AN INTRODUCTION TO PC OSCILLOSCOPES

**Picoscope Software is supplied with every Picoscope to create real-time oscilloscope.**

**Sampling Rate**
PC oscilloscopes work by “sampling” the input signal—measuring its value at regular intervals and storing those values in its memory. Any changes in the signal between one sample and the next are lost. So, to avoid losing important details, the sampling rate must be fast enough for the type of signal being measured. PicoScope devices are available with a wide range of sampling rates from 10 million to 5 billion samples per second (10 MS/s to 5 GS/s).

**Persistence Mode**
Switches to digital color or analog intensity mode. Both modes are fully configurable.

**Spectrum Mode**
Switches to spectrum analysis mode.

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

**Tools**
Custom probes, math channels, reference waveforms, serial decoding, alarms, masks and macro recorder.

**Timebase Controls**
Sets the time interval across the screens, zoom factor, and record length.

**Buffer Controls**
PicoScope stores the most recent waveforms in a buffer. Use these controls to scan backwards and forwards through the buffer.

**Flexible Resolution**
The PicoScope 1000 Series allows you to select hardware vertical resolution.

**Trigger Marker**
Click to pan and zoom around the entire view. (To zoom a single channel, use the scaling buttons).

**Zoom Buttons**
Click to add an automatic measurement to the measurements table, or to delete or edit one.

**Signal Generator**
For oscilloscopes with a built-in signal generator, this button lets you set up the output signal.

**Mixed Signal Oscilloscopes**
PicoScope MSOs can measure 1 or 4 analog and 16 digital channels at once. Dual logic thresholds allow you to operate with mixed logic families, and advanced triggering can be activated for analog or digital inputs or a combination of both. This icon will only appear if you have a MSO plugged in.

**Ruler Legend**
Shows measurements of all rulers on screen. Also shows difference between two rulers.

**Serial Decoding**
PicoScope has support for a total of eleven protocols: CAN, LIN, FlexRay, SENT (Fast and Slow) UART, USB (LS, FS, HS), I2C, I2S, Ethernet 10BASE-T, Ethernet 100BASE-TX, Ethernet 1000BASE-SX, Ethernet 1000BASE-LX, Ethernet 1000BASE-CX, USB, Li-Fi, 802.15.4, Zigbee, Bluetooth 4.0.

**Channel Axis**
There is a color-coded axis for each channel. Drag it up or down to position the channel.

**Reference Waveform**
Waveforms can be saved for comparison with live data.

**Scale and Offset**
There is a color-coded button for each channel. Click it to reveal the scale and offset controls.

**Measurements Table**
Lists all your dynamically updated automatic measurements. Choose from dozens of time-domain and frequency-domain measurement types.

**Phase Rulers**
Display phase in degrees or percent, with adjustable partitions.

**Updates to Picoscope can be downloaded free**

**The Picoscope® Range**
- PicoScope 2000 Series
  - Power & performance in your hand
  - Deep memory 2 or 4 channel and MSO
- PicoScope 3000 Series
  - Benchtop performance in a pocket sized scope
  - 8 analog and 16 digital channels at 1 GS/s
  - USB (LS, FS, HS), PS/2, Ethernet 100BASE-TX
- PicoScope 4000 Series
  - 16 analog and 32 digital channels at 2 GS/s
  - USB (LS, FS, HS), PS/2, Ethernet 100BASE-TX, USB-C, 1-Wire, RS-232/UART, ST-Link, Ethernet 1000BASE-SX, Ethernet 1000BASE-LX, Ethernet 1000BASE-CX, USB, Li-Fi, 802.15.4, Zigbee, Bluetooth 4.0
- PicoScope 5000 Series
  - Flexible resolution
  - 8 analog and 16 digital channels at 5 GS/s
  - USB (LS, FS, HS), PS/2, Ethernet 100BASE-TX, USB-C, 1-Wire, RS-232/UART, ST-Link, Ethernet 1000BASE-SX, Ethernet 1000BASE-LX, Ethernet 1000BASE-CX, USB, Li-Fi, 802.15.4, Zigbee, Bluetooth 4.0
- PicoScope 6000 Series
  - Highest performance PC scope
  - 8 analog and 16 digital channels at 5 GS/s
  - USB (LS, FS, HS), PS/2, Ethernet 100BASE-TX, USB-C, 1-Wire, RS-232/UART, ST-Link, Ethernet 1000BASE-SX, Ethernet 1000BASE-LX, Ethernet 1000BASE-CX, USB, Li-Fi, 802.15.4, Zigbee, Bluetooth 4.0

