Agilent Technologies E8045B Analysis Probe System for the Intel® Pentium® 4 Processor in the 775-Land Package

Product Overview

Requires an Agilent 16700A/B Series or 16900A Series Logic Analysis System

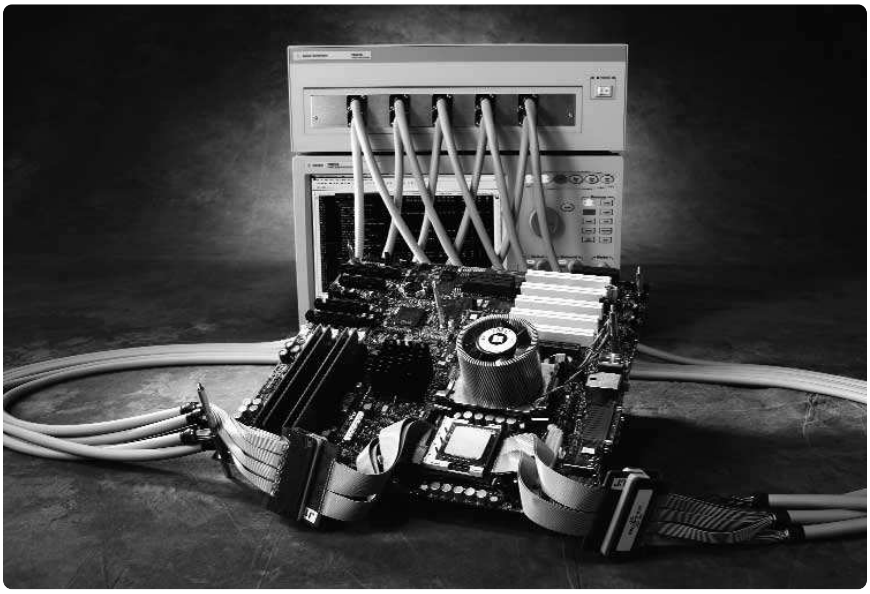

Figure 1. Intel Pentium 4 processor in the 775-land package analysis probe

Reduce your time to insight

The Agilent E8045B analysis probe system harnesses the power of the Agilent 16700A/B or 16900A Series logic analysis systems to greatly reduce your time to insight into critical Pentium 4 processor 775-land package-based system problems. The analysis probe easily connects to your target system and allows you to quickly begin making accurate measurements (See Figure 1).

The E8045B includes an analysis probe, a low-intrusion probe interface adapter (interposer) and configuration files that allow you to trace the operation of an Intel Pentium 4 in the 775-land package system. The probe interface adapter is also sold separately as the Agilent E8046B. The precision design of this instrument along with its factory calibration, makes it possible for you to interchange the probe interface with the rest of the system.

The Agilent analysis probe provides the measurement interface between the Pentium 4 processor system bus and the input system of the Agilent logic analysis modules.

Trace bus operation simply

The Agilent E8045B analysis probe system simplifies tracing the Pentium 4 processor in the 775-land package's system bus by aligning the source-synchronous, quad-pumped data lines and double-pumped address lines with the Bclk frequency control signals. The Agilent analysis probe synchronizes the clock and aligns the data, so you need not be concerned that the Pentium 4 processor in the 775-land package system bus uses multiple clock domains.

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Gain confidence in your data's integrity
To achieve maximum performance, the Intel Pentium 4 processor in the 775-land package system bus implements complex data transfer schemes. Agilent's exclusive technology effectively deals with these challenges.

The architecture of the Intel Pentium 4 processor in the 775-land package system bus allows for extremely tight setup and hold specifications. Agilent's bipolar front-end acquisition technology is uniquely positioned to capture these tight data valid windows. Data integrity is crucial to validating the operation of your design. Agilent's experience in high-speed circuitry and tight acquisition electronics offers you confidence that you are looking at the correct information on your logic analyzer.

