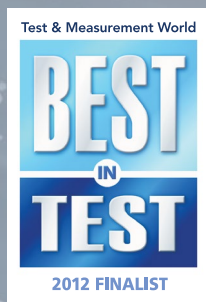


# PicoScope<sup>®</sup> 6000 Series

HIGH-PERFORMANCE USB OSCILLOSCOPES

**Ultra-deep memory. Fast data transfers.**

4 CHANNELS • 500 MHz BANDWIDTH • 5 GS/s SAMPLING  
2 GSAMPLE BUFFER MEMORY



SuperSpeed USB 3.0 interface

500 MHz spectrum analyzer

Arbitrary waveform generator

Advanced triggers

100 million x zoom

Mask limit testing

Serial bus decoding

... all as standard!



Compatible with Windows XP, Windows Vista, Windows 7 and Windows 8, USB 2.0 and USB 3.0 • Supplied with an SDK including example programs • Free technical support

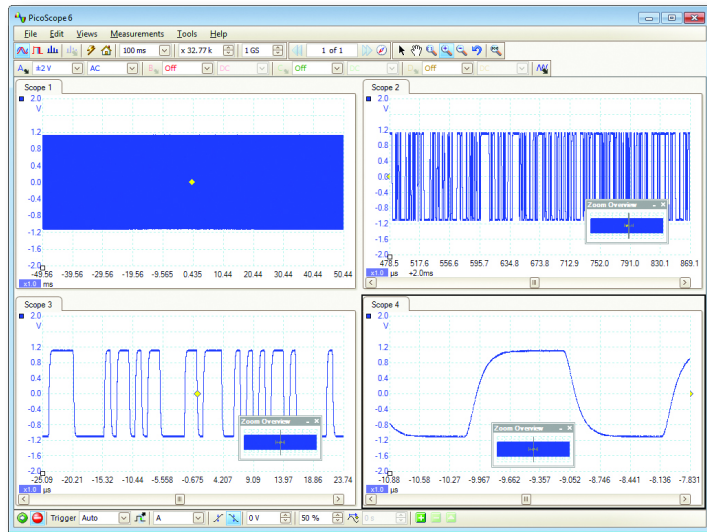
## PicoScope performance and reliability

With over 20 years' experience in the test and measurement industry, we know what's important in a new oscilloscope. The PicoScope 6000 Series scopes give you the best value for money of any oscilloscope, with outstanding bandwidth, sampling rate and memory depth specifications. These features are backed up by advanced software optimized with the help of feedback from our customers.

## High bandwidth, high sampling rate

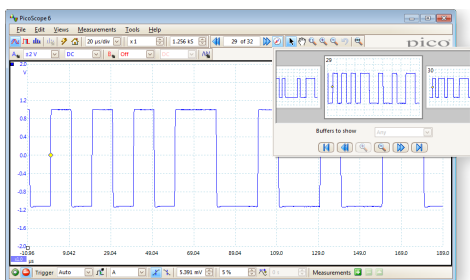
With 250 MHz to 500 MHz analog bandwidths complemented by a real-time sampling rate of 5 GS/s, the PicoScope 6000 Series scopes can display single-shot pulses with 200 ps time resolution. Equivalent time sampling (ETS) mode boosts the maximum sampling rate to 50 GS/s, giving an even finer timing resolution of 20 ps for repetitive signals.

## Huge buffer memory



Deep memory allows you to zoom in... and in... and in

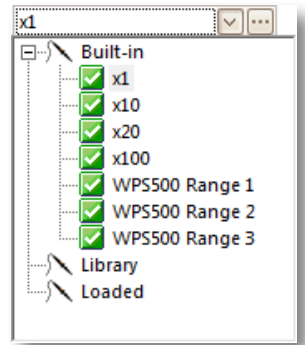
The PicoScope 6000 Series gives you the deepest buffer memory available as standard on any oscilloscope at any price. The SuperSpeed USB 3.0 interface ensures that the display is smooth and responsive even with long captures. Other oscilloscopes have high maximum sampling rates, but without deep memory they cannot sustain these rates on long timebases. The 2-gigasample buffer on the PicoScope 6404D can hold two 200 ms captures at the maximum sampling rate of 5 GS/s. To help manage all this data, PicoScope can zoom up to 100 million times using a choice of two zoom methods. There are zoom buttons as well as an overview window that lets you zoom and reposition the display by simply dragging with the mouse.



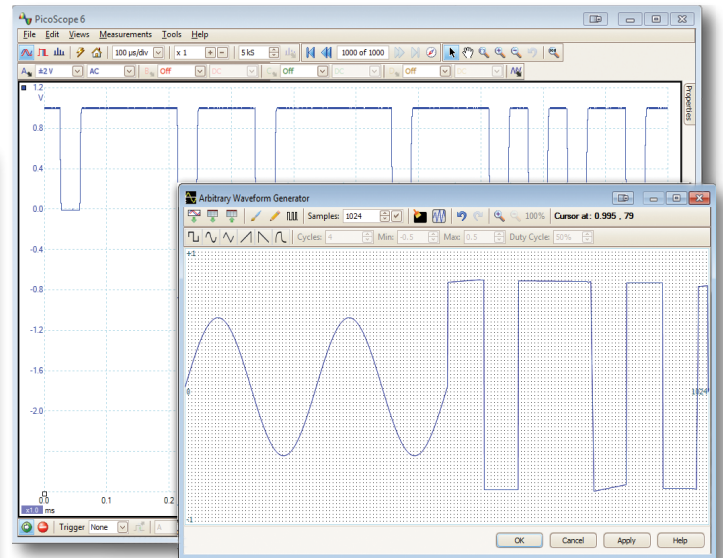
To help you find your way around the buffer memory, you can divide it into as many as 10,000 individually triggered segments. Use the visual buffer navigator to scan through the segments, or set up a mask to filter out the waveforms of interest.

## Custom probe settings

The custom probes menu allows you to correct for gain, attenuation, offsets and nonlinearities of probes and transducers, or convert to different measurement units. Definitions for standard Pico-supplied probes are built in, but you can also create your own using linear scaling or even an interpolated data table.