**Picoscope 9000 Series**
- Pocket sized oscilloscope
  - Deep memory
  - 8 analog and 16 digital channels at 5 GS/s
  - USB (LS, FS, HS), PS/2, Ethernet 100BASE-TX, USB-C, 1-Wire, RS-232/UART, ST-Link, Ethernet 1000BASE-SX, Ethernet 1000BASE-LX, Ethernet 1000BASE-CX, USB, Li-Fi, 802.15.4, Zigbee, Bluetooth 4.0

**Picoscope 1000 Series**
- Deep memory
  - 8 analog and 16 digital channels at 1 GS/s
AN INTRODUCTION TO PC OSCILLOSCOPES

SAMPLING RATE
PC oscilloscopes work by “sampling” the input signal—measuring its value at regular intervals and storing those values in its memory. Any changes in the signal between one sample and the next are lost. So, to avoid losing important details, the sampling rate must be fast enough for the type of signal being measured. PicoScope devices are available with a wide range of sampling rates from 10 million to 3 trillion samples per second (10 MS/s to 3 GS/s).

PERIODIC MODE
Digital color mode is useful for estimating noise/jitter, and for spotting glitches.

RECORD LENGTH
PC oscilloscopes usually store more data on each waveform than they can display on the screen. You can zoom in to see the extra data. PicoScope has high-performance “always-on” memory that operates at full speed regardless of record length. This lets you have to worry about the memory settings and lets you capture high-resolution data every time.

PICO WAYS TO SUPPLIES
- PICO TECHNOLOGY
- SUPPLIED WITH EVERY PICO TECHNOLOGY OSCILLOSCOPE.

THE PICO RANGE

SPECTRUM MODE
Switches to digital color or analog intensity mode. Both modes are fully configurable.

PERIODIC MODE
Switches to digital color or analog intensity mode. Both modes are fully configurable.

TIMEBASE MODE
Switches to spectrum analysis mode.

SCOPE MODE
Click to return to the normal oscilloscope display mode.

CHANNEL CONTROLS
In “Auto” mode PicoScope adjusts the input range to fit the signal. You can override this to set your own range for each channel. “DC” admits all frequencies, while “AC” bars out frequencies below about 1 Hertz. “X-axis filters” preserves the underlying shape of the signal while eliminating high-frequency noise.

CHANNELS A TO D
These are linked to the channel controls above. Each channel corresponds to one of the BNC connectors on the PicoScope.

MATH CHANNEL
Choose from basic operators or advanced equations.

SCALE AND OFFSET
Click to pan and zoom around the entire view. (To zoom a single channel, use the scaling buttons).

MEASUREMENTS TABLE
Lists all your dynamically updated automatic measurements. Choose from dozens of time-domain and frequency-domain measurement types.

UPDATES TO PICOSCOPE
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THE PICO RANGE

Power & performance in your hand

PERSONAL USE

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THE PICO RANGE

SAMPLING OSCILLOSCOPES
PicoScope 4824 can measure 2 or 4 analog and 16 digital channels at once. Dual logic thresholds allow you to operate with mixed logic families, and advanced triggering can be activated for analog or digital inputs or a combination of both. This icon will only appear if you have a MSO plugged in.

RULER LEGEND
Shows measurements of rulers on screen. Also shows difference between two rulers.

SERIAL DECODING
PicoScope has support for a total of seven screen protocols: CAN, LIN, FlexRay, SENT (Fast and Slow), J1939, J2532, USB, PC, PSI, PSI-2, Ethernet TCP/UDP, PC, PSI, SPI, 1-Wire, EMX, PCI and I2C.

CHANNEL AXES
There is a color-coded axis for each channel. Drag it up or down to position the channel.

REFERENCE WAVEFORM
Waveforms can be used for comparison with live data.

SCALING AND OFFSET
Click to start displaying waveforms. Click again to stop. The space bar on the keyboard has the same function.

STOP/START CONTROL
Click to start displaying waveforms. Click again to stop. The space bar on the keyboard has the same function.

TIMEUAL
Click to return to the normal oscilloscope display mode.

PERSISTENCE MODE
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