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Help Volume

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Agilent E2485A Memory Expansion Interface

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Agilent E2485A Memory Expansion Interface



The E2485A Memory Expansion Interface lets you use the full depth of an 16555, 16556, or 16557 logic analyzer for your data acquisition. It does this by sending a different sample to each logic analyzer pod in turn, giving you up to 40 M of samples over 16 channels of data.

The E2485A has both a hardware and software component.

Getting Started

- "Connecting the Agilent E2485A to a Power Source" on page 8
- "Connecting the Logic Analyzer Cables to the Agilent E2485A" on page 10
- "Setting Up a Measurement" on page 8

Logic Analyzers Supported

- 16555A/D 110-MHz State Logic Analyzer (see the *Agilent Technologies 16555A/D 110MHz State/500 MHz Timing Logic Analyzer* help volume)
- 16556A/D 100-MHz State Logic Analyzer (see the *Agilent Technologies 16556A/D 100 MHz State/400 MHz Timing Logic Analyzer* help volume)
- 16557D 135-MHz State Logic Analyzer (see the *Agilent Technologies 16557D 140 MHz State/500 MHz Timing Logic Analyzer* help volume)
- 16715A 167-MHz State Logic Analyzer (see the *Agilent Technologies 16715A 167 MHz State/667 MHz Timing Logic Analyzer* help volume)
- 16716A 167-MHz State Logic Analyzer (see the *Agilent Technologies 16716A 167 MHz State/2 GHz Timing Zoom Logic Analyzer* help volume)
- 16717A 333-MHz State Logic Analyzer (see the *Agilent Technologies 16717A 333 MHz State/2 GHz Timing Zoom Logic Analyzer* help volume)

NOTE: The E2485A Memory Expansion Interface has a maximum state speed of 100 MHz, independent of which logic analyzer it is used with.

See Also

"Loading and Saving Configurations" on page 11

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"Adjusting Voltage Threshold" on page 18

Main System Help (see the *Agilent Technologies 16700A/B-Series Logic Analysis System* help volume)

Glossary of Terms (see page 21)

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Agilent E2485A Memory Expansion Interface

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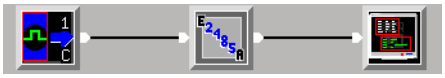
Setting Up a Measurement

After your Agilent E2485A hardware is connected to the logic analyzer and a power source, open a configuration file (see page 11) to set up the measurement.

NOTE:

Opening configuration files changes the settings of the instrument the file is loaded into. For system configuration files (*.___), the entire *workspace* is cleared before setting up the configuration.

- For simple measurements, open the workspace file `/logic/configs/E2485A/E2485A.___` .
- If you are adding the E2485A to a complex measurement, load `/logic/configs/E2485A/E2485A.__C` into an 16555, 16556, or 16557 logic analyzer. Add the E2485A *icon* to your measurement *immediately* after the logic analyzer icon and before any filtering or display *tools*. It should resemble the workspace shown below.



If necessary, change the clock setting on the E2485A hardware to match your target's clock.

See Also

"Loading and Saving Configurations" on page 11

"If You Do Not Have the Configuration File" on page 13

"Agilent E2485A Software Notes" on page 12

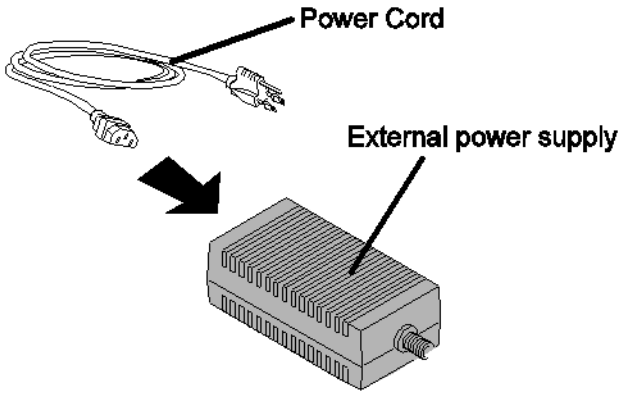
Connecting the Agilent E2485A to a Power Source

The E2485A Memory Expansion Interface is shipped from the factory with a power supply and cord appropriate for your country. If the cord you received was not appropriate for your electrical power outlet type, contact your Agilent Technologies sales and service office.