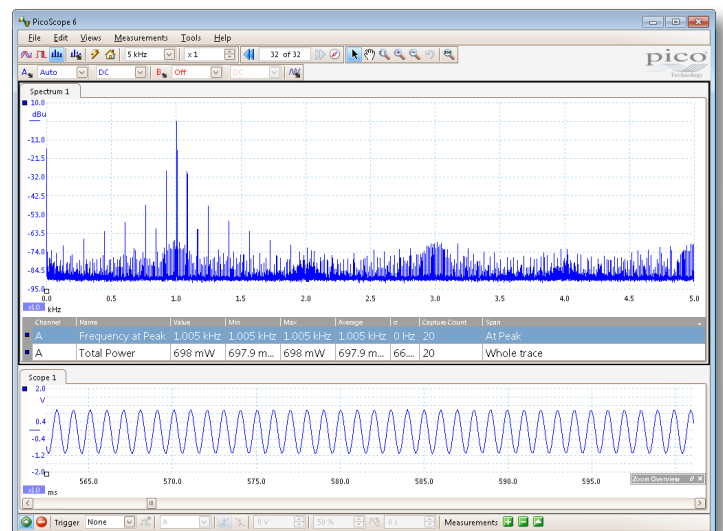
## Arbitrary waveform and function generator



Every model includes a built-in DC to 20 MHz function generator with sine, square, triangle and DC waveforms. D models add a built-in 12-bit, 200 MS/s arbitrary waveform generator. You can import arbitrary waveforms from data files or create and modify them using the built-in graphical AWG editor.

## Spectrum analyzer

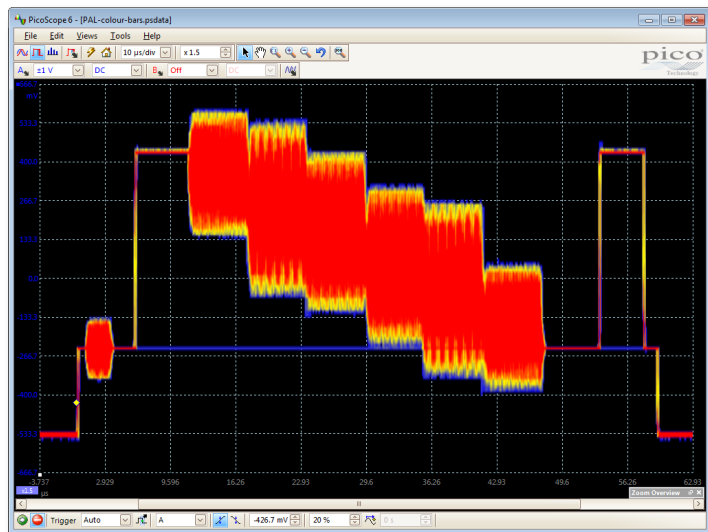
With the click of a button, you can open a new window to display a spectrum plot of selected channels up to the full bandwidth of the oscilloscope. The spectrum view can optionally be displayed together with a time-domain view. A comprehensive range of settings give you control over the number of spectrum bands, window types and display modes.



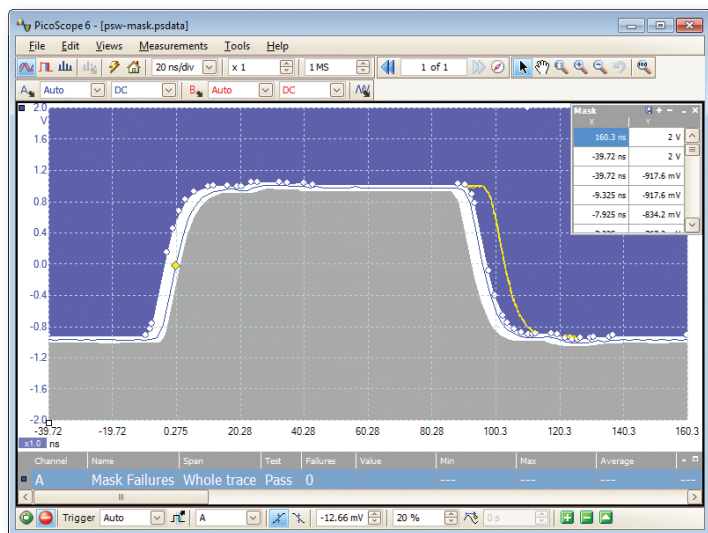


## Color persistence modes

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 analog persistence, digital color or custom display modes.

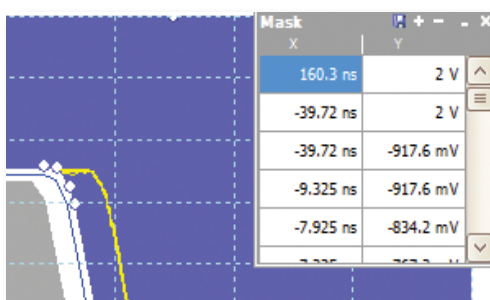


## Mask limit testing



This feature is designed for production and debugging environments. Capture a signal from a known working system, and PicoScope will draw a mask around it with your specified vertical and horizontal tolerances. Connect the system under test, and PicoScope will highlight any parts of the waveform that fall outside the mask area. The highlighted details persist on the display, so the scope can catch intermittent glitches even while your attention is elsewhere. The measurements window counts the number of failures, and can display other measurements and statistics at the same time.

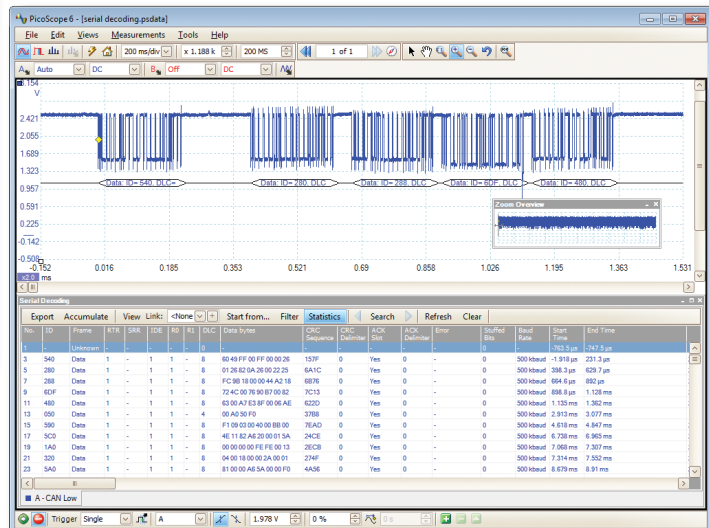
The numerical and graphical mask editors (both shown below) can be used separately or in combination, allowing you to enter accurate mask specifications or modify existing masks. You can import and export masks as files.



## High-speed data acquisition

The drivers and software development kit supplied allow you to write your own software or interface to popular third-party software packages. If the 2 GS buffer memory of the PicoScope 6404D isn't enough, the drivers support data streaming, a mode that captures gap-free continuous data over the USB 3.0 port directly to the PC's RAM at over 150 MS/s and to solid-state disk at up to 78 MS/s. Rates are subject to PC specifications and application loading.

