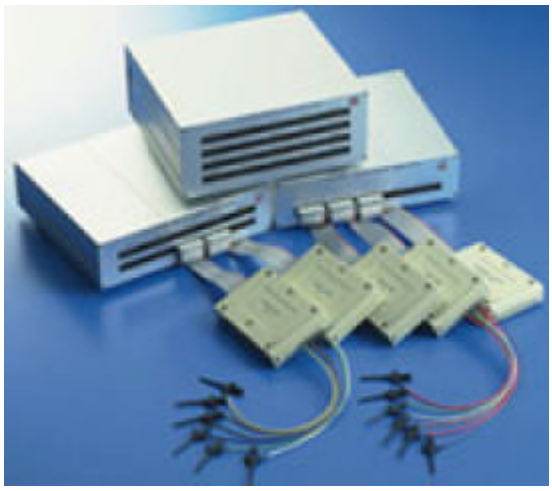
Logic Analyzers

Our latest series of logic analyzers offer all of the features and performance you have come to expect from much more expensive units: Very high speed clock rates, super deep data buffers, sophisticated triggering, high reliability and more. Because our logic analyzers are PC-based, you save money by using the components you already have, your Monitor, CPU, Keyboard, and Disk drives.

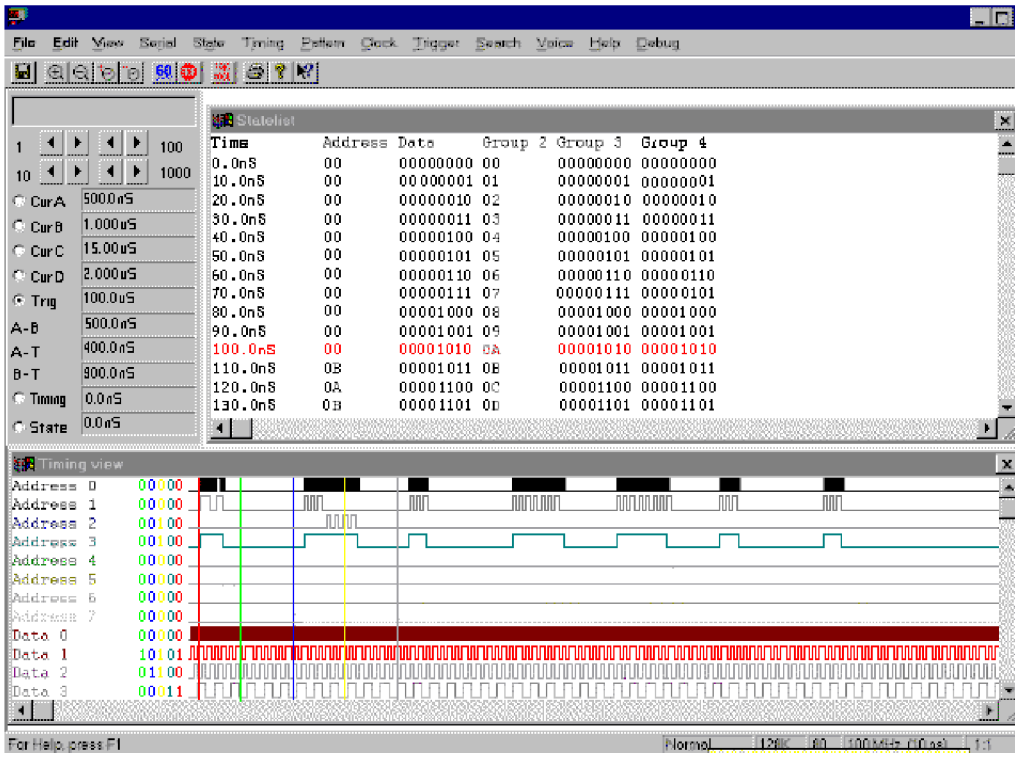
The industry's best performance-to-price ratio
Extraordinary features at a low price



Shown: (Clockwise from top) LA45160-128K, LA4540-128K, and LA4580-128K.

NEW: Optional Parallel port adapter.

