Help Volume

Analysis: Pattern Filter Tool

Using the Pattern Filter Tool

Use the Pattern Filter tool to filter a data stream before you view it or store it to a file. You can specify which states in the data you want to pass through the filter, or which states you want to filter out.

See Also

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

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Filtering States Out of the Data

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2. In the *Filter Terms* area, define a filter term (see page 10) to match the
    condition that you want to filter on.
    All of the labels in a filter term are logically *AND'ed* together.

3. If necessary, add more terms (see page 9) to the expression.
    At the top of the Pattern Filter window is a *filter expression* that shows
    each of the terms that are logically *OR'ed* together.

4. Select the *Run* icon to acquire and filter data, or if data has already been
    acquired, select *Apply* to filter it.

All states in the data that match the filter expression are filtered out of
the data.

Example

This setup filters out states that contain a *READ* from a particular
range of memory addresses. This condition is indicated by a value of 1
for label *R/*W* and a memory address in the range 3400-35FF hex. The
filter term *READ_HI* is defined to match this condition.

Passing Only Desired States Through the Filter

1. Select *Pass Matching Data*.

2. In the *Filter Terms* area, define a filter term (see page 10) to match the condition you want to filter on.
   All of the labels in a filter term are logically *AND'ed* together.

3. If necessary, add more terms (see page 9) to the expression.
   At the top of the Pattern Filter window is a *filter expression* that shows each of the terms that are logically *OR'ed* together.

4. Select the *Run* icon to acquire and filter data, or if data has already been acquired, Select *Apply* to filter it.

Only those states in the data stream that match the filter expression are passed through. The rest are filtered out.

Example

This setup passes through only those states that contain a *READ* from one of two memory address ranges, 3400-35FF hex, or 1000-100F hex. A *READ* is indicated as pattern *1* on label *R/*W*. The filter term *READ_HI* is set up to match a read from one of the address ranges. The filter term *IO_READ* is set up to match a read from the other.

Passing All States Through the Filter

1. Select *Pass All Data*.

2. Select *Run* to acquire and filter data, or if data has already been acquired,
   select *Apply* to filter it.

You can also turn off some or all of the terms (see page 15) in order to
pass all of the data.

Working With Filter Terms

Filter terms are used to define a filter expression that determines how data is filtered. The filter terms are logically *OR'ed* together to create the filter expression, which is shown at the top of the Pattern Filter window.

Each filter term is made up of data patterns and ranges for one or more labels. All of the labels associated with a particular filter term are logically *AND'ed* together to create the filter term.

Adding and Deleting Filter Terms

To Add a Filter Term:

1. Select one of the terms in the *Filter Terms* area.

2. Select *Insert term before* or *Insert term after*.

To Delete a Filter Term:

1. Select the term that you want to delete.

2. Select *Delete term*.

To Delete All Terms:

1. Select any of the terms in the *Filter Terms* area.

2. Select *Delete all terms*.
   One term will remain. The pattern for this term will be all *Don't Cares*,
   represented by *X's*.

See Also   "Defining and Changing Filter Term Values" on page 10

"Adding Labels to a Filter Term" on page 11

"Deleting Labels from a Filter Term" on page 12

Defining and Changing Filter Term Values

The value of a filter term consists of the logical *AND* of each of the label
patterns or ranges associated with the term. To change the value of the
filter term:

1. If desired, change the term name (see page 14).

2. Add the desired labels (see page 11) to the term.

3. For each label, set the numeric base.

4. Select a pattern or range mode (see page 11).

5. Type the pattern or range value.

See Also   "Adding and Deleting Filter Terms" on page 9

"Adding Labels to a Filter Term" on page 11

"Deleting Labels from a Filter Term" on page 12

Pattern and Range Modes

Four modes are available for each label assigned to a filter term: *Pattern*, *Range*, *Not Pattern* and *Not Range*.

Not Pattern selects all patterns except the defined pattern. For example, if the defined pattern is *11* binary and the mode is set to *Not Pattern*, this is the same as defining three filter terms: one for *00*, one for *01*, and one for *10*, and setting them all to *Pattern*. (Filter terms are ORed together.)

