 50 °C
Temperature range, operating, for stated accuracy		15 °C to 30 °C
Temperature range, storage		–20 °C to +60 °C
Humidity range, operating		5 to 80% RH non-condensing
Humidity range, storage		5 to 95% RH non-condensing
Altitude range		up to 2000 m
Pollution degree		2
Safety approvals		Designed to EN 61010-1

Environmental approvals	RoHS, REACH and WEEE
EMC approvals	Tested to meet EN 61326-1 and FCC Part 15 Subpart B
Warranty period	5 years
Software availability and requirements (hardware requirements as operating system)	
Windows software (64-bit)	PicoScope 7, PicoLog 6, PicoSDK
macOS software (64-bit)	PicoScope 7, PicoLog 6 and PicoSDK
Linux software (64-bit)	PicoScope 7 software and drivers, PicoLog 6 (including drivers) See Linux Software and Drivers to install drivers only
Raspberry Pi 4B and 5 (32-bit Raspberry Pi OS)	PicoLog 6 (including drivers) See Linux Software and Drivers to install drivers only
Languages supported, PicoScope 7	Bulgarian, Chinese (simplified), Chinese (traditional), Croatian, Czech, Danish, Netherlands Dutch, English (UK), English (US), Finnish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Portuguese-Brazilian, Romanian, Russian, Serbian, Slovene, Spanish, Swedish, Turkish
Languages supported, PicoLog 6	Simplified Chinese, Dutch, English (UK), English (US), French, German, Italian, Japanese, Korean, Russian, Spanish

Users writing their own apps can find example programs for all platforms on the Pico Technology organization page on GitHub.

Ordering information

Oscilloscopes

Model name	Description
PicoScope 2204A-D2	10 MHz 2-channel oscilloscope without probes
PicoScope 2204A	10 MHz 2-channel oscilloscope
PicoScope 2205A-D2	25 MHz 2-channel oscilloscope without probes
PicoScope 2205A	25 MHz 2-channel oscilloscope
PicoScope 2206B	50 MHz 2-channel oscilloscope
PicoScope 2207B	70 MHz 2-channel oscilloscope
PicoScope 2208B	100 MHz 2-channel oscilloscope
PicoScope 2405A	25 MHz 4-channel oscilloscope
PicoScope 2406B	50 MHz 4-channel oscilloscope
PicoScope 2407B	70 MHz 4-channel oscilloscope
PicoScope 2408B	100 MHz 4-channel oscilloscope
PicoScope 2205A MSO	25 MHz 2+16 channel mixed-signal oscilloscope
PicoScope 2206B MSO	50 MHz 2+16 channel mixed-signal oscilloscope
PicoScope 2207B MSO	70 MHz 2+16 channel mixed-signal oscilloscope
PicoScope 2208B MSO	100 MHz 2+16 channel mixed-signal oscilloscope

Replacement accessories

Model name	Description
TA375 passive probe	100 MHz 1:1/10:1 passive oscilloscope probe
TA136 logic cable	20-way 25 cm digital cable (suitable for MSOs only)
TA139 test clips	Pack of 12 logic test clips (suitable for MSOs only)

Calibration service

Model name	Description
Calibration certificate CC017	Calibration certificate for PicoScope 2000 Series oscilloscope

More products in the Pico Technology range...

PicoScope 3000E Series

The PicoScope 3000E Series offers an industry-leading 2 GS of capture memory which can be used to sample at 5 GS/s all the way down to 20 ms/div (200 ms total capture time).

The 500 MHz bandwidth is matched by a real-time sampling rate of 5 GS/s.

The PicoScope 3000E Series offers 4 analog channels plus 16 digital logic analyzer channels on MSO models.

PicoScope 4000 Series

A varied range of high-resolution oscilloscopes for a multitude of analog applications.

Models available with 2 channels at 16-bit resolution, 4 true differential channel inputs for extra-low-voltage or mains CAT III applications or up to 8 channels at 12-bit resolution.

TC-08

8-channel temperature data logger. Accepts all popular thermocouples to record temperatures from −270 to +1820 °C.

Up to 10 measurements per second at 20-bit resolution. Optional terminal board for voltage and current measurement.

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