PicoScope® 4000 Series
HIGH-PRECISION USB OSCILLOSCOPES

Speed, precision and detailed capture

32 MS buffer
12-bit resolution
80 to 250 MS/s sampling
20 to 100 MHz bandwidth
2 or 4 channels
2 channel IEPE model
USB powered

32 MS BUFFER
12-BIT IEPE

Supplied with a full SDK including example programs
• Software compatible with Windows XP, Windows Vista, Windows 7 and Windows 8 • Free technical support

www.picotech.com
### MODEL BANDWIDTH CHANNELS SAMPLING BUFFER MEMORY EXT TRIG AWG

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PicoScope 4424</th>
<th>PicoScope 4224</th>
<th>PicoScope 4224 IEPE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MODEL</strong></td>
<td><strong>PicoScope 4424</strong></td>
<td><strong>PicoScope 4224</strong></td>
<td><strong>PicoScope 4224 IEPE</strong></td>
</tr>
<tr>
<td><strong>INPutS</strong></td>
<td><strong>PicoScope 4424</strong></td>
<td><strong>PicoScope 4224</strong></td>
<td><strong>PicoScope 4224 IEPE</strong></td>
</tr>
<tr>
<td><strong>Number of channels</strong></td>
<td><strong>4 BNC inputs</strong></td>
<td><strong>2 BNC inputs</strong></td>
<td><strong>2 BNC inputs</strong></td>
</tr>
<tr>
<td><strong>Analog bandwidth</strong></td>
<td><strong>20 MHz (10 MHz on ±50 mV range)</strong></td>
<td><strong>DC to 20 MHz</strong></td>
<td><strong>IEPE Interface Mode</strong></td>
</tr>
<tr>
<td><strong>Voltage ranges</strong></td>
<td><strong>±50 mV to ±100 V in 11 ranges</strong></td>
<td><strong>±50 mV to ±20 V in 9 ranges</strong></td>
<td><strong>2 BNC inputs</strong></td>
</tr>
<tr>
<td><strong>Sensitivity</strong></td>
<td><strong>10 mV/div to 20 V/div</strong></td>
<td><strong>10 mV/div to 4 V/div</strong></td>
<td><strong>1.6 Hz to 20 MHz</strong></td>
</tr>
<tr>
<td><strong>Graphing frequency measurement</strong></td>
<td><strong>20 Hz, 200 Hz, 2 kHz, and 20 kHz ranges</strong></td>
<td><strong>20 Hz, 200 Hz, 2 kHz, and 20 kHz ranges</strong></td>
<td><strong>2 BNC inputs</strong></td>
</tr>
<tr>
<td><strong>Vertical resolution</strong></td>
<td><strong>12 bits (up to 16 bits with resolution enhancement)</strong></td>
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<td><strong>12 bits (up to 16 bits with resolution enhancement)</strong></td>
</tr>
<tr>
<td><strong>Input coupling</strong></td>
<td><strong>AC or DC, software-controlled</strong></td>
<td><strong>AC or DC, software-controlled</strong></td>
<td><strong>AC or DC, software-controlled</strong></td>
</tr>
<tr>
<td><strong>Input impedance</strong></td>
<td>**1 MΩ</td>
<td></td>
<td>22 pF**</td>
</tr>
<tr>
<td><strong>OVervoltage protection</strong></td>
<td><strong>±200 V</strong></td>
<td><strong>±200 V</strong></td>
<td><strong>±100 V</strong></td>
</tr>
<tr>
<td><strong>SAMPLING</strong></td>
<td><strong>100 ns/div to 1000 s/div</strong></td>
<td><strong>100 ns/div to 1000 s/div</strong></td>
<td><strong>100 ns/div to 1000 s/div</strong></td>
</tr>
<tr>
<td><strong>Maximum sampling rate (real-time)</strong></td>
<td><strong>1/2 channels: 80 MS/s</strong></td>
<td><strong>80 MS/s</strong></td>
<td><strong>80 MS/s</strong></td>
</tr>
<tr>
<td><strong>Buffer size</strong></td>
<td><strong>32 MS shared between active channels</strong></td>
<td><strong>32 MS shared between active channels</strong></td>
<td><strong>32 MS shared between active channels</strong></td>
</tr>
<tr>
<td><strong>TRIGGERING</strong></td>
<td><strong>Any input channel</strong></td>
<td><strong>Any input channel</strong></td>
<td><strong>Any input channel</strong></td>
</tr>
<tr>
<td><strong>Modes</strong></td>
<td><strong>None, single, repeat, auto, rapid</strong></td>
<td><strong>None, single, repeat, auto, rapid</strong></td>
<td><strong>None, single, repeat, auto, rapid</strong></td>
</tr>
<tr>
<td><strong>Trigger types</strong></td>
<td><strong>Rising edge, falling edge, edge with hysteresis, pulse width, runt pulse, dropout, windowed</strong></td>
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<td><strong>Rising edge, falling edge, edge with hysteresis, pulse width, runt pulse, dropout, windowed</strong></td>
</tr>
<tr>
<td><strong>PERFORMANCE</strong></td>
<td><strong>50 ppm</strong></td>
<td><strong>50 ppm</strong></td>
<td><strong>50 ppm</strong></td>
</tr>
<tr>
<td><strong>DC accuracy</strong></td>
<td><strong>1% of full scale</strong></td>
<td><strong>1% of full scale</strong></td>
<td><strong>1% of full scale</strong></td>
</tr>
<tr>
<td><strong>Trigger resolution</strong></td>
<td><strong>1 LSB</strong></td>
<td><strong>1 LSB</strong></td>
<td><strong>1 LSB</strong></td>
</tr>
<tr>
<td><strong>Trigger re-arm time</strong></td>
<td><strong>2.5 μs (fastest timebase)</strong></td>
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<td><strong>2.5 μs (fastest timebase)</strong></td>
</tr>
<tr>
<td><strong>ENVIRONMENT</strong></td>
<td><strong>Operating: 0 °C to 45 °C</strong></td>
<td><strong>For stated accuracy: 20 °C to 30 °C</strong></td>
<td><strong>Storage: –20 °C to 60 °C</strong></td>
</tr>
<tr>
<td><strong>Humidity range</strong></td>
<td><strong>Operating: 5% to 80% RH, non-condensing</strong></td>
<td><strong>Storage: 5% to 95% RH, non-condensing</strong></td>
<td><strong>5% to 95% RH, non-condensing</strong></td>
</tr>
<tr>
<td><strong>PC connection</strong></td>
<td><strong>USB 2.0. Compatible with USB 1.1</strong></td>
<td><strong>USB 2.0. Compatible with USB 1.1</strong></td>
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</tr>
<tr>
<td><strong>Power supply</strong></td>
<td><strong>5 V @ 500 mA max. from USB port</strong></td>
<td><strong>5 V @ 500 mA max. from USB port</strong></td>
<td><strong>5 V @ 500 mA max. from USB port</strong></td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td><strong>200 mm x 140 mm x 38 mm including connectors</strong></td>
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<td><strong>200 mm x 140 mm x 38 mm including connectors</strong></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td><strong>&lt; 500 g</strong></td>
<td><strong>&lt; 500 g</strong></td>
<td><strong>&lt; 500 g</strong></td>
</tr>
</tbody>
</table>
## Model PicoScope 4226 / PicoScope 4227