Not Range selects the values outside the range you define. If the range for a four-bit label is *0 through 8* hex, and the mode is set to *Not Range*, this is the same as setting the mode to *Range* and range value as *9 through F* hex.

Adding Labels to a Filter Term

1. Select one of the labels that is already assigned to the term.
   If no labels are present, make sure that the filter is connected to an instrument tool, and that there are labels defined in the instrument tool windows.

2. Select *Insert label*.

3. In the *Label Selection* dialog, select the label name to be inserted.
   To select multiple labels, highlight the desired labels.

4. Select *Apply*.

5. Select *Close* to close the *Label Selection* dialog.
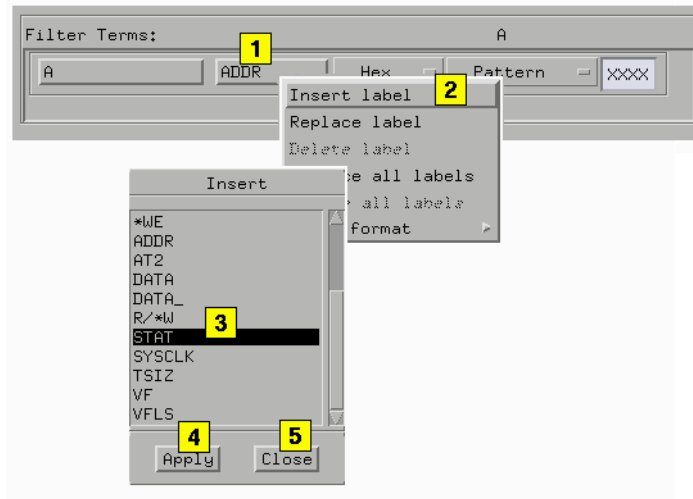
See Also   "Adding and Deleting Filter Terms" on page 9

"Deleting Labels from a Filter Term" on page 12

Deleting Labels from a Filter Term

1. Choose the label name you want to delete.

2. Select *Delete label*.
   The Filter Terms dialog will show your deleted label gone.

3. To delete all of the labels from a term, select *Delete all labels*.
   At least one label name will remain, with a pattern of all *Don't Cares*,
   represented by *X's*.

See Also   "Adding and Deleting Filter Terms" on page 9

"Adding Labels to a Filter Term" on page 11

Replacing Labels in a Filter Term

1. Choose the label name you want to replace.

2. Select *Replace label*.

3. In the *Label Selection* dialog, select the name of the replacement label.

4. Select *Apply*.

5. Select *Close* to close the *Label Selection* dialog
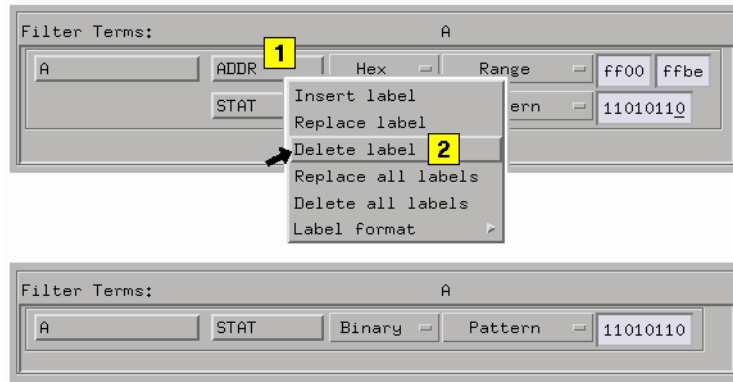   Your replacement label will have default values, which you can change.

See Also   "Adding and Deleting Filter Terms" on page 9

"Adding Labels to a Filter Term" on page 11

"Deleting Labels from a Filter Term" on page 12

Changing Term Names

1. Choose the term whose name you want to change.

2. Select *Rename term*.

3. In the Rename Term dialog, enter in the new name.

4. Select *OK*.

See Also   "Adding and Deleting Filter Terms" on page 9

Turning Filter Terms On and Off

You can remove a filter term from the filter expression by turning it off. This will preserve the term definition, but will remove the term from the set of *OR'ed* terms that are used to filter the data.