For added confidence, the E8045B analysis probe system has built-in calibrated accuracy, which also decreases the time it takes to set up your measurements.

Get greater visibility with pass-through mode
Agilent's innovative pass-through mode gives the analysis probe greater visibility to the original bus signal timing. Coupling pass-through mode with the superior 64 K samples of 4 GHz timing zoom on the Agilent 16753/54/55/56A and 16950A logic analysis modules offers the maximum practical sampling resolution for this system bus.

Flexible analysis capabilities
The E8045B analysis probe system offers four analysis mode selections:

- All mode
- Expanded mode
- Compacted mode
- Pass-through mode (see above)

These four modes allow you to pre-filter varying levels of bus activity out of the trace, so you can use the full 64 MSa acquisition depth of the 16753/54/55/56A and 16950A logic analyzers for target system debug. A software interface lets you switch seamlessly between the four analysis modes.

You can use an Agilent 16700A/B or 16900A Series logic analysis systems' remote debug capability to operate the E8045B analysis probe, including switching between analysis modes remotely. You don't need to be in the same room as the logic analyzer to enjoy full debug capability.

Combining solutions to solve tough problems
Combining the power of Agilent's E8045B analysis probe system with other computer bus analysis probes yields a time-correlated view of your system that helps you solve problems faster. Agilent and its partners offer solutions for PCI, PCI-X, InfiniBand, DDR-I and DDR2, PC133 along with solutions for PCI Express, advanced switching, PCI-X 2.0 and others. For more information visit **www.agilent.com/find/logic_applications**.

Figure 2. Whole system measurements with DDR and other bus solutions

Features

Transaction type display

The Agilent E8045B analysis probe system configuration software helps you quickly understand the transaction type. It uses plain language symbols to describe the transactions in the state listing display, so you can spend more time doing validation and debug work instead of wasting valuable time looking at reference documentation (Figure 3). This same feature in Agilent's state waveform display allows you to see the relationships of the various signal groupings (Figure 4).

Clock qualification

Two state analysis modes of the logic analyzer provide a view that is customized for your needs. Expanded mode captures all bus activity except idle states allowing full view of bus operation, while not preserving capture storage memory. Compacted mode maximizes logic analyzer memory by filtering consecutive states, data wait, and multiple reset states.

Highlight critical transactions

Focus your analysis of the activities on the Intel Pentium 4 bus by coloring those transactions that give you the best view of the problem. The filter and color options available in the E8045B enable you to selectively list and color transactions by agent and transaction type. For example, you can list only I/O writes originating from CPU 0. The filter dialog menu lets you use color to emphasize either transaction type or agent ID.

