

HP E2492S Preprocessor for the Intel Pentium® II Processor with MMX™ Technology at 333 MHz

Product Overview

Requires both the
HP 16500B/C and
the HP 16505A

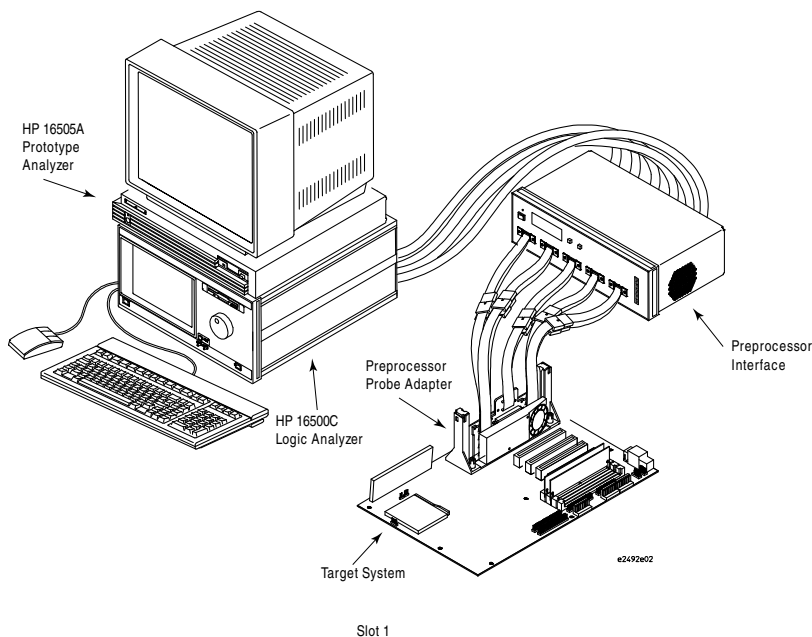


Figure 1. The HP E2492S--preprocessor interface and preprocessor probe adapter--connecting the HP 16500 logic analysis system to the target system.

The HP E2492S preprocessor with its transaction tracker and inverse assembler, allows you to easily trace the operation of a Pentium II processor multiprocessing system. Bus transactions are summarized in the state listing display, allowing rapid interpretation of bus operation. Instruction execution, disassembled into familiar Intel mnemonics, including MMX instructions, may also be displayed. The utility and usability of the HP E2492S can greatly reduce your time to insight into critical Pentium II processor based system problems. The HP E2492S utilizes the power of the HP 16505A proto type analyzer, in conjunction with the HP 16500B/C logic analysis system.

Displaying Transactions

The HP E2492S keeps track of the Pentium II processor bus by presenting a state listing of bus activity grouped by complete transactions. Because several transactions may be pending on the Pentium II processor bus, the HP E2492S preprocessor's transaction tracker monitors the start and end of each bus phase. Each transaction display starts with the request type, such as memory read, I/O write, or code read.

Selecting Transactions

Focus your analysis of the activities on the Pentium II processor bus by coloring those transactions that give you the best view of the problem. Included with the HP E2492S is a complete set of filter options that allow you to selectively list transactions by agent and transaction type. For example, you can list only branch trace messages originating from CPU 0. The filter dialog box lets you use color to emphasize either transaction type or agent ID.

State Number	IP Addr	IA-32 Inverse Assembler		
Decimal	Hex	Mnemonics/Hex		
810	000FEC0B	causing: 000FEC0B	branch trace	cpu0
	000FEC0B	target: 000FEC0B	16-bit code	
	000FEC0B	EE	OUT DX,AL	
	000FEC0C	86E0	XCHG AL,AH	
	000FEC0E	C3	RET near	
816	000FEC08	C3C3E086	EE00E300	code read
	000FEC00	E3EE002F	BAE086EE	code read
	000FEC18	00000000	00000000	code read
	000FEC10	00000000	000000C3	code read
824	0000002F	06xxxxxx	xxxxxxx	i/o write
831	000FEC08	C3C3E086	EE00E300	code read
	000FEC00	E3EE002F	BAE086EE	code read
	000FEC18	00000000	00000000	code read
	000FEC10	00000000	000000C3	code read
839	000FEC08	C3C3E086	EE00E300	code read
	000FEC00	E3EE002F	BAE086EE	code read
	000FEC18	00000000	00000000	code read
	000FEC10	00000000	000000C3	code read
847	000FEA9C	xxxx0A9E	xxxxxxx	mem data rd
852	000FEC0E	causing: 000FEC0E	branch trace	cpu0
	000FEA9E	target: 000FEA9E	16-bit code	
	000FEA9E	B022	MOV AL,22h	
	000FEAA0	BCA60A	MOV SP,0AA6h	
	000FEAA3	E94A01	JMP 000FEBF0h	
858	000FEA98	22B00A9E	0161E90A	code read