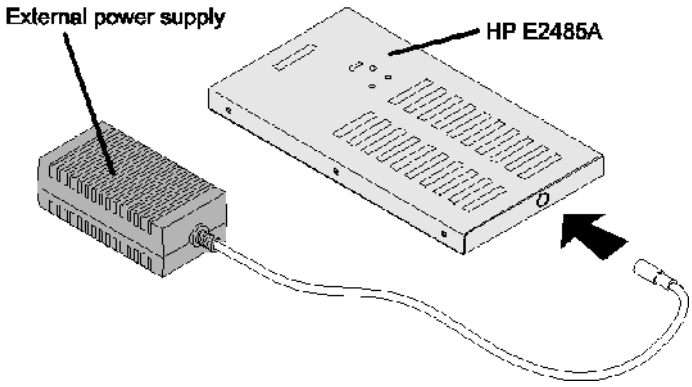
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WARNING: Use only the supplied power supply and cord. Failure to use the proper power supply could result in electric shock and equipment damage.

1. Connect the power cord to the power supply and to a socket outlet.



2. Connect the power cord to the side of the E2485A.



The power light on the top of the E2485A will be illuminated.

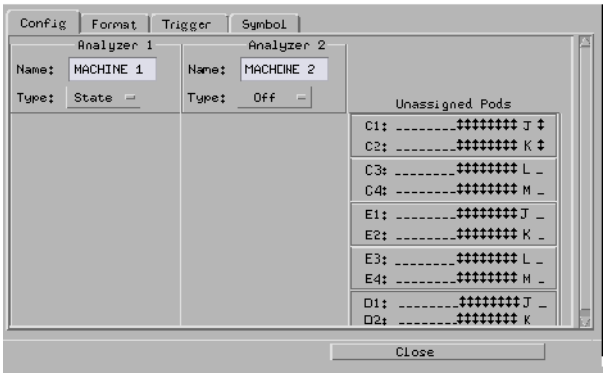
The E2485A does not have an On/Off switch. Plug in the power cord to turn it ON, and unplug the power cord to turn it OFF.

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Connecting the Logic Analyzer Cables to the Agilent E2485A

The E2485A Memory Expansion Interface connects to an 16555, 16556, or 16557 model logic analyzer in your system.

1. In the main window, select the logic analyzer icon.
2. Select *Setup* from the menu.
3. In the analyzer window, *drag and drop* all pods in the Unassigned Pods area, as in the figure below.
4. Starting at the top of the Unassigned Pods column, connect the first logic analyzer pod in the Unassigned Pods list to *Pod 1* on the top of the E2485A, the next to *Pod 2*, and so on until all logic analyzer pods are connected.
5. Press the *RESET* button on the top of the E2485A.



In the figure above, E3 would connect to Pod 7.

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Loading and Saving Configurations

Because the E2485A software has no settings, it has no configuration. You can save the logic analyzer settings and data, and any tools connected to it, by saving a configuration file. Later, you can restore your data and settings by loading the configuration file into the workspace.

To load the standard configuration

1. From the main window, select the File Manager icon then select the *Load* tab.
2. Scroll through the file system to reach `/logic/configs/E2485A/E2485A.___` .
3. Make sure Target is *All*.
4. Select *Load*.

NOTE: The E2485A Memory Expansion Interface works with 16555, 16556, and 16557 model logic analyzers. The configuration file will not load into 16550 or 16517 model logic analyzers.

See Also

Loading Configuration Files (see the *Agilent Technologies 16700A/B-Series Logic Analysis System* help volume)

Saving Configuration Files (see the *Agilent Technologies 16700A/B-Series Logic Analysis System* help volume)

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Agilent E2485A Software Notes

If you intend to modify the measurement set up by the E2485A.___ configuration file, please read this first. It contains information you should be aware of regarding the E2485A software.