## Serial data decoding



The PicoScope 6000 Series oscilloscopes are well-suited to serial decoding, with a deep memory buffer that allows them to collect long, uninterrupted sequences of data. This allows the capture of thousands of frames or packets of data over several seconds. The scopes can decode up to four buses simultaneously with independent protocol selection for each input channel.

### Serial protocols

- UART (RS-232)
- SPI
- I<sup>2</sup>C
- I<sup>2</sup>S
- CAN
- LIN
- FlexRay

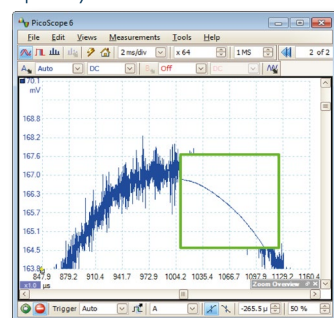
PicoScope displays the decoded data in the format of your choice: **in view**, **in window**, or both at once.

- **In view** format shows the decoded data beneath the waveform on a common time axis, with error frames marked in red. You can zoom in on these frames to look for noise or distortion on the waveform.
- **In window** format shows a list of the decoded frames, including the data and all flags and identifiers. You can set up filtering conditions to display only the frames you are interested in, search for frames with specified properties, or define a start pattern that the program will wait for before it lists the data.

## Analog and digital low-pass filtering

Each input channel has its own digital low-pass filter with independently adjustable cut-off frequency from 1 Hz to the full scope bandwidth. This enables you to reject noise on selected channels while viewing high-bandwidth signals on the others.

An additional selectable analog bandwidth limiter on each input channel can be used to reject high frequencies that would otherwise cause aliasing.



## Digital triggering

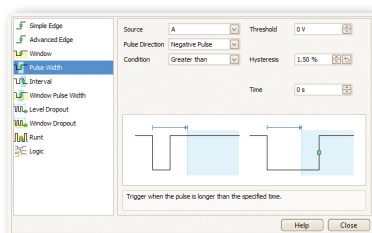
Most digital oscilloscopes sold today still use an analog trigger architecture based on comparators. This can cause time and amplitude errors that cannot always be calibrated out. The use of comparators often limits the trigger sensitivity at high bandwidths.

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.

Digital triggering also reduces re-arm delay and this, combined with the segmented memory, allows the triggering and capture of events that happen in rapid sequence. At the fastest timebase you can use rapid triggering to collect 10,000 waveforms in under 10 milliseconds. The mask limit testing function can then scan through these waveforms to highlight any failed waveforms for viewing in the waveform buffer.

## Advanced triggers

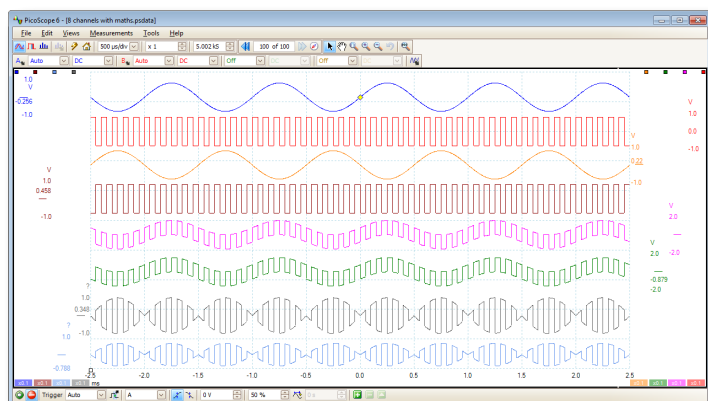
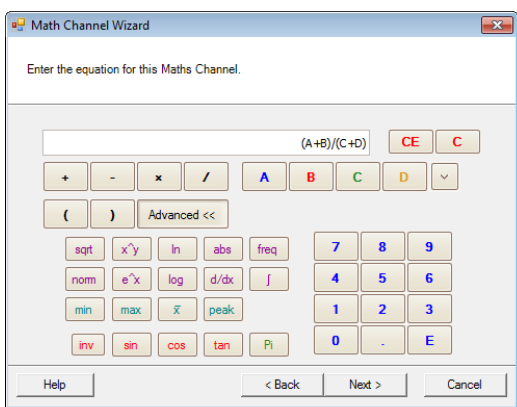
As well as the standard range of triggers found on most oscilloscopes, the PicoScope 6000 Series has a built-in set of advanced triggers to help you capture the data you need.



All triggering is digital, resulting in high threshold resolution with programmable hysteresis and optimal waveform stability.

## Maths channels

With PicoScope 6 you can perform a variety of mathematical calculations on your input signals. You can calculate the sum, difference, product or inverse, or create your own custom function using standard arithmetic, exponential and trigonometric functions.

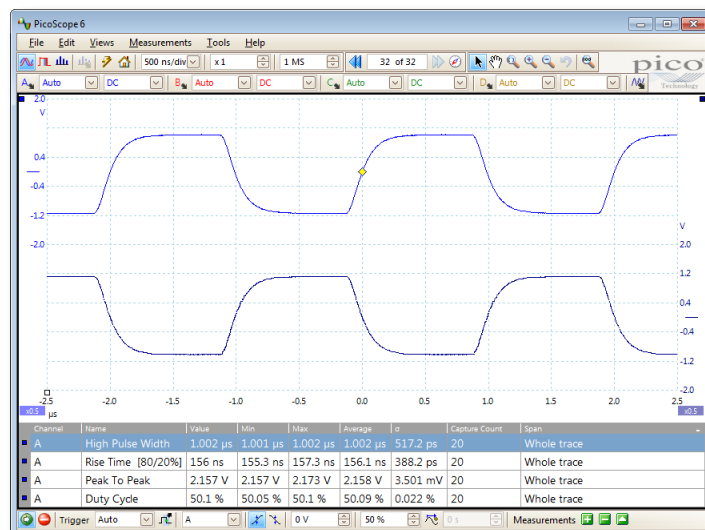


## Automatic measurements

PicoScope allows you to automatically display a table of calculated measurements for troubleshooting and analysis.

