# Table of Contents (LA-4000/LA-5000 Win 98/me/2k/xp Version)

## Item checklist (LA-2124)

1) The LA-2124 Plastic unit.
2) Color wires and E-Z Hook clips X 30.
3) D-Sub 25 Pin Cable 125 CM (Male ⇔ Female) X 1.
   [AWM style 2990 80    30V VW-1 **IEEE 1284** compliant]
4) DC Power Adapter **12V/1A** X 1.
5) LA-2124 User's Manual X 1.
6) CD for LA-2124 driver X 1.

## Item Checklist (LA-4000/LA-5000 Series)

1) The LA-4000 (or LA-5000) Aluminum unit.
2) Logic Pod :
   **X5** (LA-4240, LA-5540), **X10** (LA-4280, LA-5580), **X20** (LA-55160)
3) Color wires and E-Z Hook clips:
   **X50** (LA-4240, LA-5540), **X100** (LA-4280, LA-5580), **X200** (LA-55160)
4) D-Sub 25 Pin Cable 125 CM (Male ⇔ Female) X 1.
   [AWM style 2990 80    30V VW-1 **IEEE 1284** compliant]
5) USB 2.0 Adapter with cable X 1.
6) DC Power Adapter :
   **5V/5A** X 1 (LA-4240, LA-4280, LA-5540, LA-5580), **5V/10A** X 1 (LA-55160)
7) LA-4000/5000 User's Manual X 1.
8) CD for LA-4000/5000 driver X 1.
9) Pattern Generator Pod (this is optional to order)

## System Requirements

In order to use the Logic Analyzer card, the following equipment is necessary:

| | |
|---|---|
| Computer System: | Pentium PC system with at least one bi-directional mode (EPP or BPP) or USB interface (USB 1.1 or 2.0 version) |
| Memory: | A minimum of 128 Mega free RAM. |
| Mass Storage: | At least one CD drives and hard disk drives. |
| Display Adapter: | At least one of VGA Adapter. |
| Monitor: | Any monitor compatible with the above display adapter. |
| Operation System: | Windows 95/98/me. |

## Installing Software

1) Insert the distribution CD into drive E: ("E" is CD driver)
2) Run Windows.
3) Select File menu.
4) Select Run option.
5) Enter file to run E:\la5000\setup.exe (here E: is CD location)
   or E:\la2124\setup.exe for la2124.

6) Follow the on screen instructions.

## Installing Hardware

### Installing LA-4000/LA-5000 parallel port based Logic Analyzer

Please follow these instructions for installing the LA-4000/LA-5000 Parallel port based Logic Analyzers.
1) Locate an available parallel port.
2) Connect the included DB-25 cable to parallel port.
3) Connect the other end of the DB-25 cable to the LA-4000/LA-5000 series Logic Analyzers. (with a DB-25 mini gender changer)
4) Plug the power supply into the an AC outlet.
5) Plug the power supply into the LA-4000/LA-5000 series Logic Analyzers.
   Note: for LA-4240, LA-4280, LA-5540, LA-5580 use power supply **5V/5A** (Adapter)
   for LA-55160 use power supply **5V/10A** (Adapter)
6) Connect the pods and wires to the Logic Analyzer. See Installing Pods and Connecting wires.
7) Make sure the parallel printer port is set to bi-directional mode. This is done in the bios configuration program of your computer
8) After checking all connections, turn on the computer and peripherals. You are now ready to install the software.

### Installing LA-4000/LA-5000 with USB 2.0 Adapter

Please follow these instructions for installing the LA-4000 /LA-5000 Logic Analyzer with USB 2.0 adapter.

1) Turn off the computer and all peripherals connected. Remove the computer power cord from the wall outlet. Locate an available USB interface (USB 2.0 adapter cover USB 1.1 version).
2) Connect the included USB cable to USB interface.
3) Connect the other end of the USB cable to the USB 2.0 adapter.
4) Plug the Logic Analyzer power supply into the an AC outlet.
5) Plug the Logic Analyzer power supply into the Logic Analyzer.
6) Connect the pods to the Logic Analyzer.
7) After checking all connections, turn on the computer and peripherals. You are now ready to install the software.

### Installing LA-2124 parallel port based Logic Analyzer

Please follow these instructions for installing the LA-2124 Logic Analyzer Parallel port.

1) Locate an available parallel port.
2) Connect the included DB-25 cable to parallel port.
3) Connect the other end of the DB-25 cable to the LA-2124.

4) Plug the LA-2124 power supply into the an AC outlet.
5) Plug the LA-2124 power supply into the LA-2124.
6) Connect the wires to the Logic Analyzer. See Connecting wires.
7) Make sure the parallel printer port is set to bi-directional mode. This is done in the Bios configuration program of your computer.
8) After checking all connections, turn on the computer and peripherals. You are now ready to install the software.
   **Note: LA-2124 support parallel port interface only.**

## Guide to Operation

### Hardware

When making measurements with the Logic Analyzer, meaningful data can only be captured with some prior knowledge of the characteristics of the circuit under test. Before initiating any capture cycles, the Logic Analyzer must be configured using the control program. See the software section later in the manual for instructions on these procedures.To connect the Logic Analyzer to the test circuit, a series of mini-clips on the Logic Analyzer Pod for the Logic input channels. The Logic Analyzer Pod has inputs for 40 -160 channels, CH24 – 39 channel is the external clock input. or it has independently external clock for LA-2124.
At times, it may also be necessary to connect the test circuit to the computer system itself. This will eliminate more noise in the test application due to ground level differentials. This is especially true when dealing with high speed timing analysis. Use a heavy gauge wire to make a connection between the test circuit ground and the case of the computer.

### Logic Analyzer Pod Markings

**LA-4240-32k**
**LA-5540-256k**
These analyzers have 1 row (Labeled "Board 1") of connectors for 5 pods.
The connectors are labeled 1A, 2A, 3A, 4A and 5A. Connect Pod 1(Ch 0..7),
Pod 2(Ch 8..15), Pod 3(Ch 16..23), Pod 4(Ch 24..31), and Pod 5(Ch 32..39) to those connectors.

**LA-4280-32k**
**LA-5580-256k**
These analyzers have 2 rows (Labeled "Board 1" and "Board 2") of connectors for 10 pods.
"Board 2" is for channels 40..79
The connectors are labeled 1B, 2B, 3B, 4B and 5B. Connect Pod 1(Ch 0..7),
Pod 2(Ch 8..15), Pod 3(Ch 16..23), Pod 4(Ch 24..31), and Pod 5(Ch 32..39) to those connectors.
"Board 1" is for channels 0..39
The connectors are labeled 1A, 2A, 3A, 4A and 5A. Connect Pod 1(Ch 0..7),
Pod 2(Ch 8..15), Pod 3(Ch 16..23), Pod 4(Ch 24..31), and Pod 5(Ch 32..39) to those connectors.

**LA-55160-256k**
This analyzer has 4 rows (Labeled "Board 1", "Board 2", "Board 3" and "Board 4") of connectors for 20 pods.

"Board 4" is for channels 120..159
The connectors are labeled 1D, 2D, 3D, 4D and 5D. Connect Pod 1(Ch 0..7),
Pod 2(Ch 8..15), Pod 3(Ch 16..23), Pod 4(Ch 24..31), and Pod 5(Ch 32..39) to those connectors.
"Board 3" is for channels 80..119
The connectors are labeled 1C, 2C, 3C, 4C and 5C. Connect Pod 1(Ch 0..7), Pod 2(Ch 8..15),
Pod 3(Ch 16..23), Pod4(Ch 24..31), and Pod 5(Ch 32..39) to those connectors.
"Board 2" is for channels 40..79
The connectors are labeled 1B, 2B, 3B, 4B and 5B. Connect Pod 1(Ch 0..7),
Pod 2(Ch 8..15), Pod 3(Ch 16..23), Pod 4(Ch 24..31), and Pod 5(Ch 32..39) to those connectors.
"Board 1" is for channels 0..39
The connectors are labeled 1A, 2A, 3A, 4A and 5A. Connect Pod 1(Ch 0..7),
Pod 2(Ch 8..15), Pod 3(Ch 16..23), Pod 4(Ch 24..31), and Pod 5(Ch 32..39) to those connectors.


<span style="color:green">Connecting wires to Logic Analyzer</span>

**LA-4240-32k**
**LA-5540-256k**
**LA-4280-32k**
**LA-5580-256k**
**LA-55160-256k**
Each pod has 8 channels and 3 ground connections. Each of the grounds is tied together.
push wires onto the posts. Make sure that the wire is actually on the post it is possible to
jam the wire between the post and the plastic case and not make a connection.

The BNC on the back on the Logic Analyzer is a trigger out signal. This pin goes
low when you hit Go and then goes to logic High when the instrument triggers.