ISA communication card



State-of-the-art features

- Logic Analyzer front panel software is available for DOS, Windows 95, Windows 98 and Windows NT4.0.
- High speed operation (up to 500 MHz).
- Deep data buffers (up to 512K samples per channel). Simply put, the deeper the buffer the better.
- Continuously variable pre/post trigger position. This combined with the large data buffer gives you the power to store up to 512K events surrounding the trigger point. Up to 160 data input channels.
- High Impedance probes that minimize interference with the circuit under test (200Kohm by 3pf).
- Variable threshold voltage.
- Work with up to 12 different logic thresholds variable between -6.52 and +6.12 volts like TTL, ECL, 3V logic, CMOS, or RS-232 at the same time with our multiple threshold voltage selections.
- External trigger output. Use this to trigger other instruments, like your scope.
- Statelist display.
- Timing display.
- Mixed mode display.
- Very high data bandwidth up to 100 MHz.
- 8 External high speed clock inputs with user definable combinations for flexible clock qualifying.
- Captures both state and timing simultaneously with one probe.
- Optional very high speed pattern generator with rates up to 100 Mpoints/s from 16 to 160 channels.

Sophisticated triggering means you capture the data you want

Our logic analyzer captures the data that is important to you. Its sophisticated 16 level triggering lets you fine tune the exact point to start capturing. The deep data buffers allow you to capture up to 512K samples of data.

This is important when triggering on an error condition where you need to see the sequence of events leading up to the problem.

Other analyzers with smaller buffers won't give you this power.

Not only can you capture huge amounts of data, but you can use the continuously variable pre/post trigger positioning to define exactly how much of the buffer is used to store events before and after the trigger.

Deep data buffer helps you capture everything that you need

Our data buffer gives you the flexibility to store a great number of events surrounding the trigger. Sometimes it is difficult to pinpoint the exact event that you want to trigger on. With our system you don't need to know exactly where to trigger since our large buffer will capture so many events. And of course you can capture long events that other analyzers may cut off. Also, you can maintain higher sampling rates to get more detail without running out of buffer space!

Your PC is a powerful tool - Take advantage of it

PC-based instruments provide a familiar interface. Since the instrument is in your PC, so is the data. There is no need to fuss with cables and communications programs to transfer the data to your PC. With the Pattern Generator option your instrument becomes two instruments in one, with the data shared between the two. Another advantage of being PC-based is that there are no expensive and time consuming firmware upgrades. All of our software updates are free and done via floppy disk or modem. We take full advantage of you large color monitor to display more data. Depending on your display hardware, we can display 24, 32, 40 or more channels simultaneously in different colors and still have enough room to display the system parameters. We use your keyboard for input; no need to spin wheels or stumble though multiple softkey menus.

Any change of parameters is followed by an immediate update of the data buffer resulting in a real-time scope style sensation that's quick, easy to use, intuitive, and easy to learn.

Powerful Pattern Generator option available

We even offer a 100 Mpoints/s pattern generator option for our logic analyzer. You can dedicate as few as 16 channels or as many as 160 channels to pattern generator output and leave the remaining channels for simultaneous use as a logic analyzer. Data for the pattern generator can be provided by the user or from an acquisition on the logic analyzer.

High Speed Clock Rates Give You The Power to Oversample

Although theoretically you need your logic analyzer to capture at only twice your data rate, in reality you need much more than that. Our analyzers provide up to 500 MHz clock rates for accurate and detailed data capture.

Low speed sample rate (signal looks good)

High speed sample rate (notice the glitch)

The faster you sample the more likely it is to catch a glitch.

Flexible Channel/Memory Configuration

The Logic Analyzers have multiple channel/memory/speed configurations. Selection is done through software.