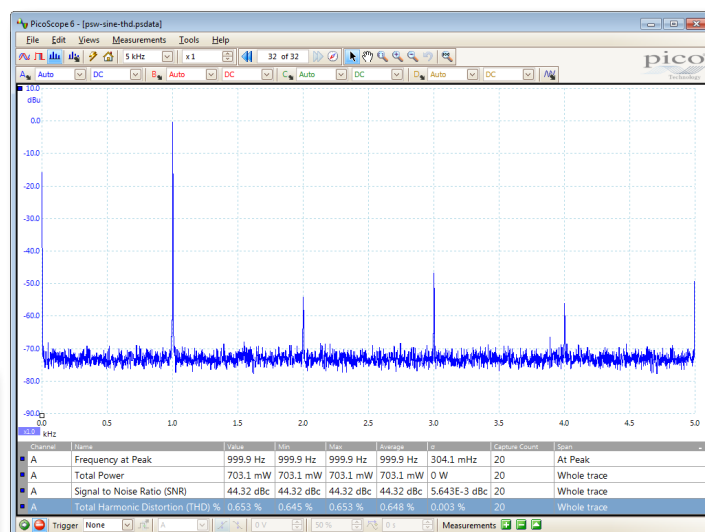
Using the built-in measurement statistics you can see the average, standard deviation, maximum and minimum of each measurement as well as the live value.

You can add as many measurements as you need on each view. Each measurement includes statistical parameters showing its variability. For information on the measurements available in scope and spectrum modes, see **Automatic Measurements** in the **Specifications** table.



| Channel | Name               | Value    | Min      | Max      | Average  |
|---------|--------------------|----------|----------|----------|----------|
| A       | High Pulse Width   | 1.002 μs | 1.001 μs | 1.002 μs | 1.002 μs |
| A       | Rise Time [80/20%] | 156 ns   | 155.3 ns | 157.3 ns | 156.1 ns |
| A       | Peak To Peak       | 2.157 V  | 2.157 V  | 2.173 V  | 2.158 V  |
| A       | Duty Cycle         | 50.1 %   | 50.05 %  | 50.1 %   | 50.09 %  |

## 15 scope mode measurements



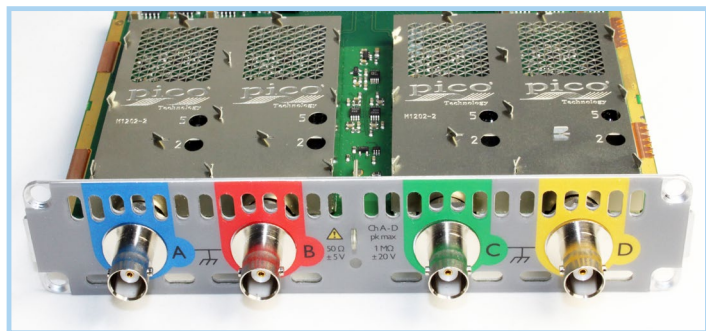
| Channel | Name                              | Value     | Min       |
|---------|-----------------------------------|-----------|-----------|
| A       | Frequency at Peak                 | 999.9 Hz  | 999.9 Hz  |
| A       | Total Power                       | 703.1 mW  | 703.1 mW  |
| A       | Signal to Noise Ratio (SNR)       | 44.32 dBc | 44.32 dBc |
| A       | Total Harmonic Distortion (THD) % | 0.653 %   | 0.645 %   |

## 11 spectrum mode measurements

## High signal integrity

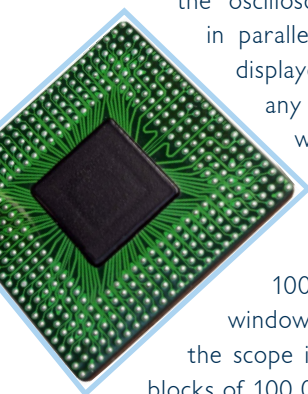
Most oscilloscopes are built down to a price; ours are built up to a specification.

Our engineers use careful front-end design and shielding to reduce noise, crosstalk and harmonic distortion. With decades of oscilloscope experience, we know how to design for optimal pulse response and bandwidth flatness.



## Hardware acceleration

On some oscilloscopes, enabling deep memory has a penalty: the screen update rate slows down and the controls become unresponsive as the processor struggles to cope with the amount of data. Thanks to the hardware acceleration inside PicoScope deep-memory oscilloscopes, you can collect waveforms containing hundreds of millions of samples while keeping fast screen update rates and a responsive user interface. Dedicated hardware inside the oscilloscope processes multiple streams of data in parallel to construct the waveform that will be displayed on the screen. This is done far faster than any PC processor could manage, and together with USB 3.0 SuperSpeed data transfer eliminates any bottlenecks between the oscilloscope and the PC.



For example, the scope may be set to capture 100 000 000 samples but the PicoScope display window may be only 1000 pixels wide. In this case, the scope intelligently compresses the data into 1000 blocks of 100 000 samples each. Unlike simple decimation, which throws away most of the data, PicoScope hardware acceleration guarantees that you see any high-frequency details such as narrow glitches, even when the display is zoomed out.

## High-end features as standard

Buying a scope from some companies is a bit like buying a car. By the time you have added all the optional extras you need, the price has gone up considerably. With the PicoScope 6000 Series, high-end features such as mask limit testing, serial decoding, advanced triggering, measurements, math, XY mode, digital filtering, segmented memory and even a signal generator are all included in the price.

To protect your investment, both the PC software and firmware inside the unit can be updated. We have a long history of providing new features for free as software downloads. Other companies make vague promises about future enhancements but we deliver on our promises year after year. Users of our products reward us by becoming lifelong customers, frequently recommending us to their colleagues.

## Probes included

Your PicoScope 6000 Series scope is supplied complete with four wideband, high-impedance probes. These probes have been designed for use with individual models of the PicoScope 6000 Series and are factory-compensated to match each scope's input characteristics. Each high-quality probe is supplied with a range of accessories for convenient and accurate high-frequency measurements.

A comprehensive range of alternative probes is also available.



| Probe specifications     | TA150                                   | TA133             |
|--------------------------|---|-------------------|
| Attenuation              | 10:1                                    |                   |
| Resistance at probe tip  | 10 MΩ                                   |                   |
| Capacitance at probe tip | 9.5 pF                                  |                   |
| Scope input impedance    | 1 MΩ                                    |                   |
| Compatibility            | PicoScope 6402C/D,<br>PicoScope 6403C/D | PicoScope 6404C/D |
| Bandwidth (3 dB)         | 350 MHz                                 | 500 MHz           |
| Rise time (10% to 90%)   | 1 ns                                    | 700 ps            |
| Compensation range       | 10 to 25 pF                             |                   |
| Safety standard          | IEC/EN 61010-031                        |                   |
| Cable length             | 1.3 m                                   |                   |

## Probe accessories included

### TA133 and TA150

- Instruction manual
- Solid tip 0.5 mm
- Coding rings, 3 x 4 colors
- Ground lead 15 cm
- Ground spring 2.5 mm
- Trim tool
- Insulating cap 2.5 mm
- Sprung hook 2.5 mm



### TA133 only

- Spring tip 0.5 mm
- Ground blade 2.5 mm
- 2 self-adhesive copper pads
- Protection cap 2.5 mm
- IC caps 0.5 to 1.27 mm pitch
- PCB adapter kit 2.5 mm





**PicoScope:** The display can be as simple or as complex as you need. Begin with a single view of one channel, and then expand the display to include any number of live channels, math channels and reference waveforms.