**LA-2124-128K**
The LA-2124-128K has 40 pins. They are organized as follows:
Top row:
00..15      Channels 0..15
CLK      External clock input
External trigger out. This pin goes low when you hit Go and then goes to logic High when
the instrument triggers Ground connection.
Bottom row:
16..23      Channels 16..23
NC      Not connected
GND      Ground connection
The wires and the clips that come with the pods are modular. The pods, wires, and clips can
all be disconnected from each other by gently pulling them apart. Removing just the clips, but
leaving the wires connected to the pods allows connections to be made to wires and posts of
the test circuit of up to 0.64 mm (0.025 in).
**Do not insert wires or posts greater than this diameter as that will expend the
contacts in the wire beyond the allowed limit, possibly damaging the connector.**

# Main Screen
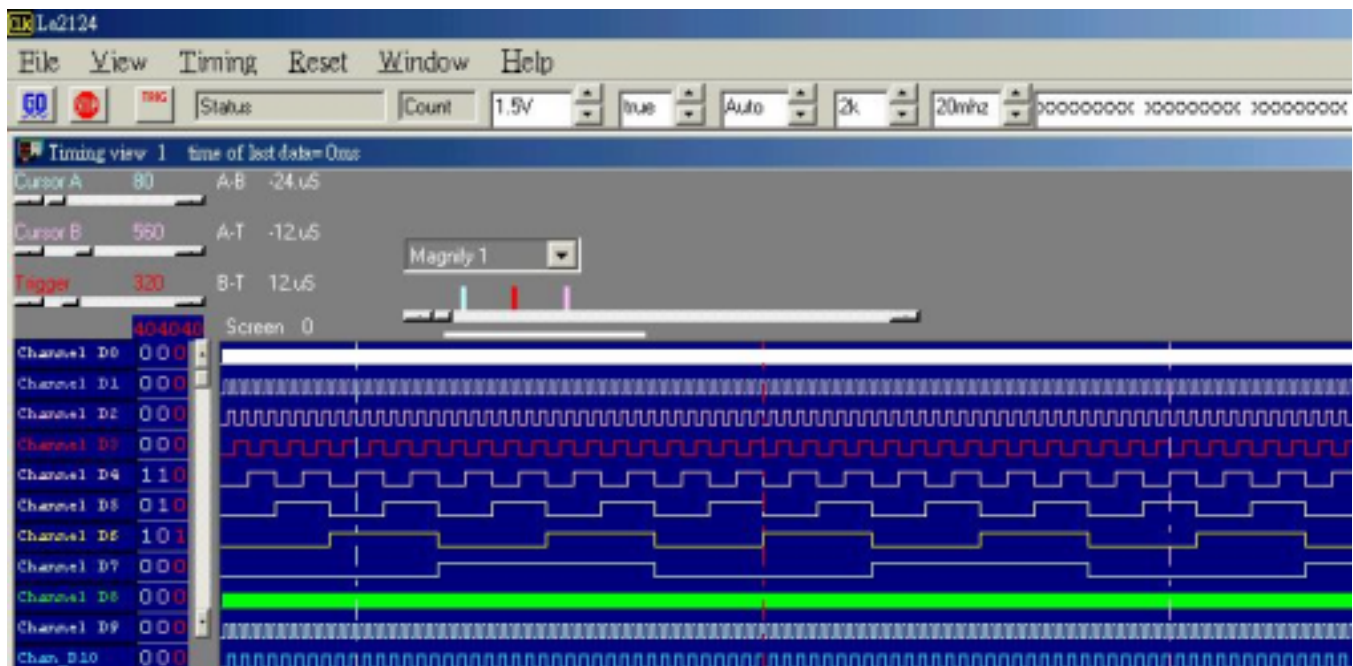


## Menu bar
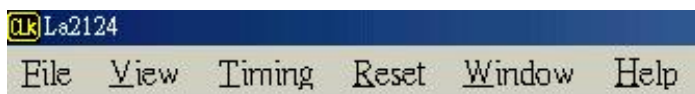


## Tool bar



## State list
Data is displayed in statelist format in this window.

# Timing window

## Multi-window

Software open more timing if system free memory have a lot. So use 256 mega or 512 mega memory will be better.

**Data1-10 to timing by point**   User point which timing memory should be placed for captured data, it can let user captured  2 or 10 set different data to buffer and display, the sequence pointed by user, this function let user have 128k*10 or 256k*10 memory size.

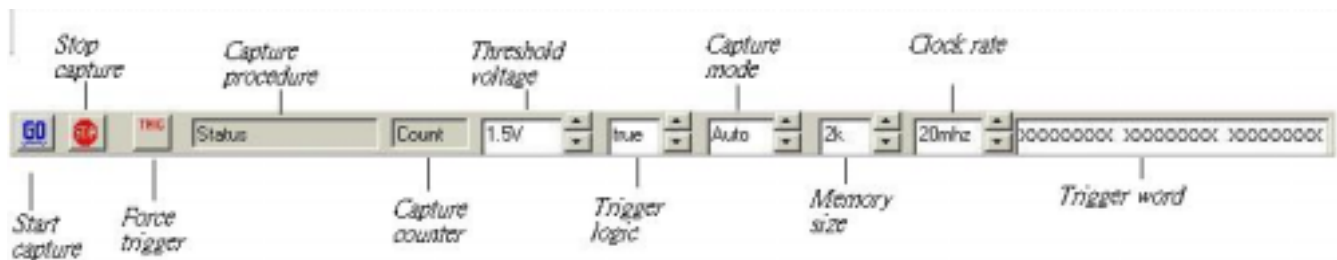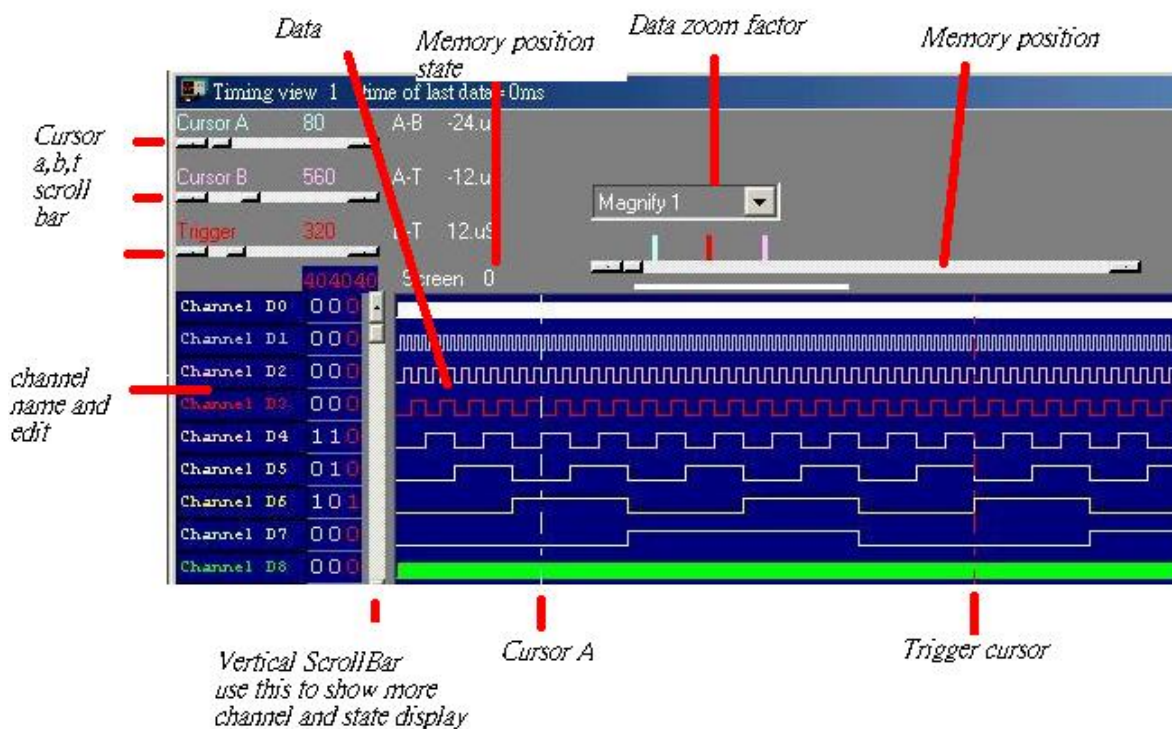**Data1-10 to timing by auto**    The same is true for it, it automatically capture 2 or 10 sets data to buffer, the sequence is 10,9,8,7,6,5,4,3,2 then 1.