- The E2485A *tool icon* should be directly connected to the logic analyzer tool icon. If you want to filter the data, put the filter after the E2485A icon.
- Only one input is allowed into the E2485A tool icon. Inputs from other tools will be inserted into the serial stream giving a false acquisition.
- Do not add *labels* to the logic analyzer Format tab. The E2485A software serializes all logic analyzer labels with bits assigned. Additional labels will be inserted into the serial data stream giving a false acquisition.
- The software for the E2485A Memory Expansion Interface runs independently of the hardware. However, it is not a general-purpose tool for serializing data. Do not use the tool if you do not have the logic analyzer connected to the E2485A hardware.
- There are no options to set for the E2485A software. All configurable options are on the hardware.
- The E2485A only works with *state measurements*.
- Any additional information from *Count Time* or *Count States* is removed from the tool's output.

See Also

"Agilent E2485A Hardware Notes" on page 13

"If You Do Not Have the Configuration File" on page 13

"Theory of Operation" on page 15

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Agilent E2485A Hardware Notes

The E2485A Memory Expansion Interface has two parts. The hardware takes serial data and splits the acquisition across the pods of a logic analyzer module. The software takes the data from the logic analyzer module and re-serializes it.

Because the logic analyzer configuration files use all pods of the logic analyzer module, you must connect all of the pods of the analyzer module to the E2485A hardware. The acquisition may miss data if pods are unattached.

The input voltage threshold can be set from -4 V to +4 V. The output from the E2485A to the logic analyzer is always TTL. Both the clock and data thresholds are the same.

After making any changes to clock edge, number of pods, or voltage threshold, press the RESET button. Changes will not be registered by the hardware until you press RESET.

See Also

"Adjusting Voltage Threshold" on page 18

"Agilent E2485A Software Notes" on page 12

"Theory of Operation" on page 15

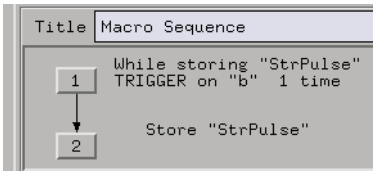
If You Do Not Have the Configuration File

If you do not have the logic analyzer configuration file, you can still use the E2485A tool by following these steps:

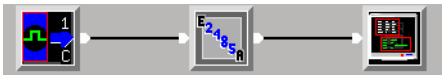
1. In the logic analyzer Config tab, set Type to *State*, and move all pods to the machine.
2. In the Format tab, set up *Lab1* as *Store Bit* with bit 2 of Data On Clocks assigned.
3. Set up a *label* for each pod of the logic analyzer, with all the bits of that pod assigned.

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4. Check that Mode is 100 MHz State, all pod thresholds are TTL, and the Master Clock is J rising.
5. In the Trigger menu, define a *term* "StrPulse" as being Store equal to 1.
6. Edit Trigger sequence step 1 to match the figure below.



7. Make sure all other levels store on StrPulse.
8. Add the E2485A *icon* to your measurement immediately after the logic analyzer icon.
9. Set up the rest of your measurement.



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Theory of Operation

The Agilent E2485A Memory Expansion Interface is used with an 16555, 16556, or 16557 logic analyzer module. The purpose of the E2485A is to increase trace depth for narrow data. The E2485A accomplishes this by limiting the number of data bits to 16, and accommodating up to 5 deep-memory logic analyzer cards configured as a single module in an 16700A/B. Only state analysis is available.

There is also an E2485A analysis tool that takes data from an analyzer connected to the E2485A hardware and re-serializes it.

Hardware

The E2485A has one 16-bit data input and a 20-pod, 340-channel output. This allows for up to a 20-to-1 improvement in memory depth. You do not need to use all 20 pod connections of the E2485A, although all pods of the logic analyzer module must be used.

The E2485A shifts the input data across the pod outputs at each sample. When the input data reaches the last connected output, the E2485A sends a "store bit" pulse to the logic analyzer on the 17th bit, the clock bit, of pod 2. The trigger sequence of the logic analyzer must be set to store on this bit.

The E2485A detects the number of connections after the reset button is pushed.

Software

The E2485A software has a minimal interface and no user-definable settings. When *Display* is selected from the icon menu, a small message window pops up. Online help can be accessed through this window's Help menu.

The E2485A software requires that the logic analyzer

- Only store samples when data has been shifted to all pods.
- Have one label per pod.