**Tools > Serial decoding:** Decode multiple serial data signals and display the data alongside the physical signal or as a detailed table.

**Tools > Reference channels:** Store waveforms in memory or on disk and display them alongside live inputs. Ideal for diagnostics and production testing.

**Tools > Masks:** Automatically generate a test mask from a waveform or draw one by hand. PicoScope highlights any parts of the waveform that fall outside the mask and shows error statistics.

**Channel options:** Filtering, offset, scaling, resolution enhancement, custom probes and bandwidth limiter.

**Auto setup button:** Configures the timebase and voltage ranges for stable display of signals.

**Trigger marker:** Drag to adjust trigger level and pre-trigger time.

**Oscilloscope controls:** Controls such as voltage range, scope resolution, channel enable, timebase and memory depth are placed on the toolbar for quick access, leaving the main display area clear for waveforms.

**Signal generator:** Generates standard signals or (on selected scopes) arbitrary waveforms. Includes frequency sweep mode.

**Waveform replay tools:** PicoScope automatically records up to 10 000 of the most recent waveforms. You can quickly scan through to look for intermittent events, or use the **Buffer Navigator** to search visually.

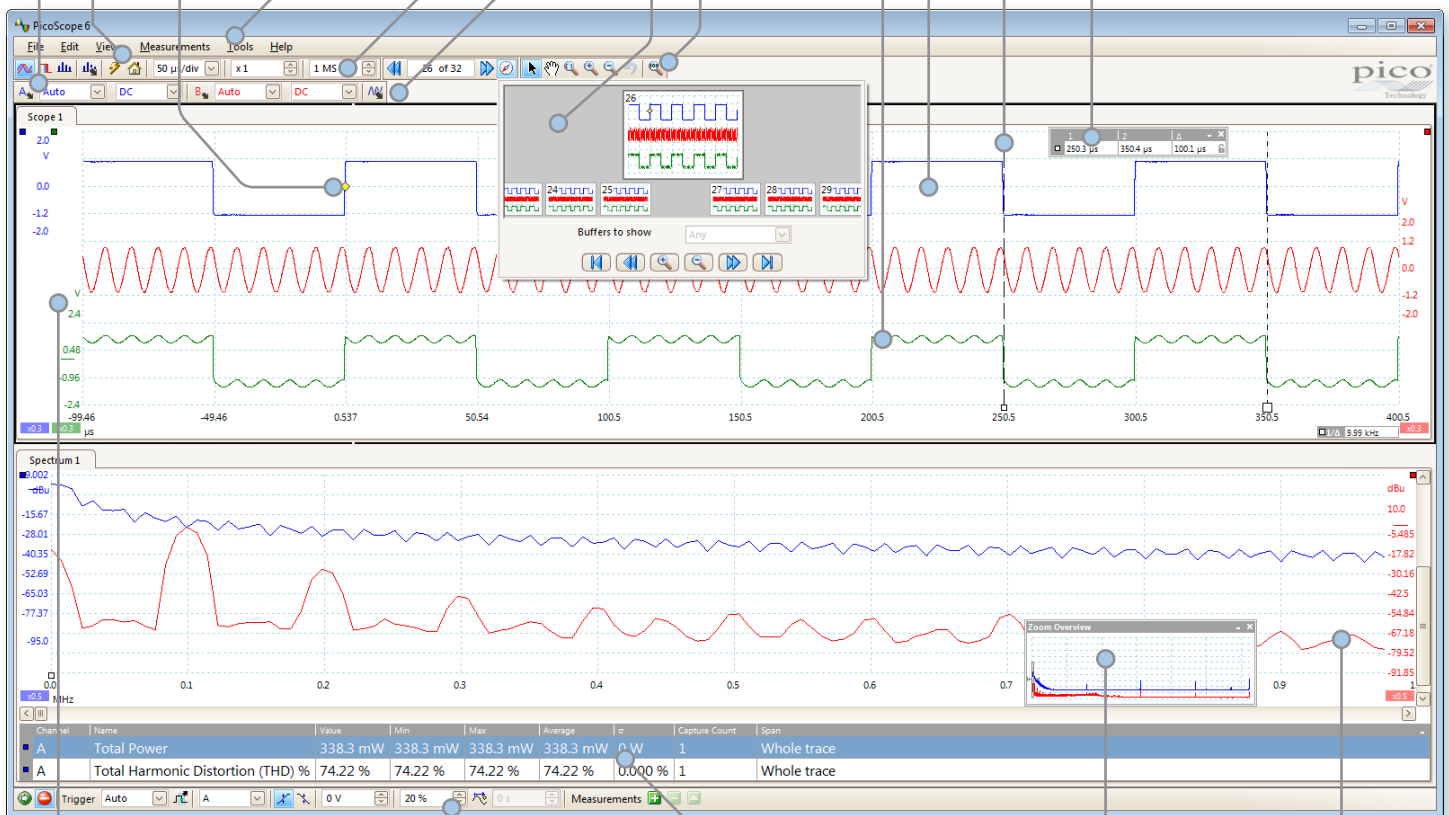
**Zoom and pan tools:** PicoScope allows a zoom factor of several million, which is necessary when working with the deep memory of the 6000 Series scopes. Either use the zoom-in, zoom-out and pan tools, or click and drag in the zoom overview window for fast navigation.

**Math channels:** Combine input channels and reference waveforms using simple arithmetic, or create custom equations with trigonometric and other functions.

**Views:** PicoScope is carefully designed to make the best use of the display area. You can add new scope and spectrum views with automatic or custom layouts.

**Rulers:** Each axis has two rulers that can be dragged across the screen to make quick measurements of amplitude, time and frequency.

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



**Movable axes:** The vertical axes can be dragged up and down. This feature is particularly useful when one waveform is obscuring another. There's also an **Auto Arrange Axes** command.