**Timing1-10<-data**  Activate timing display. we suggest user use more than 1 monitor to get better show.

This software is a revolution software, it have a lot of new function, even tradition famous oscilloscope have not these powerful function.

this software show a lot of timing, let user easy to compare and analyzer timing, tradition software no matter it is stand alone or computer base oscilloscope only show one timing, these one timing software only analyzer one segment of buffer, unlike this software it can look buffer in beginning and buffer in middle and buffer in end at the same time. The following picture part A show it is locate at beginning and part B at middle of buffer at the same time, every individual timing also support their own cursor, voltage measurement, zoom factor .. etc.
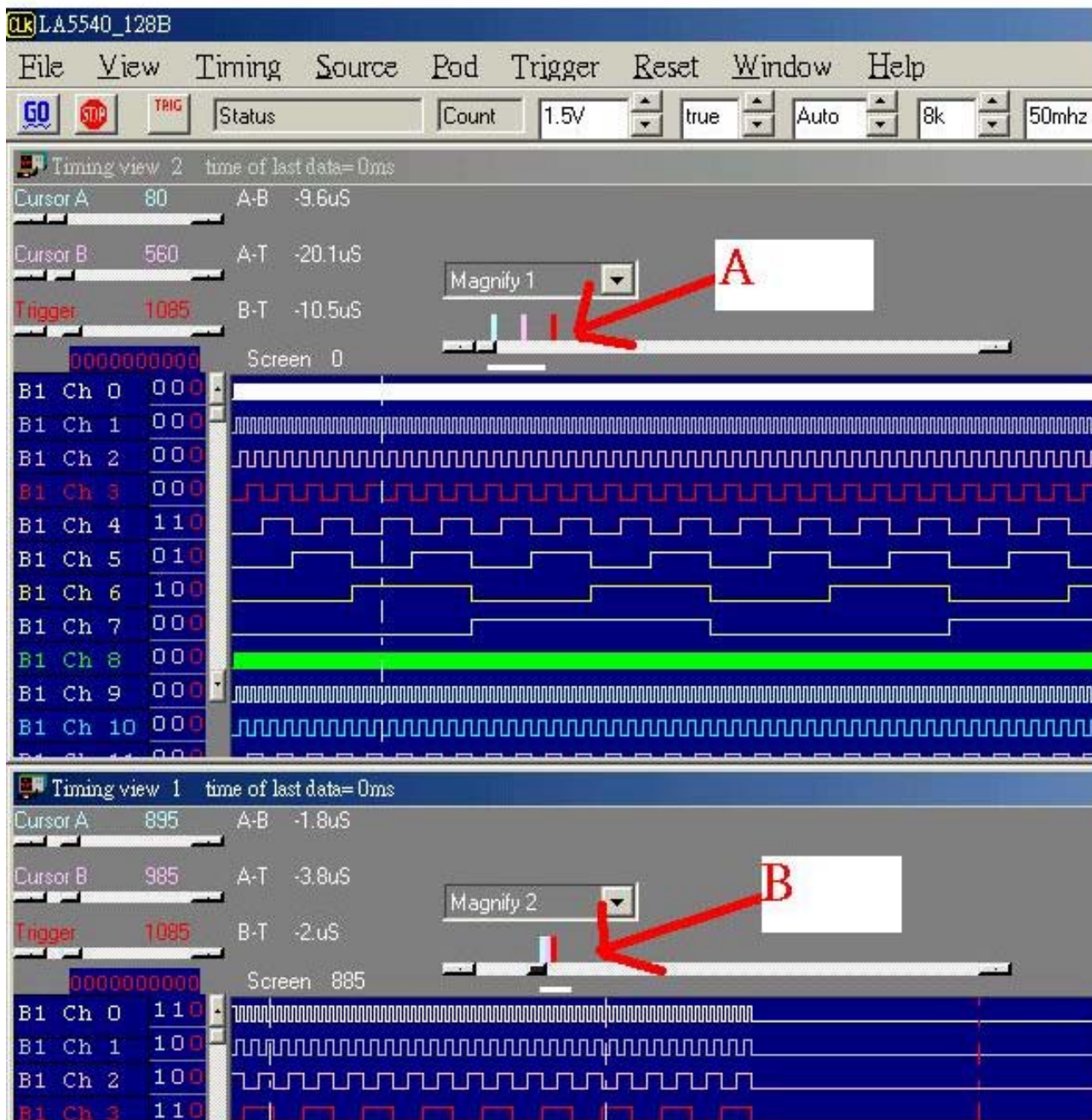
Another new function are let memory expand to 10 times by software,dso29xx now is 256k size, this software can let it look have 2.56 mega size when user open10 timing and set10 timing by auto function. (it need 512 mega system memory or more). the method is software continue capture data to these 10 timing, every timing have 256k individual buffer, so user can look almost 2.56 mega memory. it better than any famous oscilloscope in the world. The third big function are it can show long timing when you have two monitor, the following show two monitor long timing, it can let user easy analyze timing, so stand alone oscilloscope can not do it, because they only have one monitor.

The fourth function is it can support two different timing at different monitor. the follow picture is left monitor show square waveform and right monitor show another waveform. it easy compare last capture data and current data at different monitor. these function even famous oscilloscope have not support it.
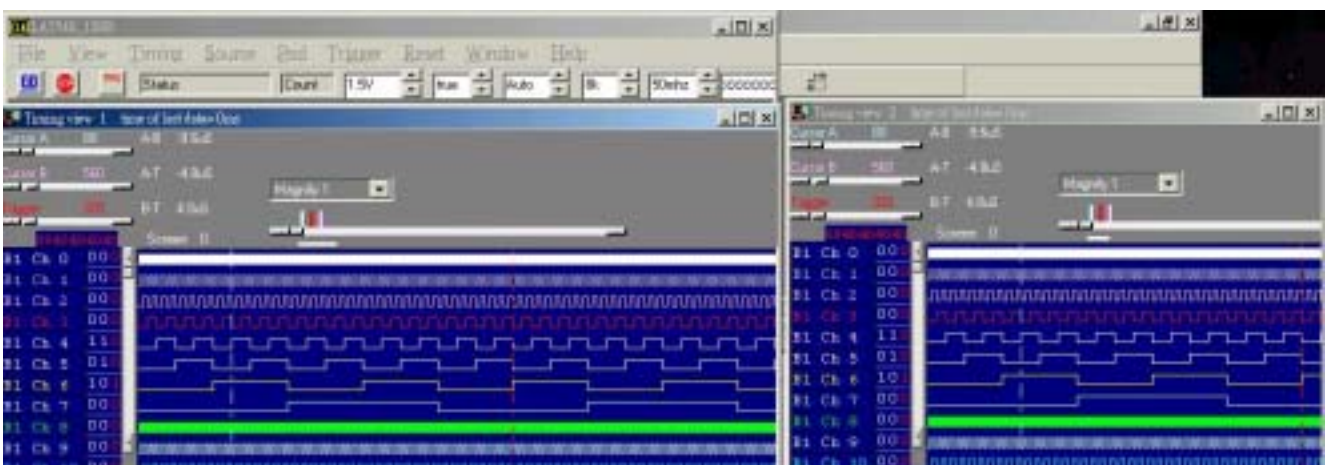


## Trigger mode (trigger menu)

Set trigger acquisition mode.

| | |
|---|---|
| Single | The LA looks for the trigger event. When it is found acquire a single buffer worth of data and stop. |
| Normal | The LA looks for the trigger event. When it is found acquire a buffer worth of data, re-arm and repeat until stop is hit. |
| Auto | Similar to Normal except that it will acquire regardless of the trigger event. |

Trigger mode setup (trigger menu)

*trigger word setup (LA-2124)*

A trigger word is the pattern that the Logic Analyzers needs to see before it will start to acquire data. The trigger word is made of a series of "1", "0" and "x" (don't care) bits. It can set at toolbar or parameter form.
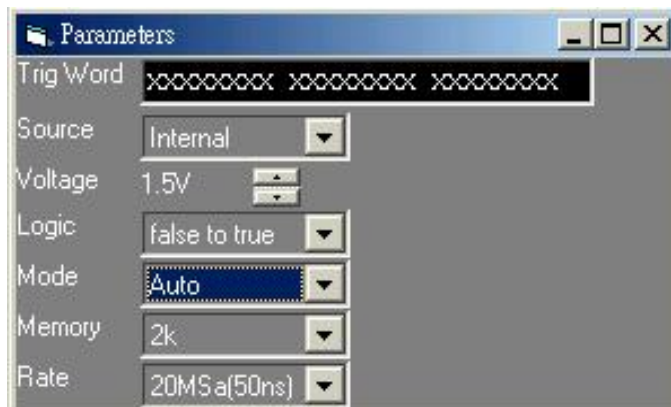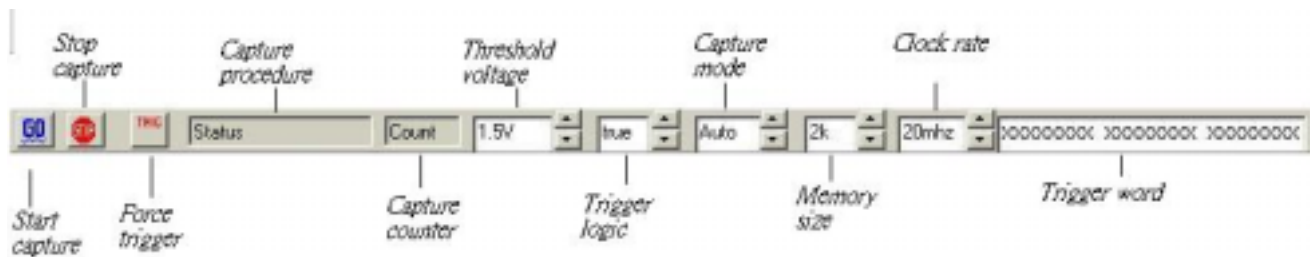
Ch23..16
    Edit pattern for channels 23 to 16
Ch15..8
    Edit pattern for channels 15 to 8
Ch7..0
    Edit pattern for channels 7 to 0
Logic
    Trigger if condition is true or false.