Both the E2485A.__C and E2485A.___ configuration files set this up in the logic analyzer.

The logic analyzer trigger is not affected by the E2485A. However, all

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trigger conditions should use data on Pod 1. Checking for conditions using other pods will produce uncertain results.

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Agilent E2485A Characteristics

Specifications are the performance standards against which the instrument is tested. Characteristics are not specifications, but are included as additional information. The E2485A Memory Expansion Interface has no specifications.

Characteristics

Maximum memory depth 40M
Memory depth per card
16555/6A 4M
16555/6/7D 8M

Channel count 16

Clocking 1 edge, rising or falling
Maximum state clock 100 MHz
Minimum clock pulse width 5 ns
Setup/Hold time 3.5 ns / 0 ns

Input resistance 100 KΩ ±2%
Input capacitance approximately 8 pF

Operating environment 0 °C to 50 °C

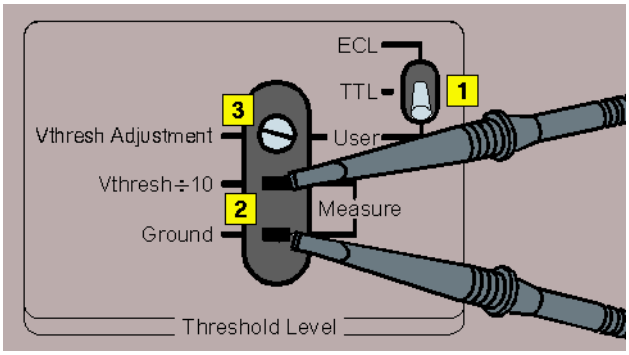
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Adjusting Voltage Threshold

You can adjust the input voltage of the E2485A to match the threshold levels used by your target system. The switch for setting voltages is on the top of the E2485A hardware.

1. Set the switch to ECL (-1.3 V), TTL (+1.5 V), or User. If you are using ECL or TTL, you are done.
2. Attach a voltmeter to the testpoints in the open area.
3. With a small screwdriver, adjust the potentiometer screw until the voltmeter shows *one-tenth* of the target's threshold voltage.

The threshold can be set from -4 to +4 volts.



NOTE: Both the clock and data thresholds are the same.

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Help - System Overview

The help system is divided into *System* Help, and *Tool* Help. All help is designed to be task oriented and specific to the window where tasks are performed.

Links, in most cases, are confined to topics in the specific window where help was requested. However, some links do go up to system-level topics from specific tool windows. When this occurrs, a second help window will appear. Since the definition of future tools is hard to link to, there are no links going from the system level down to specific tools.

System Help

The system help is accessed through the *Help* field in the menu bar of the main system window. It offers help on system-level topics and operations.

Tool Help

As you add new software and hardware tools to the system, the tool specific help is added. Tool specific help is accessed through the *Help* field in the menu bar of the specific tool windows.

Using Help

In addition to system and tool help, there is help on help called *Using Help*. Using Help shows you how to navigate and search the help systems and to print help topics. Using Help is accessed through the *Help* field in all windows.

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Glossary

absolute Denotes the time period or count of states between a captured state and the trigger state. An absolute count of -10 indicates the state was captured ten states before the trigger state was captured.

acquisition Denotes one complete cycle of data gathering by a measurement module. For example, if you are using an analyzer with 128K memory depth, one complete acquisition will capture and store 128K states in acquisition memory.

analysis probe A probe connected to a microprocessor or standard bus in the device under test. An analysis probe provides an interface between the signals of the microprocessor or standard bus and the inputs of the logic analyzer. Also called a *preprocessor*.

analyzer 1 In a logic analyzer with two *machines*, refers to the machine that is on by default. The default name is *Analyzer<N>*, where N is the slot letter.

analyzer 2 In a logic analyzer with two *machines*, refers to the machine that is off by default. The default name is *Analyzer<N2>*, where N is the slot letter.

arming An instrument tool must be armed before it can search for its trigger condition. Typically, instruments are armed immediately when *Run* or *Group Run* is selected. You can set up one instrument to arm another using the *Intermodule Window*. In these setups, the second instrument cannot search for its trigger condition until it receives the arming signal from the first instrument. In some analyzer instruments, you can set up one analyzer *machine* to arm the other analyzer machine in the *Trigger Window*.