**Trigger toolbar:** Quick access to main controls, with advanced triggers in a pop-up window.

**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.

**Zoom overview:** Click and drag for quick navigation in zoomed views.

**Spectrum view:** View FFT data alongside scope view or independently.

|  | PicoScope 6402C   | PicoScope 6402D | PicoScope 6403C                                       | PicoScope 6403D | PicoScope 6404C   | PicoScope 6404D |
|--|---|-----------------|---|-----------------|---|-----------------|
| <b>VERTICAL</b>                              |   |                 |   |                 |   |                 |
| Input channels                               | 4, BNC connectors, single-ended   |                 |   |                 |   |                 |
| Analog bandwidth (-3 dB)                     | 250 MHz (TA150 probes/50 Ω)<br>200 MHz (±50 mV range)   |                 | 350 MHz (TA150 probes/50 Ω)<br>250 MHz (±50 mV range) |                 | 500 MHz (TA133 probes/50 Ω)<br>(all ranges)                 |                 |
| Bandwidth limiting                           | 20 MHz, switchable  |                 | 20 MHz, switchable                                    |                 | 25 MHz, switchable  |                 |
| Rise time (10% to 90%, calculated)           | 1.4 ns (50 mV range 1.8 ns)   |                 | 1.0 ns (50 mV range 1.4 ns)                           |                 | 0.7 ns (all ranges)   |                 |
| Input ranges (full scale)                    | ±50 mV to ±20V, in 9 ranges (1 MΩ input), ±50 mV to ±5V, in 7 ranges (50 Ω input)   |                 |   |                 |   |                 |
| Input sensitivity                            | 10 mV/div to 4 V/div at x1 zoom (1 MΩ input), 10 mV/div to 1 V/div at x1 zoom (50 Ω input)                                |                 |   |                 |   |                 |
| Input coupling                               | 1 MΩ (AC or DC), 50 Ω (DC only)   |                 |   |                 |   |                 |
| Input characteristics                        | 1 MΩ    15 pF, or 50 Ω ±2%  |                 |   |                 | 1 MΩ    10 pF, or 50 Ω ±2%                                  |                 |
| Analog offset range                          | Input range   |                 | Offset range  |                 | Input range   |                 |
|  | 50 to 200 mV  |                 | ±0.5 V  |                 | 50 to 200 mV ±2 V   |                 |
|  | 500 mV  |                 | ±2.5 V  |                 | 500 mV ±10 V (50 Ω: ±5 V)                                   |                 |
|  | 1 V   |                 | ±2.5 V  |                 | 1 V ±10 V (50 Ω: ±4.5 V)                                    |                 |
|  | 2 V   |                 | ±2.5 V  |                 | 2 V ±10 V (50 Ω: ±3.5 V)                                    |                 |
|  | 5 V   |                 | ±20 V (50 Ω: ±0.5 V)                                  |                 | 5 V ±35 V (50 Ω: ±0.5 V)                                    |                 |
|  | 10 V  |                 | ±20 V   |                 | 10 V ±30 V  |                 |
| 20 V   |   | ±20 V           |   | 20 V ±20 V      |   |                 |
| DC accuracy                                  | 3% of full scale  |                 |   |                 |   |                 |
| Overvoltage protection                       | ±100 V to ground (1 MΩ inputs), 5.5 V RMS (50 Ω inputs)   |                 |   |                 |   |                 |
| <b>DYNAMIC PERFORMANCE</b>                   |   |                 |   |                 |   |                 |
| Noise  | 200 µV RMS (50 mV range)  |                 |   |                 | 320 µV RMS (50 mV range)                                    |                 |
| THD  | -55 dB typical  |                 |   |                 | -54 dB typical  |                 |
| SFDR   | 60 dB typical   |                 |   |                 | 55 dB typical   |                 |
| Crosstalk                                    | 17 000:1 typical at 20 MHz<br>1000:1 typical at full bandwidth  |                 |   |                 | 5600:1 typical at 20 MHz<br>560:1 typical at full bandwidth |                 |
| <b>HORIZONTAL (TIMEBASE)</b>                 |   |                 |   |                 |   |                 |
| Timebase ranges                              | 1 ns/div to 5000 s/div (real-time sampling)<br>50 ps/div to 100 ns/div (equivalent-time sampling / ETS)                   |                 |   |                 |   |                 |
| Timebase accuracy                            | ±2 ppm  |                 |   |                 |   |                 |
| Timebase ageing                              | 1 ppm per year  |                 |   |                 |   |                 |
| <b>ACQUISITION</b>                           |   |                 |   |                 |   |                 |
| ADC resolution                               | 8 bits (up to 12 bits using software resolution enhancement)  |                 |   |                 |   |                 |
| Maximum real-time sampling rate              | 1 channel   |                 |   |                 | 5 GS/s  |                 |
|  | 2 channels (A+C, A+D, B+C or B+D)   |                 |   |                 | 2.5 GS/s  |                 |
|  | 2 channels (A+B or C+D), 3 or 4 channels  |                 |   |                 | 1.25 GS/s   |                 |
| Maximum ETS rate                             | 50 GS/s (any number of channels)  |                 |   |                 |   |                 |
| Maximum streaming data rate (PicoScope 6)    | 10 MS/s   |                 |   |                 |   |                 |
| Maximum streaming data rate (SDK)            | Data transfer > 150 MS/s, streaming to SSD hard drive 78 MS/s<br>(USB 3.0, PC-dependent, subject to application loadings) |                 |   |                 |   |                 |
| Buffer size (shared between active channels) | 256 MS  | 512 MS          | 512 MS  | 1 GS            | 1 GS  | 2 GS            |
| Buffer size (streaming mode)                 | 100 MS in PicoScope software. Up to available PC memory when using SDK.   |                 |   |                 |   |                 |
| Max. buffer segments (using PicoScope 6)     | 10 000  |                 |   |                 |   |                 |
| Max. buffer segments (using SDK)             | 250 000   | 500 000         | 500 000   | 1 000 000       | 1 000 000   | 2 000 000       |
| <b>TRIGGERING</b>                            |   |                 |   |                 |   |                 |
| Sources                                      | Ch A, Ch B, Ch C, Ch D, AUX In  |                 |   |                 |   |                 |
| Trigger modes                                | None, single, repeat, auto, rapid (segmented memory), ETS   |                 |   |                 |   |                 |
| Advanced trigger types (real-time mode)      | Edge, pulse width, window, window pulse width, dropout, window dropout, level, interval, logic level, runt pulse          |                 |   |                 |   |                 |
| Trigger types (ETS mode)                     | Rising edge, falling edge   |                 |   |                 |   |                 |
| Trigger sensitivity                          | 1 LSB accuracy up to full bandwidth of scope  |                 |   |                 |   |                 |
| Trigger level                                | Adjustable over whole of selected voltage range   |                 |   |                 |   |                 |
| Maximum pre-trigger capture                  | 100% of capture size  |                 |   |                 |   |                 |
| Maximum post-trigger delay                   | 4 billion samples   |                 |   |                 |   |                 |
| Re-arm time                                  | Less than 1 µs on fastest timebase  |                 |   |                 |   |                 |
| Maximum trigger rate                         | Up to 10,000 waveforms in a 10 ms burst   |                 |   |                 |   |                 |
| Trigger timing resolution                    | 1 sample period   |                 |   |                 |   |                 |
| <b>AUX TRIGGER INPUT</b>                     |   |                 |   |                 |   |                 |
| AUX trigger connector type                   | Rear panel BNC, shared with reference clock input   |                 |   |                 |   |                 |
| Trigger types                                | Edge, pulse width, dropout, interval, logic   |                 |   |                 |   |                 |
| Input characteristics                        | 50 Ω ±1%, DC coupled  |                 |   |                 |   |                 |
| Bandwidth                                    | 25 MHz  |                 |   |                 |   |                 |
| Threshold range                              | ±1 V  |                 |   |                 |   |                 |
| Overvoltage protection                       | ±5 V (DC + AC peak)   |                 |   |                 |   |                 |
| <b>REFERENCE CLOCK INPUT (SDK ONLY)</b>      |   |                 |   |                 |   |                 |
| Clock input characteristics                  | 50 Ω, BNC, ±1 V, DC coupled   |                 |   |                 |   |                 |
| Frequency range                              | 5, 10, 20, 25 MHz, user-selectable  |                 |   |                 |   |                 |
| Connector                                    | Rear panel BNC, shared with AUX trigger   |                 |   |                 |   |                 |
| Level  | Adjustable threshold, ±1 V  |                 |   |                 |   |                 |
| Overvoltage protection                       | ±5 V  |                 |   |                 |   |                 |