## *How to set trigger word (LA-2124)*

1) You can edit all 24 channels at a time.
2) Edit the pattern: The LSB is to the right. Each bit can be set to "0","1" or "X" (Don't care, true, false)
3) You can set the trigger logic to "True" (trigger when pattern matches) or "False" (trigger when pattern stops matching)

## *Trigger position (LA-2124)*

The trigger position defines how much data is captured prior to the trigger event and how much data stored after it. You set the Trigger position by moving the trigger cursor.
This feature allows you to see the data that led up to the trigger as well as what happened after the trigger.
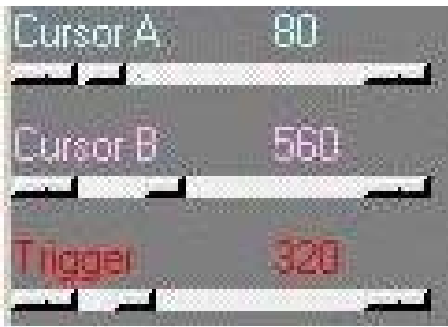
*trigger word setup (LA-4000/LA-5000)*

A sequence of up to 16 trigger words can be set. A trigger word is the pattern that the Logic Analyzers needs to see before it will start to acquire data. The trigger word is made of a series of "1", "0" and "x" (don't care) bits.
It can set trigger word at toolbar or parameter form or trigger form.

Channels   Select which channel range to edit.
  Pod 5..1   Edit pattern for each pod.
  Condition   Select which word you want to edit.
  Logic    Trigger if condition is true or false.
  Edit base   Select which base you want to edit in.
  Sequence  Select which word you want to use for each of the 16 levels.
  Count    The number of times you want to see the last word in the sequence
        before you trigger.

*How to set trigger word (LA-4000/LA-5000)*

1) The trigger words are edited here:

 You can edit 40 -160 channels at a time. If your set trigger word at trigger form.
 Edit the pattern: The LSB is to the right. Each bit can be set to "0","1" or "X" (Don't care,
      true, false)

2) The LA-4000 / LA-5000 series Logic Analyzers have 16 level sequential triggering.
 That means that can specify up to 16 conditions and the Logic Analyzer won't
 trigger until all of the conditions have been met in the order specified.

Note: You don't need to use all 16 of the levels and patterns can be repeated.

Use the list boxes to select which condition from the library of trigger patterns you want in each

trigger level. Any level set to "-" will be skipped.

Note: A pattern can be repeated in the sequence.

The last word in the sequence has some extra features:
You can look for that pattern "Count" number of times.

3) You can set the trigger logic to "True" (trigger when pattern matches) or "False" (trigger when pattern stops matching)
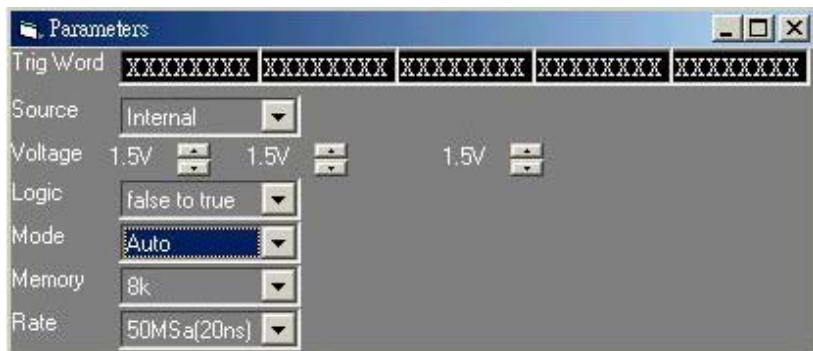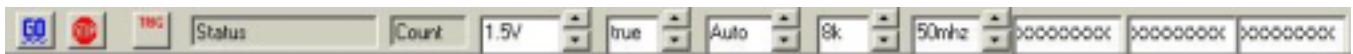
*Trigger position (LA-4000/LA-5000)*

The trigger position defines how much data is captured prior to the trigger event and how much data s stored after it. You set the Trigger position by moving the trigger cursor. This feature allows you to see the data that led up to the trigger as well as what happened after the trigger.
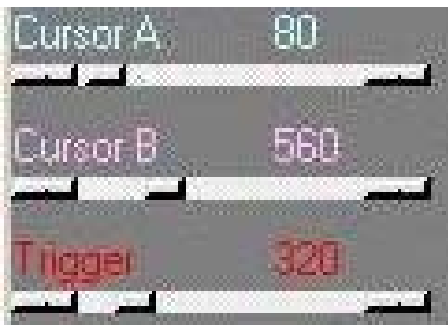


*Trigger menu*

Go         Start looking for trigger event.
Stop       Stop looking for trigger event.
End        End capture and display data captured up to this point
           independent of trigger status.
Trigger word        Define trigger event.
Threshold level     Set threshold level.
Mode                Set trigger mode.

## Threshold voltage setup

it can set threshold voltage at toolbar or parameter form.
LA-4000/LA-5000 have mode form to set all 40 --160 channels.
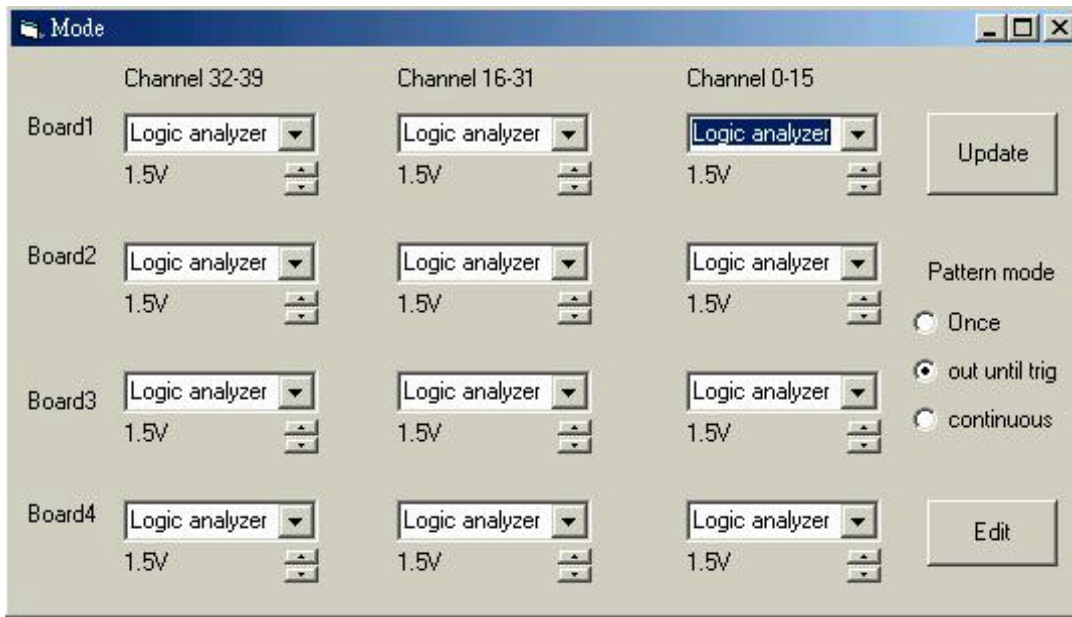
Set the threshold voltage for one or more pods. Multiple threshold voltages can be set. Each pod represents 8 channels.

## Clock menu

Select an internal clock rate or an external clock for sampling.

Clock menu for LA-2124

It can set clock rate at toolbar or parameter form.

| | |
|---|---|
| 100 MHz (10 ns) | Sample on Internal clock. |
| 50 MHz (20 ns) | Sample on Internal clock. |
| 20 MHz (50 ns) | Sample on Internal clock. |
| 10 MHz (100 ns) | Sample on Internal clock. |
| 5 MHz (200 ns) | Sample on Internal clock. |
| 2 MHz (500 ns) | Sample on Internal clock. |
| 1 MHz (1 us) | Sample on Internal clock. |
| 500 KHz (2 us) | Sample on Internal clock. |
| 200 KHz (5 us) | Sample on Internal clock. |
| 100 KHz (10 us) | Sample on Internal clock. |
| 50 KHz (20 us) | Sample on Internal clock. |
| 20 KHz (50 us) | Sample on Internal clock. |
| 10 KHz (100 us) | Sample on Internal clock. |
| 5 KHz (200 us) | Sample on Internal clock. |

**Note: The software only transfers data to the PC when the buffer is full. If you are using a slow clock it might take a long time to fill the buffer.**

**Recording time/Acquisition time/Capture time/Buffer Length**

15

The Logic analyzer will acquire data for time equal to Buffer length * clock rate. Example:

If buffer length = 128K and sample rate = 100KHz. The LA will record for 1.32 seconds (128K * 10 us).