asterisk (*) See *edge terms*, *glitch*, and *labels*.

bits Bits represent the physical logic analyzer channels. A bit is a *channel* that has or can be assigned to a *label*. A bit is also a position in a label.

card This refers to a single instrument intended for use in the Agilent Technologies 16700A/B-series mainframes. One card fills one slot in the mainframe. A module may comprise a single card or multiple cards cabled together.

channel The entire signal path from the probe tip, through the cable and module, up to the label grouping.

click When using a mouse as the

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pointing device, to click an item, position the cursor over the item. Then quickly press and release the *left mouse button*.

clock channel A logic analyzer *channel* that can be used to carry the clock signal. When it is not needed for clock signals, it can be used as a *data channel*, except in the Agilent Technologies 16517A.

context record A context record is a small segment of analyzer memory that stores an event of interest along with the states that immediately preceded it and the states that immediately followed it.

context store If your analyzer can perform context store measurements, you will see a button labeled *Context Store* under the Trigger tab. Typical context store measurements are used to capture writes to a variable or calls to a subroutine, along with the activity preceding and following the events. A context store measurement divides analyzer memory into a series of context records. If you have a 64K analyzer memory and select a 16-state context, the analyzer memory is divided into 4K 16-state context records. If you have a 64K analyzer memory and select a 64-state context, the analyzer memory will be divided into 1K 64-state records.

count The count function records periods of time or numbers of state transactions between states stored in memory. You can set up the analyzer count function to count occurrences of a selected event during the trace, such as counting how many times a variable is read between each of the writes to the variable. The analyzer can also be set up to count elapsed time, such as counting the time spent executing within a particular function during a run of your target program.

cross triggering Using intermodule capabilities to have measurement modules trigger each other. For example, you can have an external instrument arm a logic analyzer, which subsequently triggers an oscilloscope when it finds the trigger state.

data channel A *channel* that carries data. Data channels cannot be used to clock logic analyzers.

data field A data field in the pattern generator is the data value associated with a single label within a particular data vector.

data set A data set is made up of all labels and data stored in memory of any single analyzer machine or

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instrument tool. Multiple data sets can be displayed together when sourced into a single display tool. The Filter tool is used to pass on partial data sets to analysis or display tools.

debug mode See *monitor*.

delay The delay function sets the horizontal position of the waveform on the screen for the oscilloscope and timing analyzer. Delay time is measured from the trigger point in seconds or states.

demo mode An emulation control session which is not connected to a real target system. All windows can be viewed, but the data displayed is simulated. To start demo mode, select *Start User Session* from the Emulation Control Interface and enter the demo name in the *Processor Probe LAN Name* field. Select the *Help* button in the *Start User Session* window for details.

deskewing To cancel or nullify the effects of differences between two different internal delay paths for a signal. Deskewing is normally done by routing a single test signal to the inputs of two different modules, then adjusting the Intermodule Skew so that both modules recognize the signal at the same time.

device under test The system under test, which contains the circuitry you are probing. Also known as a *target system*.

don't care For *terms*, a "don't care" means that the state of the signal (high or low) is not relevant to the measurement. The analyzer ignores the state of this signal when determining whether a match occurs on an input label. "Don't care" signals are still sampled and their values can be displayed with the rest of the data. Don't cares are represented by the *X* character in numeric values and the dot (.) in timing edge specifications.

dot (.) See *edge terms*, *glitch*, *labels*, and *don't care*.

double-click When using a mouse as the pointing device, to double-click an item, position the cursor over the item, and then quickly press and release the *left mouse button* twice.

drag and drop Using a Mouse: Position the cursor over the item, and then press and hold the *left mouse button*. While holding the left mouse button down, move the mouse to drag the item to a new location. When the item is positioned where you want it, release the mouse button.