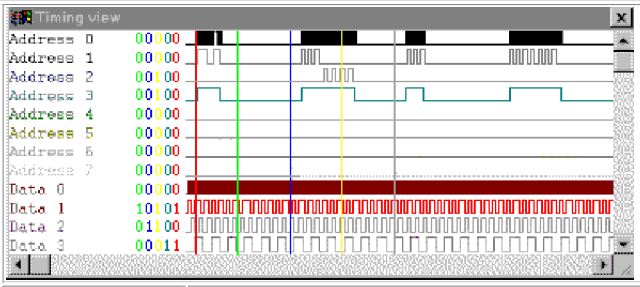
The LA-4580-128K has the following choices:

Sample rate	Channels/Memory
500 MSa/s	32Ch. (16 @500MSa/s @512k and 16@125MSa/s @128k)
250 MSa/s	48Ch. (32 @250MSa/s @256k and 16@125MSa/s @128k)
1 Sa/s to 100MSa/s	80Ch. (80 @1 Sa/s-100MSa/s @128k)
External	80Ch. (80 @DC to 80MSa/s @128k)

Timing Window

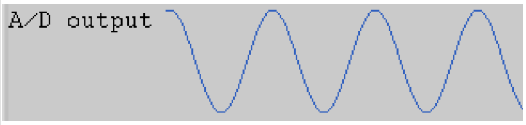
The data is displayed as a timing waveform. Each channel is displayed in it's own color. Channel names, numeric value of data at each cursor and scrollbars are also in this view.

The window can be zoomed in or out t show just a few samples or the entire buffer.



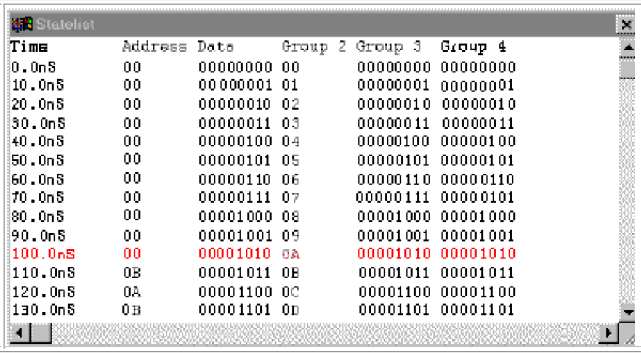
Group of channels displayed in HEX:

Group of channels displayed as Waveform:



Statelist Window

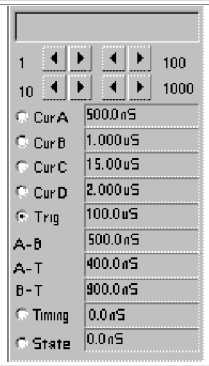
Data is organized into groups and displayed in a numeric format (ASCII, binary, hexadecimal, decimal or user defined mnemonics). The data is organized into user defined groups.



Cursor Controls and Settings

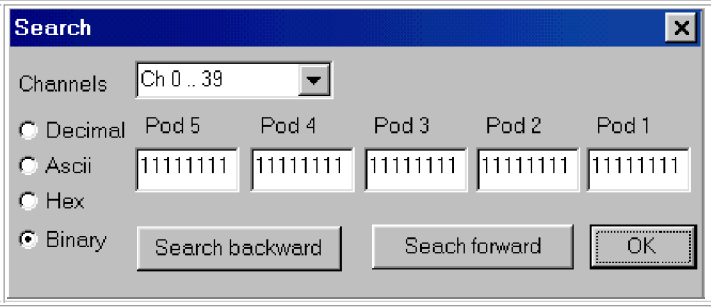
The current position of the cursors is shown here. Selecting a specific cursor or display window and then clicking the arrows allows precise positional changes.

The cursors can also be quickly repositioned by clicking on the cursor and dragging it. The position, both absolute and relative to the trigger, can be shown in time units or data sample numbers.



Search

Sorting through all your data is easier with our search feature. You can specify a search pattern, including Don't Care bits, in any of the shown numeric bases. Then just click on the forward or backwards search to find what you are looking for!



File Save/Export

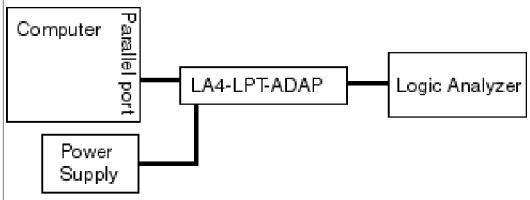
Data files can be saved for future viewing or sharing with other engineers. You can even export the data in "CSV" format to programs like mathcad, excel, word ....