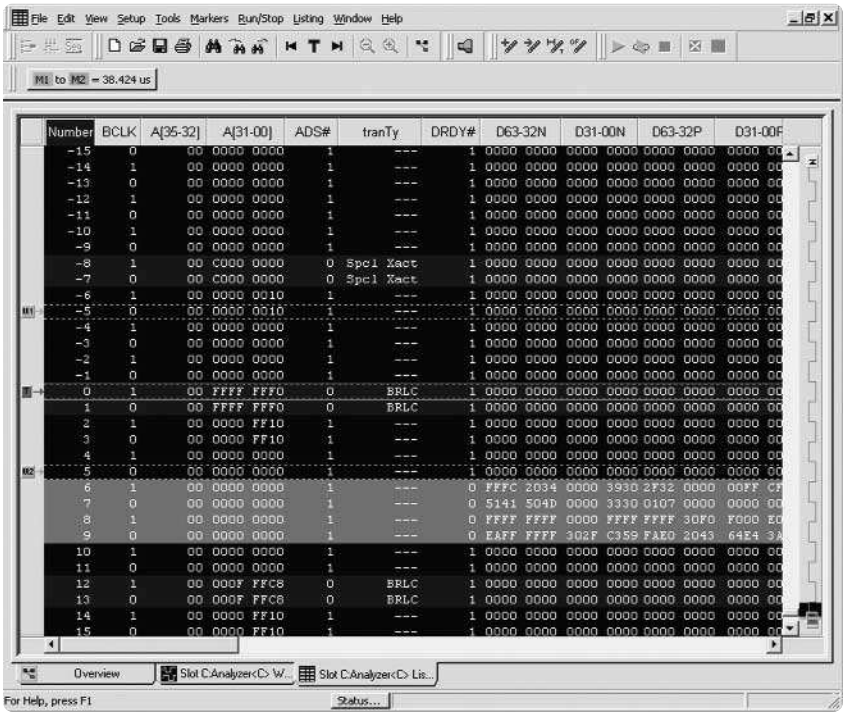


Figure 3. State listing display

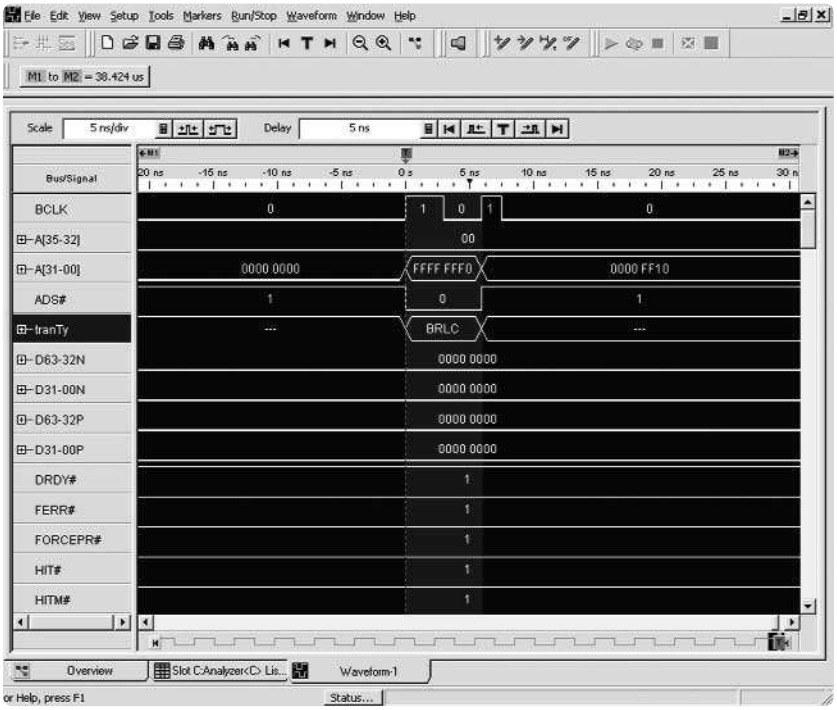


Figure 4. State waveform display

775-Land Package Probe Interface Adapter

Inserting into a target system

The Agilent E8046B 775-land package probe interface adapter fits between the processor and its socket. Because the probe interface adapter is electrically passive, bus loading and mechanical intrusion is minimized.

After opening the 775-land package socket, remove the processor (Figure 5) and install the supplied clamp frame on the mother board (Figure 6, step a).

Position the Agilent probe interface adapter over the clamp frame and gently place it into the socket on your target system (Figure 6, step b).

Then secure the probe interface adapter to the mother board with the supplied thumbscrews (Figure 6, step c). Finally, align the processor, and insert it into the socket on the Agilent probe interface adapter. Closing the Agilent socket completes insertion of the low profile interposer in your system.

Combining these with the flexible coax attach wings and low profile of the Agilent E8046B probe interface adapter means that the interposer is very likely to fit within the tight mechanical constraints of your system.