### Inputs
- **Number of channels**: 2 BNC inputs
- **Analog bandwidth**: 50 MHz / 100 MHz
- **Voltage ranges**: ±50 mV to ±20 V in 9 ranges
- **Sensitivity**: 10 mV/div to 4 V/div
- **Input coupling**: AC or DC, software-controlled
- **Input impedance**: 1 MΩ || 16 pF
- **Overvoltage protection**: ±100 V

### Sampling
- **Timebases**: 100 ns/div to 1000 s/div / 50 ns/div to 1000 s/div
- **Maximum sampling rate (real-time)**: 1 channel: 125 MS/s / 2 channels: 125 MS/s
- **Maximum sampling rate (ETS)**: 10 GS/s
- **Buffer size**: 32 MS shared between active channels

### Trigging
- **Sources**: Ch A, Ch B, Ext
- **Modes**: None, single, repeat, auto, rapid
- **Ch A, Ch B trigger types**: Edge, window, pulse, interval, dropout, runt, delayed
- **EXT trigger types**: Rising edge, falling edge

### Ext Trigger Input
- **Connector**: BNC
- **Bandwidth**: 100 MHz
- **Impedance**: 1 MΩ || 20 pF
- **Threshold range**: ±150 mV to ±20 V
- **Overvoltage protection**: ±100 V