Screen images can be pasted into windows compatible programs like word, excel ....

New: Optional parallel port adapter

You can now connect your LA-4000 series Logic Analyzer to the parallel port of your laptop or desktop computer.

- Allows connection between an LA-4000 series Logic Analyzer and the parallel port of your laptop or desktop computer.
- Compatible with all 40 and 80 channel versions of the LA-4000 series. Works with all 40 and 80 channelLA-4000's purchased over the last 5 years.
- Universal Power supply (90-240V, 47-63Hz)
- Compatible with win95/98 software ONLY! We plan to offer future support for this adapter in WinNT.
- Supports EPP, 4 bit and 8 bit parallel communication modes.



Logic Analyzer: Interface Card and Cable

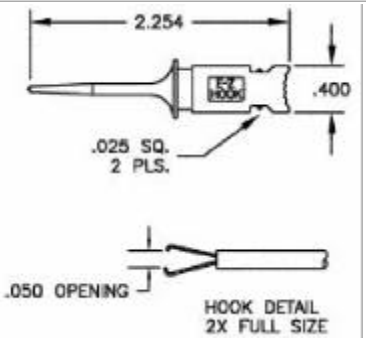
A small 16 bit ISA card that supplies the power and data connection between the analyzer and your PC. The card requires only I/O addresses, nc IRQs.

The cable is 1 meter long with 50 pin mini-D connectors on both ends. An optional 2.5 meter long cable is also available.

Logic Analyzer: Clips

The Logic Analyzer ships with a full set of color coded clips and wires. The double gripper is designed for hard-to-make test connections of varying sizes and shapes. The narrow configuration allows stacking of the test connectors side-by-side for high-density IC packages and surface-mount components. Two .025" square pins permit connection to .025" square or .030" round push-on adapters or jumpers.

Other options include:
Connecting the wires directly to .025" posts on your board and connecting your wires/cables to the posts on the Logic Pod.



®E-Z-Hook inc.

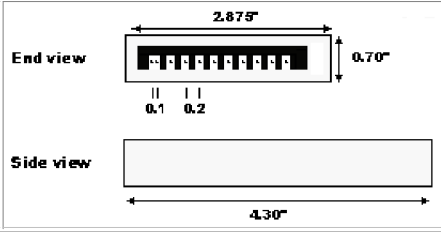
Logic Analyzer: Wires

Wires are used to connect the logic analyzer to either the clips, or directly to the circuit under test.

One wire is provided for each channel and two for grounding each data pod. The wires are 10 inches long and have female connectors at each end. These plug onto standard 0.25" posts on your cuicuit or to the pins o the clips. The other end plugs onto the pins of the data pod.

Logic Analyzer: Data Pods

A complete set of logic analyzer data pods is included. Each pod has a 20 pin, 13.5" ribbon cable to connect to the analyzer and eight data input pins plus three ground pins to connect to the above wires. This is a fully active buffered pod with a 100MHz digital bandwidth.



Overvoltage protection	
Logic inputs can handle +/- 120V continuous.	Unlike other analyzers with the Link LA-4000 series logic analyzers if you accidentally touch the wrong pin you are unlikely to damage the anything.

Technical Specifications for:

