
Specifications and Characteristics

This chapter lists specifications and characteristics for the Agilent Technologies 16557D logic analyzer. Specifications are the performance standards against which the product is tested.

Characteristics are not specifications, but are included as additional information.

For complete information on the test procedures to verify product performance, refer to the *Agilent Technologies 16557D Service Guide*. The Service Guide can be ordered from any Agilent Technologies Sales Office.

Specifications

The specifications are the performance standards against which the product is tested.

Minimum State Clock Pulse Width *	3.5 ns
Threshold Accuracy	$\pm (100 \text{ mV} + 3\% \text{ of threshold setting})$

Clock Scheme:

Single Clock, Single Edge:

Setup/Hold Time: *	-0.5/3.5 ns through 3.0/0.0 ns, adjustable in 500-ps increments
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Maximum State Speed	135 MHz
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Minimum Master-to-Master Clock Time *	7.40 ns
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Single Clock, Multiple Edges:

Setup/Hold Time: *	-0.5/4.0 ns through 3.5/0.0 ns, adjustable in 500-ps increments
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Maximum State Speed	135 MHz
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Minimum Master-to-Master Clock Time *	7.40 ns
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Multiple Clocks, Multiple Edges:

Setup/Hold Time: *	-0.5/4.5 ns through 4.0/0.0 ns, adjustable in 500-ps increments
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Maximum State Speed	135 MHz
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Minimum Master-to-Master Clock Time *	7.40 ns
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* Specified for an input signal $V_H = -0.9 \text{ V}$, $V_L = -1.7 \text{ V}$, and threshold = -1.3 V .



Characteristics

The characteristics are not specifications, but are included as additional information.

	Full Channel	Half Channel *
Maximum State Clock Rate		
One, Two, Three-Cards	135 MHz	Not applicable
Maximum State Clock Rate		
Four, Five-Cards	100 MHz	Not applicable
Maximum Conventional Timing Rate	250 MHz	500 MHz
Channel Count per Card	68	34
Channel Count per Three-Card Module	204	102
Channel Count per Five-Card Module	340	170
Memory Depth	2032K	4177K

* Half channel mode is only available for timing analysis.

Supplemental Characteristics

These characteristics are not specifications, but are included as additional information.

Probes

Input Resistance	100 K Ω , 2%
Input Capacitance	~ 8 pF
Minimum Voltage Swing	500 mV, peak-to-peak
Maximum Input Voltage	\pm 40 V, CAT I
Threshold Range	\pm 6.0 V, adjustable in 50 mV increments

State Analysis

Setup/Hold Time ¹	-0.5/3.5 ns through 3.0/0 ns, adjustable in 500 ps increments
Minimum State Clock Width	3.5 ns
State Clock/Qualifiers	4/4
Time Tag Resolution ²	8 ns
Maximum Time Count Between States	34 seconds
Maximum State Tag Count ²	4.29 x 10 ⁹

¹Minimum setup/hold time specified for single-edge, single-clock acquisition. Single-clock, multiedge setup/hold window is 3.5 ns. Multiclock, multiedge setup/hold window is 4.0 ns. All setup/hold windows are adjustable in 500-ps increments.

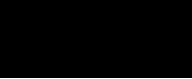
²When all pods are assigned to a state or timing machine, time or state tags halve the memory depth.

Timing Analysis

Sample Period Accuracy	0.01 % of sample period
Channel-to-Channel Skew	2 ns, typical
Time Interval Accuracy	±(sample period + channel-to-channel skew + 0.01% of time interval reading)
Minimum Detectable Glitch	3.5 ns

Triggering

Sequencer Speed	135 MHz, maximum
State Sequence Levels	12
Timing Sequence Levels	10
Max. Occurrence Counter Value	1,048,575
Pattern Recognizers	10
Range Recognizers	2
Range Width	32 bits each
Timers	2
Timer Value Range	400 ns to 500 seconds
Glitch/Edge Recognizers	2 (timing only)



Measurement and Display Functions

Arming Each module can be armed by the RUN key, external PORT IN, or by another module via the Intermodule Bus (IMB).

Displayed Waveforms 24 lines maximum, with scrolling across 96 waveforms.

Measurement Functions

Run/Stop Functions

Run Starts acquisition of data in specified trace mode.

Stop In single trace mode or the first run of a repetitive acquisition, STOP halts acquisition and displays the current acquisition data. For subsequent runs in repetitive mode, STOP halts acquisition of data and updates the current display.

Trace Mode Single mode acquires data once per trace specification. Repetitive mode repeats single mode acquisitions until stop is pressed or until time interval between two specified patterns is less than or greater than a specified value, or within or not within a specified range.

Indicators

Activity Indicators Provided in the Configuration and Format menus for identifying high, low, or changing states on the inputs.

Markers Two markers (X and 0) are shown as dashed lines on the display.

Trigger Displayed as a vertical dashed line in the Timing Waveform display and a line 0 in the State Listing display.

Data Entry/Display

Labels Channels may be grouped together and given a 6-character name. Up to 126 labels in each analyzer may be assigned with up to 32 channels per label.

Display Modes State Listings, State Waveforms, Timing Waveforms, Timing Listings, Compare Listings, Chart, and System Performance Analysis. State Listing, Timing Waveforms, and Oscilloscope Waveforms can be time-correlated on the same displays.

Timing Waveform Pattern readout of timing waveforms at X or 0 marker.

Bases Binary, Octal, Decimal, Hexadecimal, ASCII (display only), Two's Complement, and User-defined symbols.

Symbols 500 maximum. Symbols can be downloaded over RS-232, GPIB, or Ethernet LAN.

Marker Functions

Time Interval The X and 0 markers measure the time interval between one point on a timing waveform and trigger, two points on the same timing waveform, two points on different waveforms, or two states (time tagging on).

Delta States (state analyzer only) The X and 0 markers measure the number of tagged states between one state and trigger or between two states.

Patterns The X and 0 markers can be used to locate the nth occurrence of a specified pattern from trigger, or from the beginning of data. The 0 marker can also find the nth occurrence of a pattern from the X marker.

Statistics X and 0 marker statistics are calculated for repetitive acquisitions. Patterns must be specified for both markers, and statistics are kept only when both patterns can be found in an acquisition. Statistics are minimum X to 0 time, maximum X to 0 time, average X to 0 time, and ratio of valid runs to total runs.



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Auxiliary Power

Power Through Cables 1/3 amp at 5 V maximum per cable

Operating Environment

Indoor Use Only

Temperature	Instrument, 0 C to 55 C (+32 F to 131 F) Probe lead sets and cables, 0 C to 65 C (+32 F to 149 F).
Humidity	Instrument, probe lead sets, and cables, up to 95% relative humidity at +40 C (+122 F)
Altitude	To 4600 m (15,000 ft)
Vibration	Operating: Random vibration 5-500 Hz, 10 minutes per axis, 0.3 g (rms) Non-operating: Random vibration 5 to 500 Hz, 10 minutes per axis, 2.41 g (rms); and swept sine resonant search, 5 to 500 Hz, 0.75 g (0-peak), 5 minute resonant dwell at 4 resonances per axis.