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Glossary

Using the Touchscreen:
Position your finger over the item, then press and hold finger to the screen. While holding the finger down, slide the finger along the screen dragging the item to a new location. When the item is positioned where you want it, release your finger.

edge mode In an oscilloscope, this is the trigger mode that causes a trigger based on a single channel edge, either rising or falling.

edge terms Logic analyzer trigger resources that allow detection of transitions on a signal. An edge term can be set to detect a rising edge, falling edge, or either edge. Some logic analyzers can also detect no edge or a *glitch* on an input signal. Edges are specified by selecting arrows. The dot (.) ignores the bit. The asterisk (*) specifies a glitch on the bit.

emulation module A module within the logic analysis system mainframe that provides an emulation connection to the debug port of a microprocessor. An E5901A emulation module is used with a target interface module (TIM) or an analysis probe. An E5901B emulation module is used with an E5900A emulation probe.

emulation probe The stand-alone equivalent of an *emulation module*. Most of the tasks which can be performed using an emulation module can also be performed using an emulation probe connected to your logic analysis system via a LAN.

emulator An *emulation module* or an *emulation probe*.

Ethernet address See *link-level address*.

events Events are the things you are looking for in your target system. In the logic analyzer interface, they take a single line. Examples of events are *Label1 = XX* and *Timer 1 > 400 ns*.

filter expression The filter expression is the logical *OR* combination of all of the filter terms. States in your data that match the filter expression can be filtered out or passed through the Pattern Filter.

filter term A variable that you define in order to specify which states to filter out or pass through. Filter terms are logically OR'ed together to create the filter expression.

Format The selections under the logic analyzer *Format* tab tell the

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logic analyzer what data you want to collect, such as which channels represent buses (labels) and what logic threshold your signals use.

frame The Agilent Technologies or 16700A/B-series logic analysis system mainframe. See also *logic analysis system*.

gateway address An IP address entered in integer dot notation. The default gateway address is 0.0.0.0, which allows all connections on the local network or subnet. If connections are to be made across networks or subnets, this address must be set to the address of the gateway machine.

glitch A glitch occurs when two or more transitions cross the logic threshold between consecutive timing analyzer samples. You can specify glitch detection by choosing the asterisk (*) for *edge terms* under the timing analyzer Trigger tab.

grouped event A grouped event is a list of *events* that you have grouped, and optionally named. It can be reused in other trigger sequence levels. Only available in Agilent Technologies 16715A or higher logic analyzers.

held value A value that is held until the next sample. A held value can exist in multiple data sets.

immediate mode In an oscilloscope, the trigger mode that does not require a specific trigger condition such as an edge or a pattern. Use immediate mode when the oscilloscope is armed by another instrument.

interconnect cable Short name for *module/probe interconnect cable*.

intermodule bus The intermodule bus (IMB) is a bus in the frame that allows the measurement modules to communicate with each other. Using the IMB, you can set up one instrument to *arm* another. Data acquired by instruments using the IMB is time-correlated.

intermodule Intermodule is a term used when multiple instrument tools are connected together for the purpose of one instrument arming another. In such a configuration, an arming tree is developed and the group run function is designated to start all instrument tools. Multiple instrument configurations are done in the Intermodule window.

internet address Also called Internet Protocol address or IP address. A 32-bit network address. It

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is usually represented as decimal numbers separated by periods; for example, 192.35.12.6. Ask your LAN administrator if you need an internet address.

labels Labels are used to group and identify logic analyzer channels. A label consists of a name and an associated bit or group of bits. Labels are created in the Format tab.

line numbers A line number (Line #s) is a special use of *symbols*. Line numbers represent lines in your source file, typically lines that have no unique symbols defined to represent them.

link-level address Also referred to as the Ethernet address, this is the unique address of the LAN interface. This value is set at the factory and cannot be changed. The link-level address of a particular piece of equipment is often printed on a label above the LAN connector. An example of a link-level address in hexadecimal: 0800090012AB.

local session A local session is when you run the logic analysis system using the local display connected to the product hardware.

logic analysis system The Agilent Technologies 16700A/B-series mainframes, and all tools designed to work with it. Usually used to mean the specific system and tools you are working with right now.

machine Some logic analyzers allow you to set up two measurements at the same time. Each measurement is handled by a different machine. This is represented in the Workspace window by two icons, differentiated by a *1* and a *2* in the upper right-hand corner of the icon. Logic analyzer resources such as pods and trigger terms cannot be shared by the machines.