LA-4000 Series

	Sampling Speed	Channels/Memory	Price
LA4240-32K	Internal clock 200 MSa/s	24Ch. (16 @200MSa/s @64k and 8 @100MSa/s @32k)	$1350
	Internal clock 1 Sa/s to 100 MSa/s	40Ch. (40 @1 Sa/s-100MSa/s @ 32k)	
	External clock	40Ch. (40 @ DC to 50MSa/s @ 32k)	
LA4540-128K	Internal clock 500 MSa/s	16Ch. (8 @500MSa/s @512k and 8 @125MSa/s @128k)	$1900
	Internal clock 250 MSa/s	24Ch. (16 @250MSa/s @256k and 8 @125MSa/s @128k)	
	Internal clock 1 Sa/s to 100MSa/s	40Ch. (40 @1 Sa/s-100MSa/s @128k)	
	External clock	40Ch. (40 @DC to 80MSa/s @128k)	
LA4280-32K	Internal clock 200 MSa/s	48Ch. (32 @200MSa/s @64k and 16 @100MSa/s @32k)	$2000
	Internal clock 1 Sa/s to 100 MSa/s	80Ch. (80 @1Sa/s-100MSa/s @ 32k)	
	External clock	80Ch. (80 @ DC to 50MSa/s @ 32k)	
LA4580-128K	Internal clock 500 MSa/s	32Ch. (16 @500MSa/s @512k and 16@125MSa/s @128k)	$2800
	Internal clock 250 MSa/s	48Ch. (32 @250MSa/s @256k and 16@125MSa/s @128k)	
	Internal clock 1 Sa/s to 100MSa/s	80Ch. (80 @1 Sa/s-100MSa/s @128k)	
	External clock	80Ch. (80 @DC to 80MSa/s @128k)	
LA45160-128K	Internal clock 500 MSa/s	64Ch. (32 @500MSa/s @512k and 32@125MSa/s @128k)	$7000
	Internal clock 250 MSa/s	96Ch. (64 @250MSa/s @256k and 32@125MSa/s @128k)	
	Internal clock 1 Sa/s to 100MSa/s	160Ch. (160 @1 Sa/s-100MSa/s @128k)	
	External clock	160Ch. (160 @DC to 80MSa/s @128k)	

General Specifications	
External clocks	8
Bandwidth	> 100 MHz
Setup/Hold Time	2 ns / 0 ns
Threshold Voltage	Variable (-6.52 v to +6.12 v). Each Pair of pods can be set to different voltage settings.
Impedance	200 KOhm Shunted by 3 pF
Maximum Input Voltage	Inputs are clamped through a 200 KOhm resistor. ±150 V Cont., 250 V Trans.
Sampling Clock	(4540/4580/45160) 500 MSa, 250 MSa, 100 MSa, 50 MSa, 20 MSa, 10 MSa, 5 MSa, 2 MSa, 1 MSa, 500 KSa, 200 KSa, 100 KSa, 50 KSa, 20 KSa, 10KSa, 5 KSa, 2 KSa, 1 KSa, 500 Sa, 200 Sa, 100 Sa, 50 Sa, 20 Sa, 10 Sa, 5 Sa, 2 Sa and 1 Sa. (4240/4280) 200 MSa, 100 MSa, 50 MSa, 20 MSa, 10 MSa, 5 MSa, 2 MSa, 1 MSa, 500 KSa, 200 KSa, 100 KSa, 50 KSa, 20 KSa, 10KSa, 5 KSa, 2 KSa, 1 KSa, 500 Sa, 200 Sa, 100 Sa, 50 Sa, 20 Sa, 10 Sa, 5 Sa, 2 Sa and 1 Sa.
External Clock	Eight external clocks can be combined to form a versatile sampling clock.
Qualifier	The eight external clocks can be used as qualify lines.
Data Skew	Channel to channel, < 2 ns typical.

Trigger	
Trigger Conditions	0, 1, and DON'T CARE for all channels. Pass Counter: 1 to 255 Duration timer <= n or >= n Clocks. n from 1 to 255.
Trigger Edge	Trigger on the condition becoming TRUE or on becoming FALSE
Number of Levels	16 sequential trigger levels.
Trigger Position	Trigger position can be set anywhere in the capture buffer.
Trigger modes	Single: when trigger condition is met - Acquire a buffer worth of data. Normal: when trigger condition is met - Acquire a buffer worth of data - then start again. Auto: if trigger condition is not met within a set time- Acquire anyway - then start again.

Pattern Generator	
	With the optional Pattern Generator pods the LA-4000 series Logic Analyzers can be configured to work as a Pattern Generator. As few as 16 and the as many as the total number of channels can be configured to output data at the sample clock (internal or external) rate. The remaining channels will continue to function as Logic Analyzer inputs. The data to be output can be generated using our software, from your files or acquired through the Logic Analyzer channels.