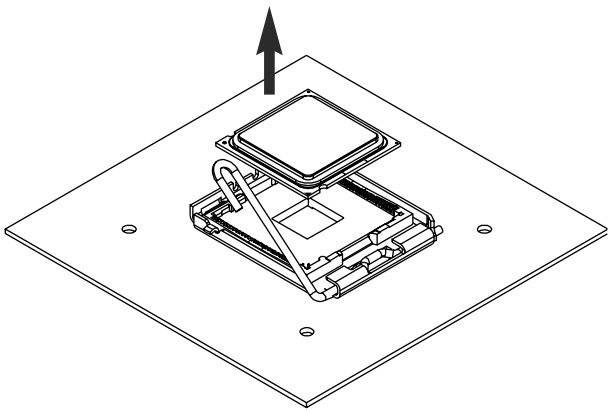


Figure 5. Remove processor from mother board

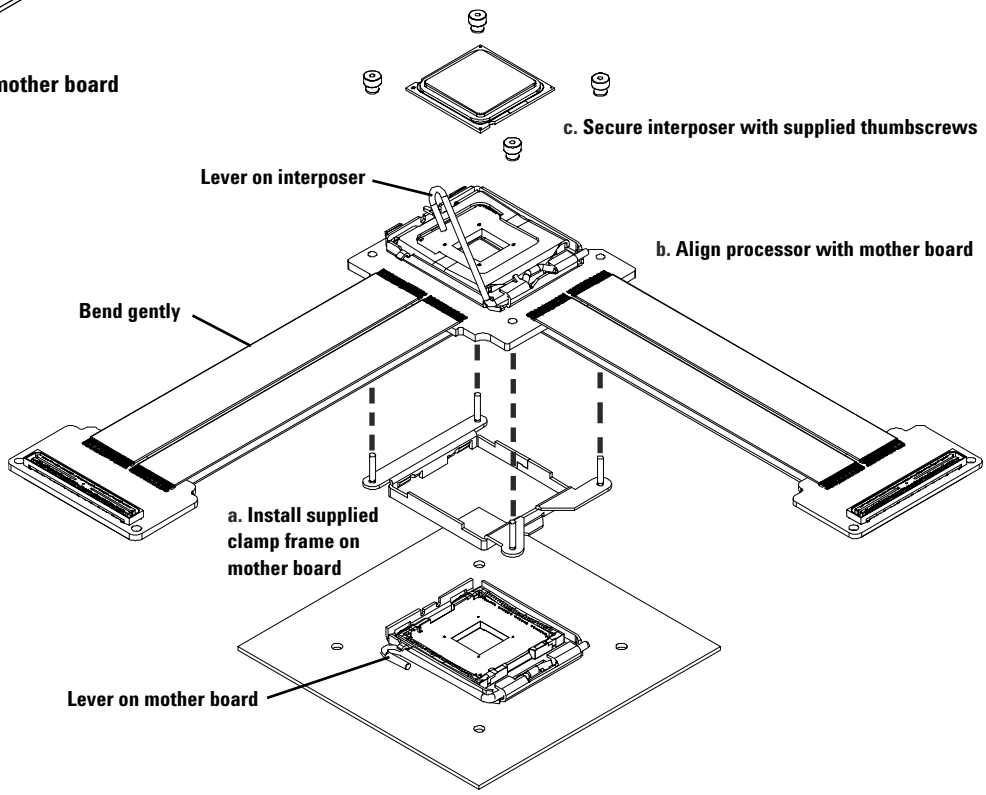


Figure 6.