markers Markers are the green and yellow lines in the display that are labeled *x*, *o*, *G1*, and *G2*. Use them to measure time intervals or sample intervals. Markers are assigned to patterns in order to find patterns or track sequences of states in the data. The x and o markers are local to the immediate display, while G1 and G2 are global between time correlated displays.

master card In a module, the master card controls the data acquisition or output. The logic analysis system references the module by the slot in which the master card is plugged. For example, a 5-card Agilent Technologies 16555D would be referred to as *Slot C:*

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machine because the master card is in slot C of the mainframe. The other cards of the module are called *expansion cards*.

menu bar The menu bar is located at the top of all windows. Use it to select *File* operations, tool or system *Options*, and tool or system level *Help*.

message bar The message bar displays mouse button functions for the window area or field directly beneath the mouse cursor. Use the mouse and message bar together to prompt yourself to functions and shortcuts.

module/probe interconnect cable

The module/probe interconnect cable connects an E5901B emulation module to an E5900B emulation probe. It provides power and a serial connection. A LAN connection is also required to use the emulation probe.

module An instrument that uses a single timebase in its operation. Modules can have from one to five cards functioning as a single instrument. When a module has more than one card, system window will show the instrument icon in the slot of the *master card*.

monitor When using the Emulation Control Interface, running the monitor means the processor is in debug mode (that is, executing the debug exception) instead of executing the user program.

panning The action of moving the waveform along the timebase by varying the delay value in the Delay field. This action allows you to control the portion of acquisition memory that will be displayed on the screen.

pattern mode In an oscilloscope, the trigger mode that allows you to set the oscilloscope to trigger on a specified combination of input signal levels.

pattern terms Logic analyzer resources that represent single states to be found on labeled sets of bits; for example, an address on the address bus or a status on the status lines.

period (.) See *edge terms*, *glitch*, *labels*, and *don't care*.

pod pair A group of two pods containing 16 channels each, used to physically connect data and clock signals from the unit under test to the analyzer. Pods are assigned by pairs in the analyzer interface. The number of pod pairs available is determined

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by the channel width of the instrument.

pod See *pod pair*

point To point to an item, move the mouse cursor over the item, or position your finger over the item.

preprocessor See *analysis probe*.

primary branch The primary branch is indicated in the *Trigger sequence step* dialog box as either the *Then find* or *Trigger on* selection. The destination of the primary branch is always the next state in the sequence, except for the Agilent Technologies 16517A. The primary branch has an optional occurrence count field that can be used to count a number of occurrences of the branch condition. See also *secondary branch*.

probe A device to connect the various instruments of the logic analysis system to the target system. There are many types of probes and the one you should use depends on the instrument and your data requirements. As a verb, "to probe" means to attach a probe to the target system.

processor probe See *emulation probe*.

range terms Logic analyzer resources that represent ranges of values to be found on labeled sets of bits. For example, range terms could identify a range of addresses to be found on the address bus or a range of data values to be found on the data bus. In the trigger sequence, range terms are considered to be true when any value within the range occurs.

relative Denotes time period or count of states between the current state and the previous state.

remote display A remote display is a display other than the one connected to the product hardware. Remote displays must be identified to the network through an address location.

remote session A remote session is when you run the logic analyzer using a display that is located away from the product hardware.

right-click When using a mouse for a pointing device, to right-click an item, position the cursor over the item, and then quickly press and release the *right mouse button*.

sample A data sample is a portion of a *data set*, sometimes just one point. When an instrument samples the target system, it is taking a single

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measurement as part of its data acquisition cycle.

Sampling Use the selections under the logic analyzer Sampling tab to tell the logic analyzer how you want to make measurements, such as State vs. Timing.

secondary branch The secondary branch is indicated in the *Trigger sequence step* dialog box as the *Else on* selection. The destination of the secondary branch can be specified as any other active sequence state. See also *primary branch*.

session A session begins when you start a *local session* or *remote session* from the session manager, and ends when you select *Exit* from the main window. Exiting a session returns all tools to their initial configurations.

skew Skew is the difference in channel delays between measurement channels. Typically, skew between modules is caused by differences in designs of measurement channels, and differences in characteristics of the electronic components within those channels. You should adjust measurement modules to eliminate as much skew as possible so that it does not affect the accuracy of your measurements.