### Function Generator / Arbitrary Waveform Generator
- **Connector**: BNC
- **Function generator frequency range**: DC to 100 kHz
- **Function generator waveforms**: Sine, square, triangle, ramp, sin(x)/x, Gaussian, half-sine, white noise, DC level
- **Buffer size**: 8192 samples
- **DAC update rate**: 20 MS/s
- **DAC resolution**: 12 bits
- **Bandwidth**: 100 kHz
- **DC accuracy**: 1%
- **Output range**: ±250 mV to ±2 V
- **Output offset range**: ±1 V
- **Max. combined output**: ±2.5 V
- **Output resistance**: 600 Ω
- **Overvoltage protection**: ±10 V

### Performance
- **Timebase accuracy**: 50 ppm
- **DC accuracy**: 1% of full scale
- **Trigger resolution**: 1 LSB (Ch A, Ch B)
- **Trigger re-arm time**: 1 μs (fastest timebase, rapid trigger)

### Environment
- **Temperature range**: Operating: 0 °C to 45 °C / For stated accuracy: 20 °C to 30 °C
- **Humidity range**: Operating: 5% to 80% RH, non-condensing / Storage: 5% to 95% RH, non-condensing
- **PC connection**: USB 2.0. Compatible with USB 1.1
- **PC operating system**: Windows XP (SP3), Windows Vista, Windows 7 and Windows 8 (not Windows RT). 32-bit and 64-bit versions.
- **Power supply**: 5 V @ 500 mA max. from USB port
- **Dimensions**: 200 mm x 140 mm x 38 mm including connectors
- **Weight**: < 500 g
- **Compliance**: EU EMC and LVD Standards / RoHS and WEEE, FCC Rules Part 15 Class A

### Additional features:
- Mask limit testing with alarms
- Serial data decoding (CAN, I2C etc.)
- Per-channel low-pass filtering
- Math channels
- Reference waveforms
- Waveform buffer with up to 10,000 segments and visual navigator
- Digital Color and Analog Intensity persistence modes
- XY mode
All-in-one instruments

The PicoScope 4000 Series PC Oscilloscopes are extremely versatile, with an oscilloscope and spectrum analyzer included in every model.

PicoScope 4224 IEPE

The 2-channel IEPE version is compatible with industry-standard IEPE accelerometers and microphones, making it suitable for a variety of measurement applications including noise and vibration analysis.

Convenience and speed

The PicoScope 4000 Series scopes obtain their power from the USB 2.0 interface, so there’s no need for an external power supply. The USB port also delivers high-speed data to your PC to give you a responsive, high-resolution display. With sampling ranges from 80 MS/s to 250 MS/s, the 4000 Series scopes are some of the fastest USB-powered 12-bit scopes around.

Deep memory

The 32 M sample buffer is ‘always on’. There is never a compromise between buffer size and waveform update rate, because the PicoScope 4000 Series always maximises both at the same time. Now you can capture every waveform with full detail without having to think about it.

Advanced software

The scopes are bundled with the latest version of PicoScope for Windows. PicoScope is easy to use and can export data in a variety of graphical, text and binary formats. Also included are Windows drivers and example programs.

Arbitrary Waveform Generator

The PicoScope 4226 and 4227 come with an AWG/Function generator with a frequency range of 100 kHz, 12-bit resolution, and a 8192 sample buffer.

Ordering Information

<table>
<thead>
<tr>
<th>ORDER CODE</th>
<th>PART DESCRIPTION</th>
<th>GBP</th>
<th>USD*</th>
<th>EUR*</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP493</td>
<td>PicoScope 4424</td>
<td>799</td>
<td>1319</td>
<td>967</td>
</tr>
<tr>
<td>PP492</td>
<td>PicoScope 4224</td>
<td>499</td>
<td>824</td>
<td>604</td>
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<tr>
<td>PP695</td>
<td>PicoScope 4224 IEPE</td>
<td>599</td>
<td>989</td>
<td>725</td>
</tr>
<tr>
<td>PP671</td>
<td>PicoScope 4226 Kit</td>
<td>699</td>
<td>1154</td>
<td>846</td>
</tr>
<tr>
<td>PP672</td>
<td>PicoScope 4227 Kit</td>
<td>899</td>
<td>1484</td>
<td>1088</td>
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