775-Land Package Probe Interface Adapter

Mechanical dimensions

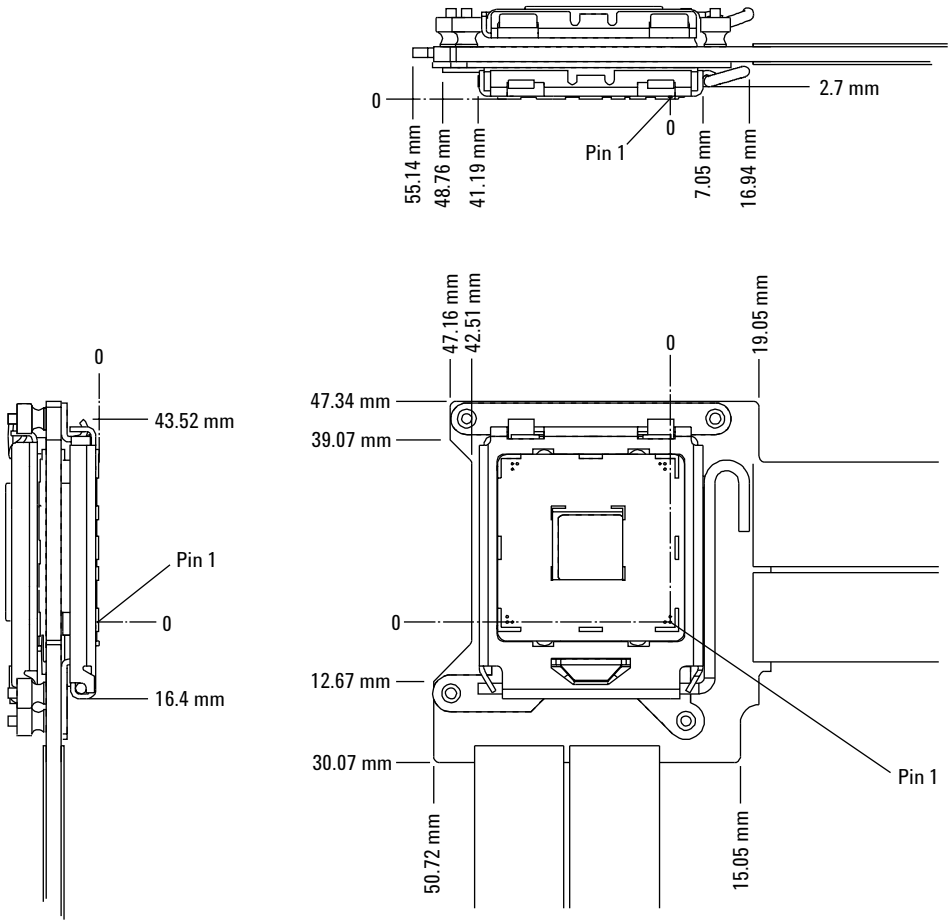
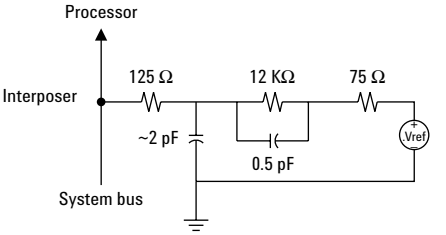


Figure 7. Interposer keepout dimensions

Operating Characteristics

Analysis probe	Agilent E8045B (includes probe interface adapter)
Processor package	775-land package
Logic analysis system required	1 – Agilent 16900 or 16902 mainframe, or 16700 or 16702 mainframe 5 – Agilent 16753/54/55/56 logic analysis modules or 5 – Agilent 16950A* logic analyzer modules (*Compatible with 16900A Series only)
Clocking mode	State/clock – all mode (clock qualification off) State/clock – expanded mode State/clock – compacted mode Timing/pass-through mode
Signal line loading	
Analysis probe cable length	Approximately 4 feet
Clock frequency	266 MHz maximum for external BCLK
Data bus strobes	Source-synchronous quad-pumped
Target system	Must comply with Intel Pentium 4 processor in the 775-land package data sheets
Power requirement	Internal power supply 115/230 V, 48 to 66 Hz, 350 W

Environmental Characteristics

Operating	20° to 30° C (68° to 86° F)
Altitude operating	4,600 m (15,000 ft)
Altitude nonoperating	15,300 m (50,000 ft)
Humidity	Up to 50% noncondensing (avoid sudden, extreme temperature changes that could cause condensation within the instrument)

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