Clock menu for la-5540-256k, la-5580-256k and la-55160-256k

It can set clock rate at toolbar or parameter form.

| | |
|---|---|
| 500 MHz (2 ns)    Pod 1*,3*,5* is at 500MHz, Pod 2*, 4* are off | |
| 250 MHz (4 ns) | All Pods active. |
| 100 MHz (10 ns) | All Pods active. |
| 50 MHz (20 ns) | All Pods active. |
| 20 MHz (50 ns) | All Pods active. |
| 10 MHz (100 us) | All Pods active. |
| 5 MHz (200 us) | All Pods active. |
| 2 MHz (500 us) | All Pods active. |
| 1 MHz (1 us) | All Pods active. |
| 500 KHz (2 us) | All Pods active. |
| 200 KHz (5 us) | All Pods active. |
| 100 KHz (10 us) | All Pods active. |
| 50 KHz (20 us) | All Pods active. |
| 20 KHz (50 us) | All Pods active. |
| 10 KHz (100 us) | All Pods active. |
| 5 KHz (200 us) | All Pods active. |
| 2 KHz (500 us) | All Pods active. |
| 1 KHz (1 ms) | All Pods active. |
| 500 Hz (2 ms) | All Pods active. |
| 200 Hz (5 ms) | All Pods active. |
| 100 Hz (10 ms) | All Pods active. |
| 50 Hz (20 ms) | All Pods active. |
| 20 Hz (50 ms) | All Pods active. |
| 10 Hz (100 ms) | All Pods active. |
| 5 Hz (200 ms) | All Pods active. |
| 2 Hz (500 ms) | All Pods active. |
| 1 Hz (1 s) | All Pods active. |

Pattern Generator functions are not available at 250 MHz and 500 MHz modes.

**Note: The software only transfers data to the PC when the buffer is full. If you are using a slow clock it might take a long time to fill the buffer.**

**Recording time/Acquisition time/Capture time/Buffer Length**

The Logic analyzer will acquire data for time equal to Buffer length * clock rate.

Example

> If buffer length = 8K and sample rate = 1KHz. The LA will record for 8.096 seconds (8K * 1ms).

## External clock (LA-2124)

External clock setup. The LA has up to 1 external clock input. This input can be set to rising or falling. The LA will acquire 1 sample every time it sees a clock.

Note 1: The LA only transfers data to the PC after the data buffer is full. Slow external clocks might take a very long time to fill the buffer.

Note 2: Make sure that your external clock has enough pulses to fill the buffer or the instrument will never transfer data.

## External clock (LA-4000/LA-5000)

External clock setup. The LA has up to 8 external clock inputs. These inputs can be combined to create very complex clocking. Pod 5A is used for the external clock.

Note:
The LA only transfers data to the PC after it has received a full buffer worth of data. If your clock is very slow it might take a long time to fill the buffer. Please make sure your clock happens enough times to fill the buffer.
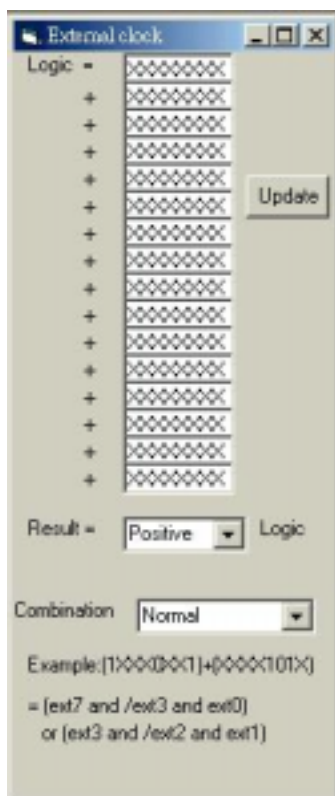
1..16             16 sets of 8 bit patterns that are OR's together to form a complex clock.
                   Each bit can be set to 0, 1 or X.
Logic              Clock on the rising or falling edge.

**Modes:**:

Normal             External clock

Latched 100MHz     Clock on external + 100MHz internal to avoid too narrow waveform to
                   make circuit crazy.

Rising and falling     Clock on the rising and the falling edge of the external clock.

**Logic**:

Logic rising          Clock on the external rising edge.
Logic falling         Clock on the external falling edge.

**How to use:**
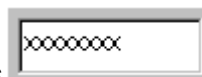
1) Each word represents the 8 external clocks `xxxxxxxx` Each bit can be set to
   0(low), 1(high) or X (don't care).
2) The 16 words are OR's together to form a complex clock.
3) Set clock mode:

        Normal      Sample on the external clock.
        Internal + external      Mix of internal + external clock.
        Rising and falling Clock on the rising or the falling edge of the
        external clock.
4) Set Logic to rising or falling.

**Examples:**
Example 1: Pattern 1 = xxx1xxx0 and all other patterns are xxxxxxxx
Result:   Sample when line 4 is HIGH and line 0 is LOW.
Example 2: Pattern 1 = xxx1xxx0, Pattern 2 = xxxx xx11 and all other patterns are xxxxxxxx
Result:   Sample when line 4 is HIGH and line 0 is LOW or when Lines 1 and 0 are HIGH.

Magnify (timing)

Select a zoom ratio for the timing window. You can display the timing data in a compressed
or expanded format. Zooming in lets you see great detail. Zooming out lets you see large
abundant of data.

Zoom can be changed in the following ways:

1) Right clicking on the combo brings up a magnify factor list.

## Zoom combo
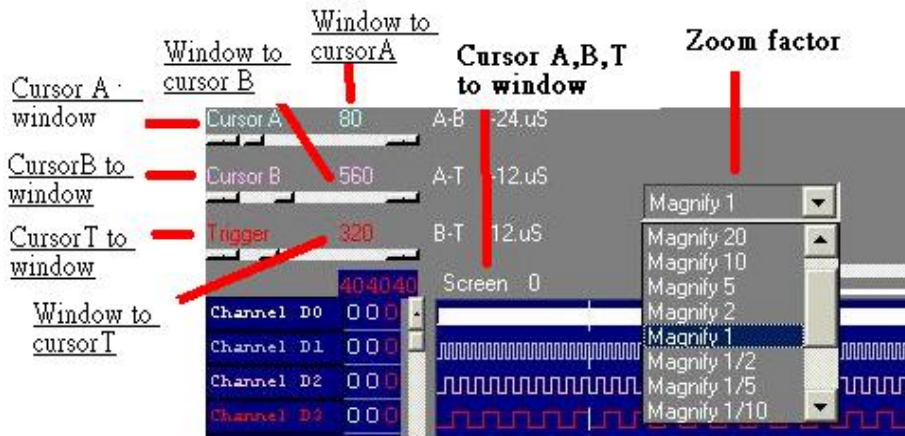


In the timing   window you can do the following:

## Zoom

Zoom in or out by selecting zoom factor combo.
Window to cursor A:          Zoom around cursor A
Window to cursor B:          Zoom around cursor B
Window to cursor T:          Zoom around cursor T (trigger cursor)
cursor A to Window:          shift cursor A to window
cursor B to Window:          shift cursor B to window
cursor T to Window:          shift cursor T to window
cursor A, B, T to Window:     shift cursor A, B, T to window

Timing window

This window shows the data in a timing waveform style display. The channel names
will be on the left edge with the data going horizontally. To the right of the channel
names are the values of data at each cursor (it is color coded to match the cursors).
The vertical scrollbar moves the window up and down to display more channels. The
horizontal scrollbar moves the data forward and backward in time.

The channel order can be changed by the color form.
The size of the window can be changed by grabbing an edge of the window and dragging it.

When the Timing window is selected (title says "active window")
Left and right arrows scroll data with respect to time,
or grabbing timing to shift data.

Up and down arrows scroll data with respect to channels.

| | |
|---|---|
| Window to cursor A: | Zoom around cursor A |
| Window to cursor B: | Zoom around cursor B |
| Window to cursor T: | Zoom around cursor T ( trigger cursor) |
| cursor A to Window: | shift cursor A to window |
| cursor B to Window: | shift cursor B to window |
| cursor T to Window: | shift cursor T to window |
| cursor A, B, T to Window: | shift cursor A, B, T to window |

Note:
> This only works on the selected window.
> Click on the window to select it.

**Cursor using**
Cursors are used to mark points of interest in the data, to measure time between events and to define pre/post trigger position.
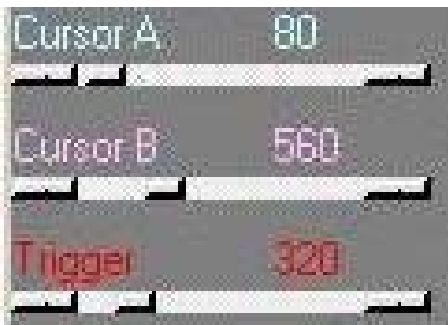


Moving a cursor:
1) In the timing you can select a cursor by using the arrow buttons in the timing move it.
2) You can also "grab" the cursor by left clicking on it in the timing and then move it by
3) "dragging" it to a new location.
4) The timing cursor A, B, T have selections that allow you to bring the cursors onto their views.

## Setting up the state window

Setting up the state display.
1) Set group.
2) Select which group to display. Groups can be in different bases.
3) Set Base.
4) Set channel combination.