Timing Display	**Windows Software** Data can be displayed on screen as a timing waveform. Each channel can have a user-specified name and can be displayed in any sequence. Channels can be also be grouped together into busses and viewed in ASCII, hexadecimal, decimal, binary, or in user defined mnemonics. Time between cursor A , cursor B, and Trigger is displayed Zoom scales of 1/4000X to 50X (horizontal). Indicator of current position of buffer shown on screen. The color of each channel can be set independently. **DOS Software** 24 channels may be displayed on screen at one time as a timing waveform. User-specified labels of up to nine characters for each channel. Channels displayed in user-selected sequence. Time between A cursor, B cursor, and Trigger is displayed. Zoom scales of 1/64X to 64X (horizontal) and 1X to 4X (vertical). Indicator of current position of buffer shown on screen. The color of each channel can be set independently. Channels can be grouped into multi-bit busses in ASCII, hexadecimal, decimal, binary or with user defined mnemonics.

Statelist Display	**Windows Software** Channels can be organized into groups and displayed on screen in ASCII, binary, decimal, hexadecimal, and user defined mnemonics. Channels can be displayed in any sequence. Time betwee A cursor, B cursor, and Trigger is displayed. **DOS Software** Data is displayed in ASCII, binary, decimal, hexadecimal, and user defined mnemonics formats.

Printed Output	**Windows software** Both Statelist and Timing waveforms can be printed on any windows compatible printer. **DOS software** Both Statelist and Timing waveforms can be printed. Graphics mode on HP LaserJet compatible or IBM compatible dot matrix printers supported.

Data Storage Formats	**Windows Software** Data and settings can be saved in .CSV (Comma Separated Values) or as a compressed format, with settings, for later display and analysis. Data can be exported in the CSV format to programs such as Excel, Mathcad, etc... **DOS Software** Data is saved in a raw binary format. Settings are also saved in a binary format. File formats descriptions included.

Hardware Compatibility	ISA 8 or 16 bit bust slot is required for the interface card. **Windows and DOS software** VGA or better display adapter required.

Software Compatibility	**Windows software** (with ISA card) Win95, Win98 and WinNT 4.0. At least the minimum computer configuration to run above operating systems is required. **DOS software** (with ISA card) 80386 CPU with memory as follows:	
	LA-4240-32K	1 meg
	LA-4280-32K	1 meg
	LA-4540-128K	4 meg
	LA-4580-128K	4 meg
	LA-45160-128K	8 meg

Optional	"C" language library, Pattern Generator pods, I2C software, and replacement clips and wires.

Hardware	
Operating Temperature	10°C to 40°C (50°F to 140°F)
Software	**Windows software** The software combines the live feel of a stand-alone oscilloscope and the familiar operation of a Windows program. Just like the DOS software, parameters can be changed on the fly while acquisitions are repeating and the results seen on the updated display. All functions are accessed through pull down menus and dialog boxes. Toolbar icons speed up the more frequent operations. **DOS software** The software works in real-time like a stand-alone oscilloscope. What this means is that operating parameters like clock rates and threshold levels can be changed on-the-fly while in repeat capture modes and that data will be continuously updated in real-time on the screen in timing or statelist modes. The software is very easy to use and most functions are set directly from the main screen. The software is controlled by single key 'hotkeys' or can be setup to be menu driven.
	Standard equipment
LA4240-32K	Logic Analyzer, Software (DOS, Win95/98, WinNT 4.0), Communications card (ISA), 5 Logic pods, 50 clips and 50 wires.
LA4540-128K	Logic Analyzer, Software (DOS, Win95/98, WinNT 4.0), Communications card (ISA), 5 Logic pods, 50 clips and 50 wires.
LA4280-32K	Logic Analyzer, Software (DOS, Win95/98, WinNT 4.0), Communications card (ISA), 10 Logic pods, 100 clips and 100 wires.
LA4580-128K	Logic Analyzer, Software (DOS, Win95/98, WinNT 4.0), Communications card (ISA), 10 Logic pods, 100 clips and 100 wires.
LA45160-128K	Logic Analyzer, Software (DOS, Win95/98, WinNT 4.0), Communications card (ISA), 20 Logic pods, 200 clips and 200 wires.

Technical specifications subject to change without notice. Software updates free via our Website.

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