1. Select the term you want to turn on or off.

2. Select *Term [ON]/[OFF]* to toggle the control.
   Terms that are turned off do not appear in the filter expression at the top of the Filter Terms window.

NOTE: Terms that are off are grayed-out. None of the labels or values can be changed until the term is turned on again.
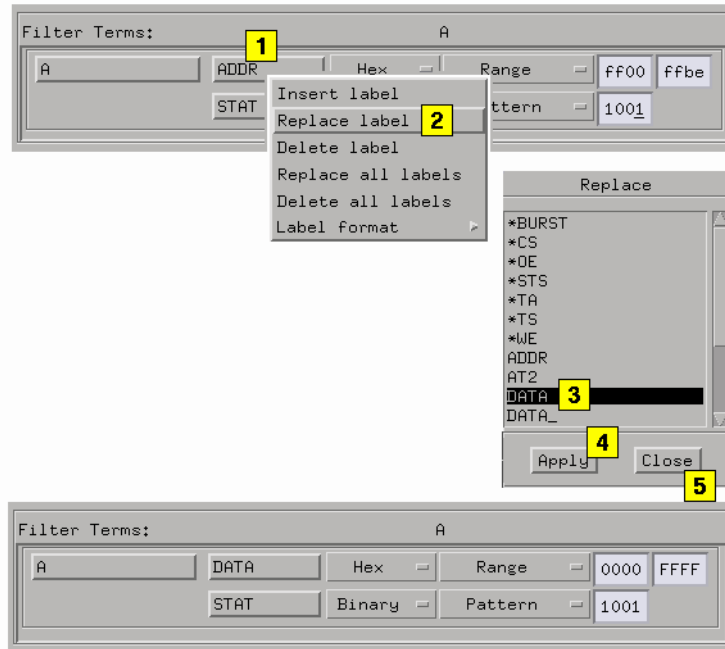
See Also "Adding and Deleting Filter Terms" on page 9

"Adding Labels to a Filter Term" on page 11

"Deleting Labels from a Filter Term" on page 12

Creating Powerful Filter Expressions

The default filter expression ORs all filter terms together. You can override the default to create more complex combinations of filter terms when you need powerful filter expressions.

NOTE: Expression filtering is not available and will be greyed out when Timing Zoom is turned on. In order for expression filtering to work properly, you MUST turn Timing Zoom off and configure the Pattern Filter tool to a single data set input.

1. In the menu bar, select *Options*, then set *Expression* to *On*.
   The Filter Terms field becomes a text entry field. See the Note above.

2. Create any desired expression composed of the defined filter terms.

3. Available operators are:

   *=AND

+=OR

()=grouping filter terms

Example:

Filter Terms: A+B * C+D
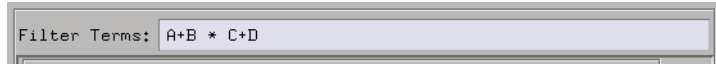
Loading & Saving Filter Configurations

Pattern Filter settings can be saved to a configuration file on hard disk or floppy disk, and settings can be loaded from previously saved configuration files.

- 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)

NOTE: The *Load Configuration* window can be accessed via File->Load Configuration.
The *Save Configuration* window can be accessed via File->Save Configuration.

Printing the Pattern Filter Window

The print windows operation enables you to print just the Pattern Filter tool window. Use this operation if you want a hardcopy or electronic record of configurations and data currently displayed in the viewing area of the Pattern Filter window.

NOTE: Only the currently displayed viewing area of the Pattern Filter window is printed. If any data or configuration fields appear offscreen, scroll the desired data or configuration fields into the window's viewing area before printing.

1. Optional - configure the Print Options (see the *Agilent Technologies 16700A/B-Series Logic Analysis System* help volume) if desired. Print Options include print destination, file format type, filename autoincrement, and color/b&w; pixel mapping.

2. In the Pattern Filter tool menu bar, select *File*, then select *Print This Window*. The print output will be as configured in the Print Options in step 1.

See Also   Setup the Printer (see the *Agilent Technologies 16700A/B-Series Logic Analysis System* help volume)

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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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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

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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