Setting channel names and colors

Channel names can edit at timing window directly.
Channel names should be edited at color form.
Color form also can set all cursor color.
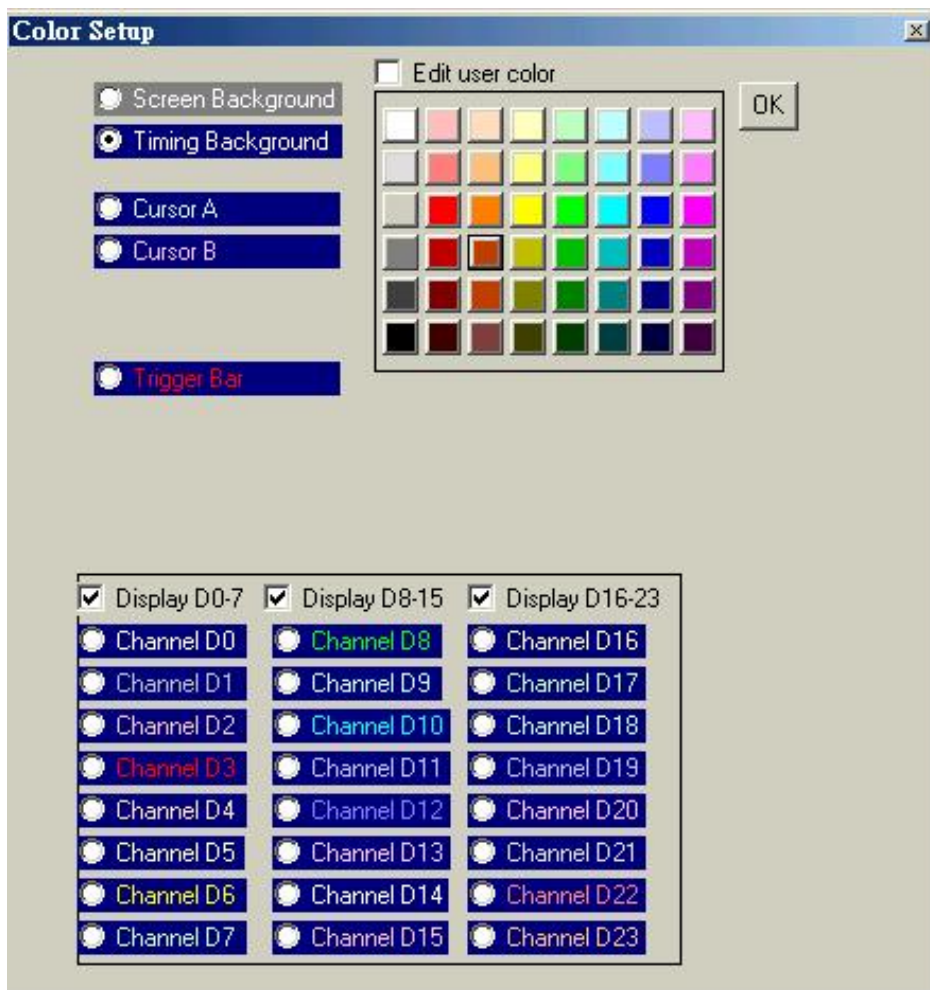
## Export (file menu)

Use this to output data to other programs.
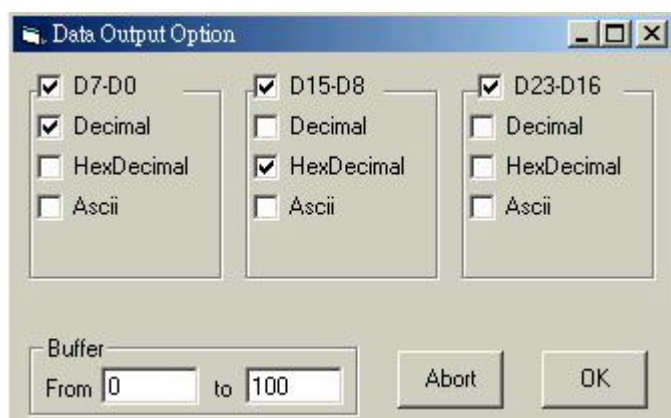


How to use:
1) Data:

Select which data to output: Individual group or all channels
Select base to output data in.

2)  Start and End:
        Select data address range.
3)  Click OK to save data.

<span style="color:green">File menu commands</span>
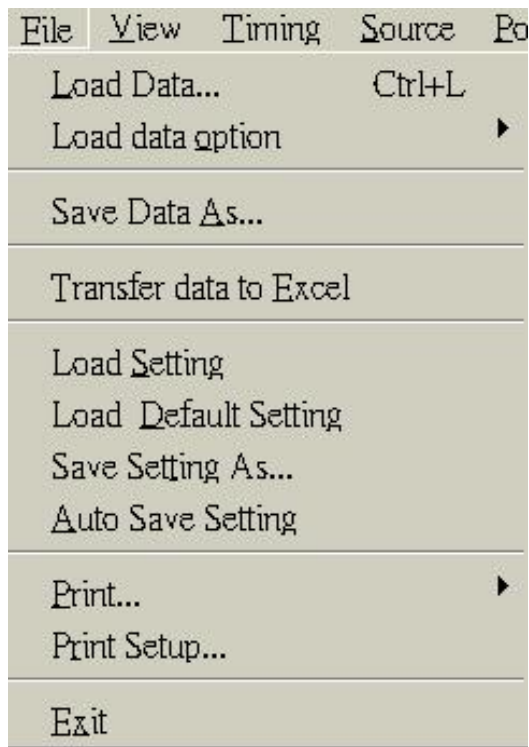


The File menu offers the following commands:

Load :          Opens an existing file (data or settings).
Save :          Saves a file to a specified file name. Saves settings or data files.
Export:         Export data to excell programs.

Auto save setting :  If checked settings will be saved when you exit the program.
                        then loaded when you load the program.

Print:          Prints data in Timing format.
Print Setup:  Selects a print mode, printer and printer connection.
Exit:           Exit.

## Pod Menu
(Not available on LA-2124)
Pod Mode setup:   Select to configure the pods and to edit the pattern generator data
                    and options.
Edit : Select this to edit pattern generator data.
Threshold voltage: Set threshold voltage. Signals above the threshold voltage is

evaluated as a "1" and signals below are "0".

The Logic Analyzer can be converted into a combination Logic Analyzer/Pattern Generator or to a Pattern Generator only. This is done by buying Pattern Generator pods, installing them instead of the Logic pods and then configuring the software.

Three different modes can be set
Logic                          Install Logic pods and acquire data.
Pattern Generator       Install Pattern Generator pods and output data.
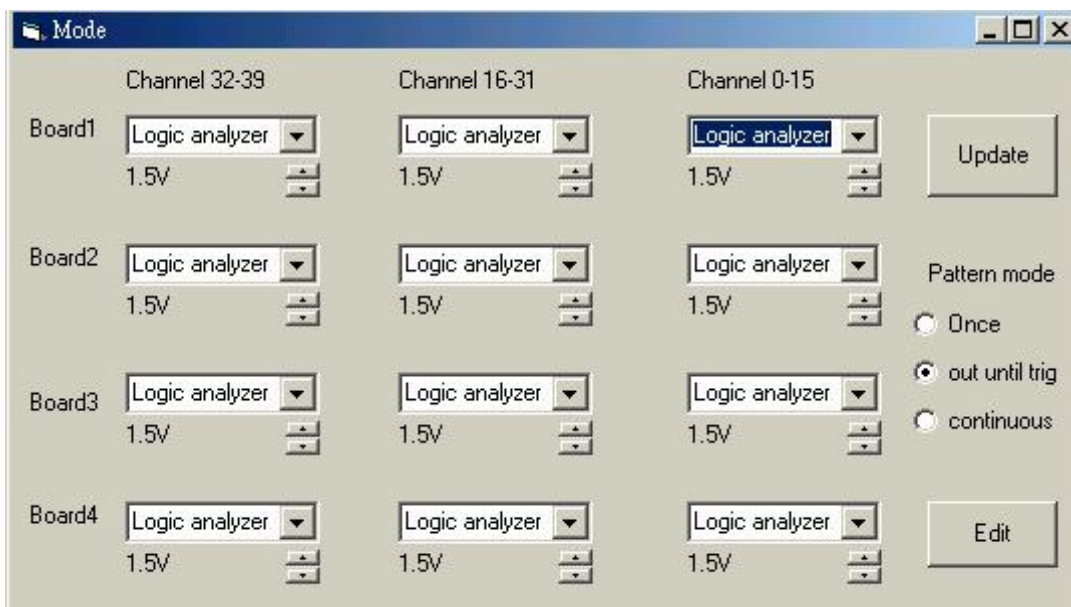


Pattern mode:
Once                     Output pattern once. Data is acquired simultaneously on Logic pods.
Out until trig          Output until trigger condition met. Data is acquired
                             simultaneously on Logic pods.
Continuous           Continuously output until stop hit. Data is not acquired
                             simultaneously on Logic pods.

How to:

1) Install pattern pods and select the matching configuration on the table above.
    Note: Pods 1 and 2 must be both either Pattern Generator or Logic Analyzer.
    Pods 3 and 4 must also be the same type.
2) Select pattern output mode.