|   | PicoScope 6402C  | PicoScope 6402D | PicoScope 6403C | PicoScope 6403D             | PicoScope 6404C | PicoScope 6404D |
|---|--|-----------------|-----------------|-----------------------------|-----------------|-----------------|
| <b>FUNCTION GENERATOR</b>                 |  |                 |                 |                             |                 |                 |
| Standard signal frequency                 | DC to 20 MHz   |                 |                 |                             |                 |                 |
| Standard output signals                   | Sine, square, triangle, DC<br>Ramp, sinc, Gaussian, half-sine, white noise, PRBS   |                 |                 |                             |                 |                 |
| Output frequency accuracy                 | Same as scope timebase accuracy  |                 |                 |                             |                 |                 |
| Output frequency resolution               | < 0.05 Hz  |                 |                 |                             |                 |                 |
| Output voltage adjustment                 | Amplitude adjustment: $\pm 2$ V (4 V max. p-p)<br>Offset adjustment: $\pm 1$ V<br>Maximum combined output voltage: $\pm 2.5$ V   |                 |                 |                             |                 |                 |
| DC accuracy                               | $\pm 1\%$ of full scale  |                 |                 |                             |                 |                 |
| Connector type                            | Rear panel BNC   |                 |                 |                             |                 |                 |
| Output impedance                          | 50 $\Omega$  |                 |                 |                             |                 |                 |
| Overvoltage protection                    | $\pm 5$ V  |                 |                 |                             |                 |                 |
| Sweep modes                               | Up, down, or dual, with selectable start/stop frequencies and increments   |                 |                 |                             |                 |                 |
| Signal generator triggering               | Scope, manual, or AUX input; programmable number of cycles from 1 to $2^{30}-1$  |                 |                 |                             |                 |                 |
| <b>ARBITRARY WAVEFORM GENERATOR (AWG)</b> |  |                 |                 |                             |                 |                 |
| Buffer size                               |  | 64 kS           |                 | 64 kS                       |                 | 64 kS           |
| Sample rate                               | -  | 200 MS/s        | -               | 200 MS/s                    | -               | 200 MS/s        |
| Resolution                                |  | 12 bits         |                 | 12 bits                     |                 | 12 bits         |
| Bandwidth                                 |  | 20 MHz          |                 | 20 MHz                      |                 | 20 MHz          |
| <b>PROBE COMPENSATION OUTPUT</b>          |  |                 |                 |                             |                 |                 |
| Impedance                                 | 600 $\Omega$   |                 |                 |                             |                 |                 |
| Frequency                                 | 1 kHz square wave  |                 |                 |                             |                 |                 |
| Level                                     | 2 V pk-pk  |                 |                 |                             |                 |                 |
| Overvoltage protection                    | $\pm 5$ V (DC + AC peak)   |                 |                 |                             |                 |                 |
| <b>SPECTRUM ANALYZER</b>                  |  |                 |                 |                             |                 |                 |
| Frequency range                           | DC to 250 MHz  |                 | DC to 350 MHz   |                             | DC to 500 MHz   |                 |
| Display modes                             | Magnitude, average, peak hold  |                 |                 |                             |                 |                 |
| Windowing functions                       | Rectangular, Gaussian, triangular, Blackman, Blackman-Harris, Hamming, Hann, flat-top  |                 |                 |                             |                 |                 |
| Number of FFT points                      | Selectable power of 2 from $2^7$ to $2^{20}$   |                 |                 |                             |                 |                 |
| <b>MATH CHANNELS</b>                      |  |                 |                 |                             |                 |                 |
| 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, freq, derivative, integral, min, max, average, peak, delay                                |                 |                 |                             |                 |                 |
| Operands                                  | Input channels A to D, reference waveforms, time, $\pi$  |                 |                 |                             |                 |                 |
| <b>AUTOMATIC MEASUREMENTS</b>             |  |                 |                 |                             |                 |                 |
| Scope mode                                | AC RMS, true RMS, cycle time, DC average, duty cycle, falling rate, fall time, frequency, high pulse width, low pulse width, maximum, minimum, peak-to-peak, rise time and rising rate                               |                 |                 |                             |                 |                 |
| Spectrum mode                             | Frequency at peak, amplitude at peak, average amplitude at peak, total power, THD %, THD dB, THD+N, SFDR, SINAD, SNR and IMD   |                 |                 |                             |                 |                 |
| Statistics                                | Minimum, maximum, average, and standard deviation  |                 |                 |                             |                 |                 |
| <b>SERIAL BUS DECODING</b>                |  |                 |                 |                             |                 |                 |
| Data formats                              | CAN, LIN, I <sup>2</sup> C, I <sup>2</sup> S, UART/RS-232, SPI, FlexRay  |                 |                 |                             |                 |                 |
| <b>MASK LIMIT TESTING</b>                 |  |                 |                 |                             |                 |                 |
| Statistics                                | Pass/fail, failure count, total count  |                 |                 |                             |                 |                 |
| <b>DISPLAY</b>                            |  |                 |                 |                             |                 |                 |
| Interpolation                             | Linear or sin(x)/x   |                 |                 |                             |                 |                 |
| Persistence modes                         | Digital color, analog intensity, custom, or none   |                 |                 |                             |                 |                 |
| <b>GENERAL</b>                            |  |                 |                 |                             |                 |                 |
| PC connectivity                           | USB 3.0 (USB 2.0 compatible)   |                 |                 |                             |                 |                 |
| Export data formats                       | Comma-separated values (CSV), tab delimited (TXT), BMP, GIF, PNG, MATLAB 4 format (MAT)  |                 |                 |                             |                 |                 |
| Power requirement                         | 12V DC, 4A max. AC adaptor and cable supplied  |                 |                 |                             |                 |                 |
| Dimensions (inc. connectors & end caps)   | 170 x 255 x 40 mm  |                 |                 | 170 x 285 x 40 mm           |                 |                 |
| Weight                                    | 1 kg (approx. 2 lb 3 oz)   |                 |                 | 1.3 kg (approx. 2 lb 14 oz) |                 |                 |
| Temperature range                         | Operating: 0 °C to 40 °C (20 °C to 30 °C for stated accuracy). Storage: -20 °C to +60 °C.  |                 |                 |                             |                 |                 |
| Humidity range                            | Operating: 5% to 80% RH non-condensing. Storage: 5% to 95% RH non-condensing.  |                 |                 |                             |                 |                 |
| Compliance                                | EU: EMC, LVD, RoHS, WEEE. USA: FCC Part 15 Subpart B   |                 |                 |                             |                 |                 |
| Safety approvals                          | Designed to EN 61010-1:2010  |                 |                 |                             |                 |                 |
| PC requirements                           | Microsoft Windows XP, Windows Vista, Windows 7, or Windows 8 (not Windows RT)  |                 |                 |                             |                 |                 |
| Software included                         | PicoScope 6, Windows SDK and example programs  |                 |                 |                             |                 |                 |
| Languages supported (software)            | Chinese (Simplified), Chinese (Traditional), Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Romanian, Spanish, Swedish, Turkish |                 |                 |                             |                 |                 |
| Languages supported (help)                | English, French, German, Italian, Spanish  |                 |                 |                             |                 |                 |