state measurement In a state measurement, the logic analyzer is clocked by a signal from the system under test. Each time the clock signal becomes valid, the analyzer samples data from the system under test. Since the analyzer is clocked by the system, state measurements are *synchronous* with the test system.

store qualification Store qualification is only available in a *state measurement*, not *timing measurements*. Store qualification allows you to specify the type of information (all samples, no samples, or selected states) to be stored in memory. Use store qualification to prevent memory from being filled with unwanted activity such as no-ops or wait-loops. To set up store qualification, use the *While storing* field in a logic analyzer trigger sequence dialog.

subnet mask A subnet mask blocks out part of an IP address so that the networking software can determine whether the destination host is on a local or remote network. It is usually represented as decimal numbers separated by periods; for example, 255.255.255.0. Ask your LAN administrator if you need a the subnet mask for your network.

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symbols Symbols represent patterns and ranges of values found on labeled sets of bits. Two kinds of symbols are available:

- Object file symbols - Symbols from your source code, and symbols generated by your compiler. Object file symbols may represent global variables, functions, labels, and source line numbers.
- User-defined symbols - Symbols you create.

Symbols can be used as *pattern* and *range* terms for:

- Searches in the listing display.
- Triggering in logic analyzers and in the source correlation trigger setup.
- Qualifying data in the filter tool and system performance analysis tool set.

system administrator The system administrator is a person who manages your system, taking care of such tasks as adding peripheral devices, adding new users, and doing system backup. In general, the system administrator is the person you go to with questions about implementing your software.

target system The system under test, which contains the microprocessor you are probing.

terms Terms are variables that can be used in trigger sequences. A term can be a single value on a label or set of labels, any value within a range of values on a label or set of labels, or a glitch or edge transition on bits within a label or set of labels.

TIM A TIM (Target Interface Module) makes connections between the cable from the emulation module or emulation probe and the cable to the debug port on the system under test.

time-correlated Time correlated measurements are measurements involving more than one instrument in which all instruments have a common time or trigger reference.

timer terms Logic analyzer resources that are used to measure the time the trigger sequence remains within one sequence step, or a set of sequence steps. Timers can be used to detect when a condition lasts too long or not long enough. They can be used to measure pulse duration, or duration of a wait loop. A single timer term can be used to delay trigger until a period of time after detection of a significant event.

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timing measurement In a timing measurement, the logic analyzer samples data at regular intervals according to a clock signal internal to the timing analyzer. Since the analyzer is clocked by a signal that is not related to the system under test, timing measurements capture traces of electrical activity over time. These measurements are *asynchronous* with the test system.

tool icon Tool icons that appear in the workspace are representations of the hardware and software tools selected from the toolbox. If they are placed directly over a current measurement, the tools automatically connect to that measurement. If they are placed on an open area of the main window, you must connect them to a measurement using the mouse.

toolbox The Toolbox is located on the left side of the main window. It is used to display the available hardware and software tools. As you add new tools to your system, their icons will appear in the Toolbox.

tools A tool is a stand-alone piece of functionality. A tool can be an instrument that acquires data, a display for viewing data, or a post-processing analysis helper. Tools are represented as icons in the main window of the interface.

trace See *acquisition*.

trigger sequence A trigger sequence is a sequence of events that you specify. The logic analyzer compares this sequence with the samples it is collecting to determine when to *trigger*.

trigger specification A trigger specification is a set of conditions that must be true before the instrument triggers.

trigger Trigger is an event that occurs immediately after the instrument recognizes a match between the incoming data and the trigger specification. Once trigger occurs, the instrument completes its *acquisition*, including any store qualification that may be specified.

workspace The workspace is the large area under the message bar and to the right of the toolbox. The workspace is where you place the different instrument, display, and analysis tools. Once in the workspace, the tool icons graphically represent a complete picture of the measurements.

zooming In the oscilloscope or timing analyzer, to expand and contract the waveform along the time base by varying the value in the s/Div

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field. This action allows you to select specific portions of a particular waveform in acquisition memory that will be displayed on the screen. You can view any portion of the waveform record in acquisition memory.

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