## Pattern editor

(Not available on LA-2124)
Patterns can be edited and defined in this window. You can also get data for the pattern data by capturing it from logic channels and copying it to the pattern channels. Pattern

data can also come from data files created by this software or files that you create yourself.
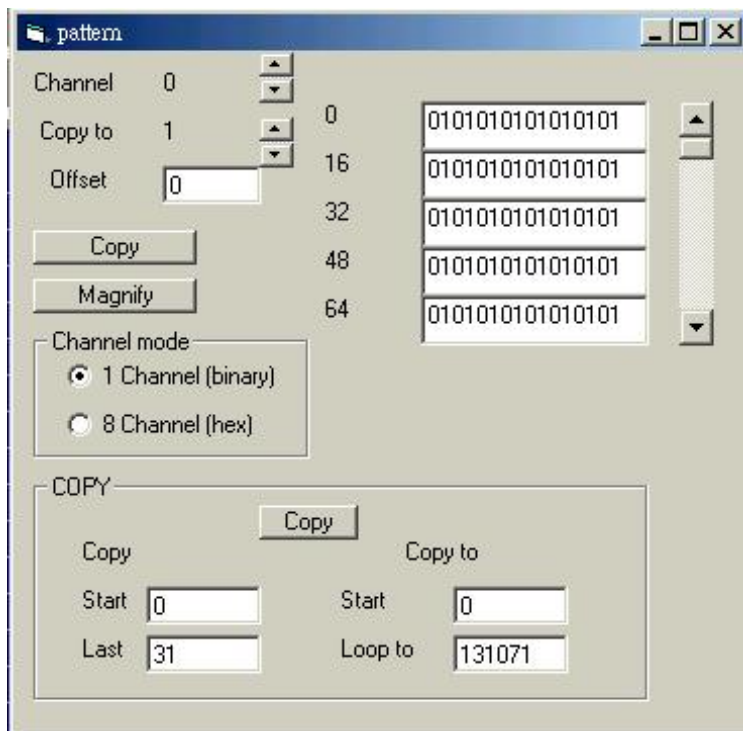


**Channel**
Select which channel (s) to edit.

**Channel copy**
Used to copy entire channels.

**Channel mode**
Select 1 channel edit or 8 channel edit.

**Magnify**
Each time the key is hit the data is expanded by a factor of two. For example
0101100 becomes 00110011110000
**Copy**
Select "copy from" range, "copy to start" and   "loop to". Then hit the
'copy' key.

Example 1:
        Copy from start = 20
        Copy from end = 30
        Copy to start = 50
        Loop to = 131071
When you click on the copy key the 131071-50 data points from position 20 to and
including position 30 in the data buffer will be copied to position 50.

## Accessories

Pattern generator pods (Not available for the LA-2124)
Pattern generator pods can be purchased to convert the LA-4000 into a pattern generator.
the mini DB-25 gender changer connect to LA-4000/LA-5000, it is parallel port based Logic
Analyzers.

USB 2.0 adapter (Not available for the LA-2124)
An optional USB adapter is available for the LA-4000 series Logic Analyzers. It allows you
to run the Analyzer from the USB port of your computer instead of the ISA

## Hardware / Software Specifications

**Note: From the date of September 2002 we do not supply the ISA bus for
LA-4000/ LA-5000 Logic Analyzer.**

Software (LA-4000/5000 series)

**Operating systems supported**.
WIN95/98/me:           Yes.
WIN NT/2000/XP:     Yes. **(usb only)**

Software (LA-2124)

**Operating systems supported**
WIN95/98/ME:           A version for win 95/98 is now available.
WIN NT/2000/XP:     Not available yet.

## Memory modes and channel specs

Memory mode
Select memory mode:                              Available Channels

**LA-2124-128K**
Max speed channels (memory size)
up to 50MHz external 24 (24 @ 128K each) All channels available
up to 100MHz internal 24 (24 @ 128K each) All channels available

**LA-4240-32K**
Max speed channels (memory size)
up to 50MHz external 40 (40 @32K each) All channels available
up to 100MHz internal 40 (40 @32K each) All channels available
100MHz 40 (40 @100MHZ @32K)
200MHz 24 (24 @200MHZ @64K) Pods 1a, 2a are at 200MHz, Pods 3a, 4a are off.
                                        Pods 5a are at 100MHz.

**LA-5540-256K**
Max speed channels (memory size).
up to 80MHz external 40 (40 @128K each) All channels available.
up to 250MHz internal 40 (40 @256K each) All channels available.
500MHz 24 (24 @500MHZ @512K) Pods 1a, 3a, 5a are at 500MHz, Pods 2a, 4a are off.

**LA-4280-32K**
Max speed channels (memory size)
up to 50MHz external 80 (80 @32K each) All channels available.
up to 100MHz internal 80 (80 @32K each) All channels available.
100MHz 80 (80 @100MHz @32K).
200MHz 48 (48 @200MHz @32K) Pods 1a, 2a & 1b, 2b, are at 200MHz.
Pods 3a, 4a & 3b, 4b are off. Pods 5a & 5b are at 100MHz.

**LA-5580-256K**
Max speed channels (memory size)
up to 80MHz external 80 (80 @ 128K each) All channels available
up to 250MHz internal 80 (80 @ 256K each) All channels available
500MHz 48 (48 @500MHz @512K) Pods 1a, 3a, 5a & 1b, 3b, 5b are at 500MHz,
Pods 2a, 4a & 2b, 4b are off.

**LA-55160-256K**
Max speed channels (memory size)
up to 80MHz external 160 (160 @ 128K each) All channels available
up to 250MHz internal 160 (160 @ 256K each) All channels available
500MHz 96 (96 @500MHz @512K) Pods 1a, 3a, 5a 1b, 3b, 5b, 1c, 3c, 5c & 1d, 3d, 5d are
at 500MHz, Pods 2a, 4a, 2b, 4b, 2c, 4c, & 2d, 4d are off.

## Window USB driver install

Windows 98/ME USB driver install

When USB2.0 control interface be connected to computer, screen will display as following:

**Add New Hardware Wizard**

Windows has found the following new hardware:

   USB2.0 Device

Windows can automatically search for and install software that supports your hardware. If your hardware came with installation media, insert it now and click Next.

What would you like to do?

○ Automatic search for a better driver (Recommended)

◉ Specify the location of the driver (Advanced)

[ < Back ]  [ Next > ]  [ Cancel ]

Click Next to continue



**Add New Hardware Wizard**

Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected

◉ Search for the best driver for your device. (Recommended).

☐ Removable Media (Floppy, CD-ROM...)

☑ Specify a location:

   D:\dso25216\Usb20Driver ▼   [ Browse ]

○ Display a list of all the drivers in a specific location, so you can select the driver you want.

[ < Back ]  [ Next > ]  [ Cancel ]

Edit or browse path to ...\USB20driver\win98_ME\gene.inf
(here D: is CD location, dso25216 may be dso29xx or la5000)
Click Next to continue

Click Next to continue



Completing install

Windows 2000 USB driver install

When USB2.0 control interface be connected to computer, screen will display as following:

**Found New Hardware Wizard**

Welcome to the Found New Hardware Wizard

This wizard helps you install a device driver for a hardware device.

To continue, click Next.

< Back    Next >    Cancel

Click Next to continue



**Found New Hardware Wizard**

**Install Hardware Device Drivers**
A device driver is a software program that enables a hardware device to work with an operating system.

This wizard will complete the installation for this device:

USB2.0 Device

A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.

What do you want the wizard to do?

⦿ Search for a suitable driver for my device (recommended)

○ Display a list of the known drivers for this device so that I can choose a specific driver

< Back    Next >    Cancel

Click Next to continue

30

Click Next to continue



Edit or browse path to ...\USB20driver\win2000_XP\gene.inf
(here F: is CD location, dso25216 may be dso29xx or la5000)
Press OK

**Upgrade Device Driver Wizard**

**Driver Files Search Results**
The wizard has finished searching for driver files for your hardware device.

The wizard found a driver for the following device:

USB2.0 Device

Windows found a driver that is a closer match for this device than your current driver.
To install the driver Windows found, click Next.

f:\dso25216\usb20driver\win2000_xp\gene.inf

< Back    Next >    Cancel

Click Next to continue



**Digital Signature Not Found**

The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.

The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.

Usb2.0 Controller 5

If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.