## Model selector

| Model           | Bandwidth | Buffer size | Signal generator | Arbitrary waveform generator |
|-----------------|-----------|-------------|------------------|------------------------------|
| PicoScope 6402C | 250 MHz   | 256 MS      | ✓                |                              |
| PicoScope 6402D |           | 512 MS      | ✓                | ✓                            |
| PicoScope 6403C | 350 MHz   | 512 MS      | ✓                |                              |
| PicoScope 6403D |           | 1 GS        | ✓                | ✓                            |
| PicoScope 6404C | 500 MHz   | 1 GS        | ✓                |                              |
| PicoScope 6404D |           | 2 GS        | ✓                | ✓                            |

## Product pack contents

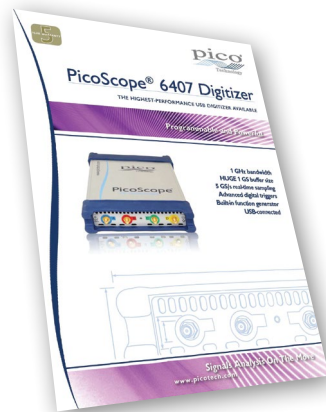
- PicoScope 6000 Series oscilloscope
- Four factory-compensated probes
- USB cable
- Universal mains (AC) power supply
- Mains lead (power cord)
- Installation Guide
- Software and Reference CD
- Carrying case



## Have you seen the PicoScope 6407 Digitizer?

The PicoScope 6407 Digitizer has four 1 GHz inputs and a maximum sampling rate of 5 GS/s.

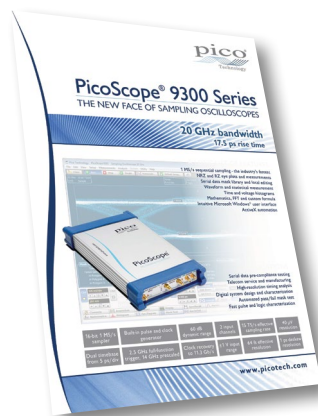
→ PicoScope 6407 Digitizer



## Need more bandwidth?

For repetitive signals such as serial data streams, and characterization of cables and backplanes, the PicoScope 9000 Series Sampling Oscilloscopes deliver high specifications at low prices. Choose between the 12 GHz PicoScope 9200 Series and the 20 GHz PicoScope 9300 Series. TDR/TDT and optical models are also available.

→ PicoScope 9000 Series



## Ordering information

| Description   | GBP              | USD   | EUR   |
|---|------------------|-------|-------|
| PP884 PicoScope 6402C 250 MHz Oscilloscope with probes            | 1 995            | 3 292 | 2 414 |
| PP885 PicoScope 6402D 250 MHz Oscilloscope with AWG and probes    | 2 495            | 4 117 | 3 019 |
| PP886 PicoScope 6403C 350 MHz Oscilloscope with probes            | 2 995            | 4 942 | 3 624 |
| PP887 PicoScope 6403D 350 MHz Oscilloscope with AWG and probes    | 3 495            | 5 767 | 4 229 |
| PP888 PicoScope 6404C 500 MHz Oscilloscope with probes            | 3 995            | 6 592 | 4 834 |
| PP889 PicoScope 6404D 500 MHz Oscilloscope with AWG and probes    | 4 495            | 7 417 | 5 439 |
| TA150 Replacement x10 probe for PicoScope 6402C/D & 6403C/D       | 125              | 206   | 151   |
| TA133 Replacement x10 probe for PicoScope 6404C/D                 | 125              | 206   | 151   |
| TA065, TA066 and TA067 accessory packs for TA150 and TA133 probes | www.picotech.com |       |       |

Prices are correct at the time of publication. Please contact Pico Technology for the latest prices before ordering.

### Headquarters:

Pico Technology  
James House  
Colmworth Business Park  
St. Neots  
Cambridgeshire  
PE19 8YP  
United Kingdom

☎ +44(0) 1480 396395

☎ +44 (0) 1480 396296

✉ sales@picotech.com

### USA Branch Office:

Pico Technology  
320 N Glenwood Blvd  
Tyler  
Texas 75702  
United States

☎ +1 800 591 2796

☎ +1 620 272 0981

✉ sales@picotech.com

Errors and omissions excepted. *Windows* is a registered trade mark of Microsoft Corporation in the United States and other countries. *Pico Technology* and *PicoScope* are internationally registered trade marks of Pico Technology Ltd. MM050-2. Copyright © 2011-2013 Pico Technology Ltd. All rights reserved.

www.picotech.com

**pico**  
Technology