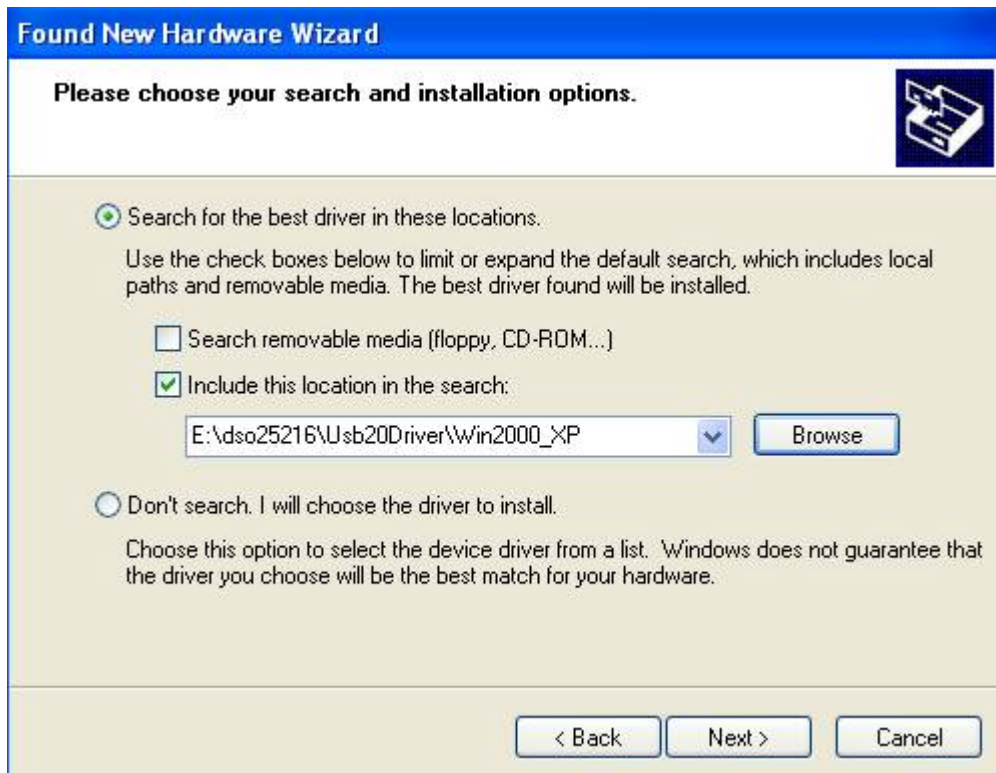Do you want to continue the installation?
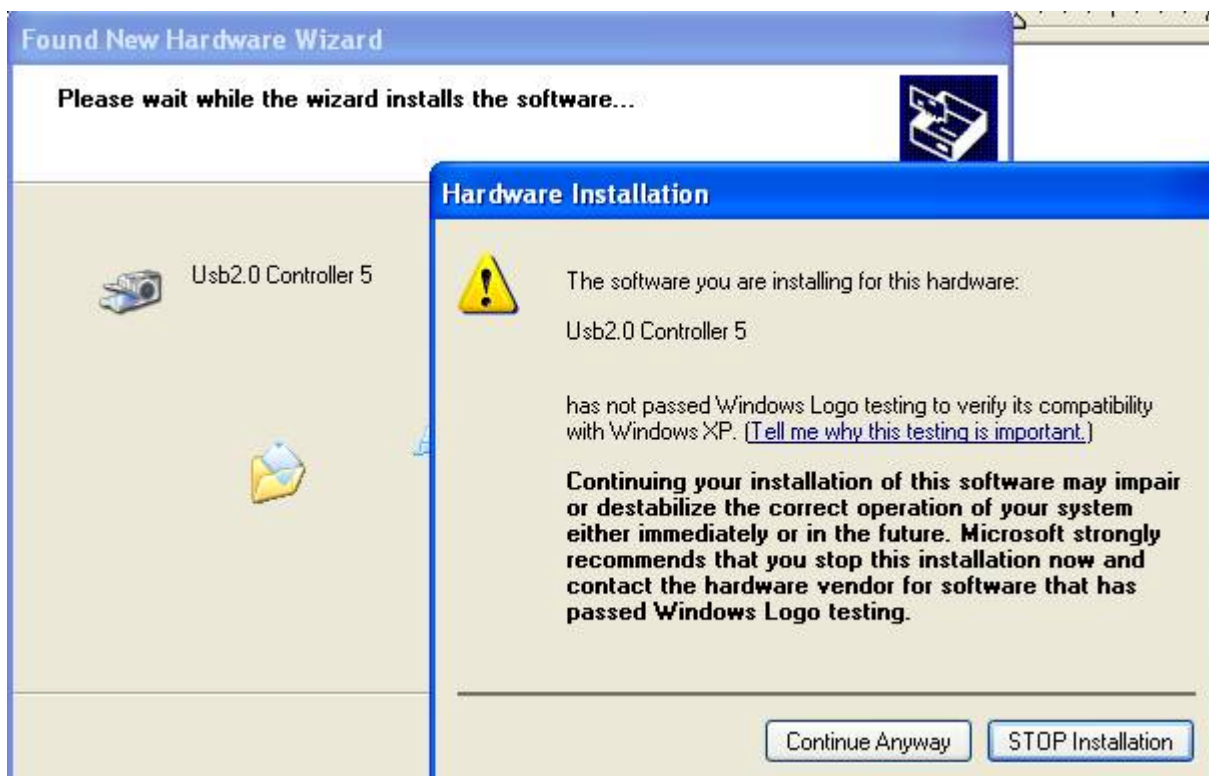
Yes    No    More Info

Click Yes to continue

Completing install

When USB2.0 control interface be connected to computer, screen will display as following:



Click Next to continue

Found New Hardware Wizard

Please choose your search and installation options.

⊙ Search for the best driver in these locations.

Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.

☐ Search removable media (floppy, CD-ROM...)

☑ Include this location in the search:

E:\dso25216\Usb20Driver\Win2000_XP        [ Browse ]

○ Don't search. I will choose the driver to install.

Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.

[ < Back ]  [ Next > ]  [ Cancel ]

Edit or browse path to ...\USB20driver\win2000_XP\gene.inf
(here E: is CD location, dso25216 may be dso29xx or la5000)
Click Next to continue



Found New Hardware Wizard

Please wait while the wizard installs the software...

Usb2.0 Controller 5

Hardware Installation

⚠ The software you are installing for this hardware:

Usb2.0 Controller 5

has not passed Windows Logo testing to verify its compatibility with Windows XP. ([Tell me why this testing is important.])

Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.

[ Continue Anyway ]  [ STOP Installation ]

34

Press Continue Anyway



Completing install

## Certificate for LA-5540/80/160, LA-4240/80, LA-2124 Introduction

**Introduction**
calibration equipment used:
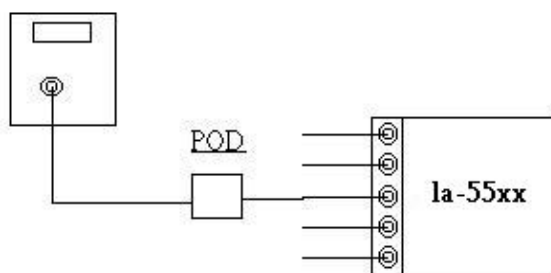
      HP 33120A   Serial No: US36034172
      Clock Computer Corp.   LA-55160 Pattern Generator
      HP 8648A Signal Generator   Serial No:3625U00521
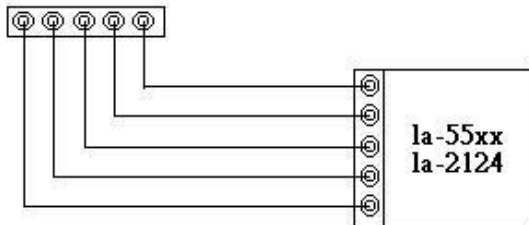
Threshold voltage calibration

Let signal generator output a square wave from -5v to 5v.
Set threshold from -4.8 to 4.8v, it should get square waveform.
Set threshold   to   5.2v, it should get low signal.
Set threshold   to   -4.8v, it should get high signal.

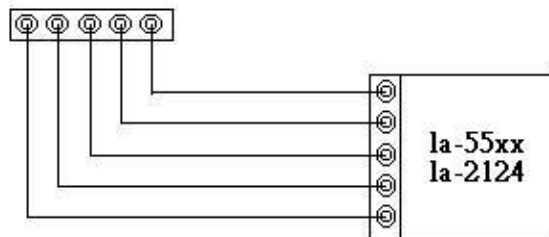Trigger word and position calibration



LA-55xx use software let trigger position always lock in 100% accuracy position, even you zoom in the waveform, still lock in 100 % accuracy position.
Use LA-55160 arbitrary pattern generator to output some specific word like 01010101 00001111 10001101 1111111 00000000... etc.
then set trigger word. it should get trigger word at proper position.
it should test more than ten sets trigger word.
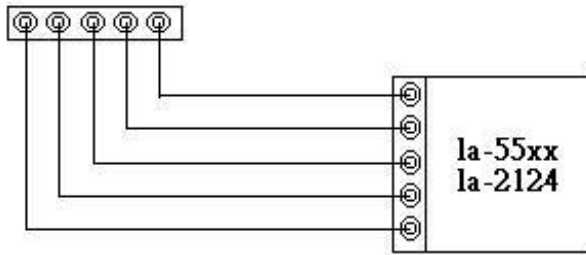
Trigger sequential calibration



Use LA-55160 arbitrary pattern generator to output some specific word like 01010101 00001111 10001101 1111111 00000000... etc.
then set trigger word from 1 to 15 sequential. it should get trigger word at proper position.
it should test more than ten sets trigger word.

Clock source calibration

la-55160 pattern generator

It has two clock source, one is internal clock, another is external clock.
Use LA-55160 arbitrary pattern generator to output some  1/2  1/4 ... etc pattern.
the LA-55160 output sample rate is 1 to 100 MHz, for 1/2 pattern, it can get 1/2 Hz to 50 MHz
square wave form. then set logic analyzer internal clock to proper sample rate to get data,
measure the data frequency should be 1/2 to 50 MHz.
the same is true for external clock.

## Technical Support

Technical support can be reached at
Clock Computer Corp.
7/F., No: 5. Lane 236, Section 5.
Roosevelt Road. Taipei. 116.
Taiwan.
Phone: 886-2-29321685. 29340273. 29335954.
Fax: 886-2-29331687.
Email:
ufclockc@ms9.hinet.net

## Software Updates

Software can be downloaded from our website
Web: www.clock-link.com.tw
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Fax: 886-2-29331687.
Email: ufclockc@ms9.hinet.net