Figure 2. Inverse Assembly Listing

Viewing Instructions

The HP E2492S includes an inverse assembler that displays code execution in familiar Intel mnemonics. The inverse assembler takes advantage of the Pentium II processor's branch trace message (BTM) bus cycles. Branch trace messages are special bus cycles issued by the CPU (when enabled) that indicate the "from" and "to" addresses of a branch. Using BTMs, the HP E2492S inverse assembler displays a listing of only the instructions executed by the processor(s). For inverse assembly, a run-control probe, such as the HP E3493B, is necessary to enable branch trace messages and disable caches.

Identifying Processors

The HP E2492S filter options allow you to color instructions by processor. Determining which processor executed a particular code segment in a multiprocessor system is simple. As you follow the assembly instruction listing on the HP 16505A prototype analyzer display, the color of the trace changes when another processor takes an execution branch. Priority agent (I/O) activity is also displayed in color.

Features

Display Filter Options

Selectively display the most important transactions by using state listing filters.

Agents

CPU 0:	Show/Suppress
CPU 1:	Show/Suppress
CPU 2:	Show/Suppress
CPU 3:	Show/Suppress
Priority:	Show/Suppress

Transaction Types

Deferred Replies:	Show/Suppress
Interrupt Acknowledge:	Show/Suppress
Special Transactions:	Show/Suppress
Branch Trace Messages:	Show/Suppress
I/O Reads:	Show/Suppress
I/O Writes:	Show/Suppress
Memory Read & Invalidate:	Show/Suppress
Memory Data Reads:	Show/Suppress
Code Reads:	Show/Suppress
Memory Writes:	Show/Suppress
Memory Writebacks:	Show/Suppress

Note: Agents and transaction-type filter terms are combined in display by "ANDing."

Clock Qualification

Expanded Mode

Captures all snoop stalls and data wait states.

Compacted Mode

Maximizes logic analyzer memory use by hiding snoop stalls and data wait states.

Specifications

Preprocessor	E2487A -- Preprocessor interface
Support Components	E2492A -- Preprocessor probe adapter
Processor	Single Edge Contact (SEC) cartridge
Package	(Supports both Slot 1 and Slot 2)
Logic Analysis	12 (compatible with
Pods Required	2-card HP 16550A, 3-card HP 16555A/D, or 3-card HP 16556A/D logic analyzer modules for the HP 16500B/C logic analysis system)
Preprocessor	State/Clock -- Expanded mode
Clocking Mode	State/Clock -- Compacted mode
Preprocessor	Logic analyzer stores bus state on each qualified BCLK
Cable Length	Approximately 1 meter
Clock	100 MHz maximum for
Frequency	external BCLK
Target Signal	800 mV p-p minimum for all
Amplitude	GTL+ signals
Power	Internal power supply is
Requirements	included with preprocessor

Environmental

Temperature:	
Operating	20° to 30° C (+68° to +86° F)
Nonoperating	- 40° to 70° C (- 40° to +158° F)
Altitude:	
Operating	4,600 m (15,000 ft)
Nonoperating	15,300 m (50,000 ft)
Humidity	Up to 90% noncondensing (Avoid sudden, extreme temperature changes that could cause condensation within the instrument)

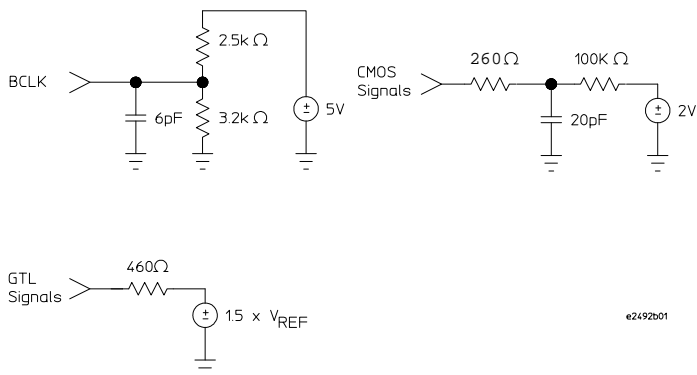


FIGURE 3. Signal Line Loading

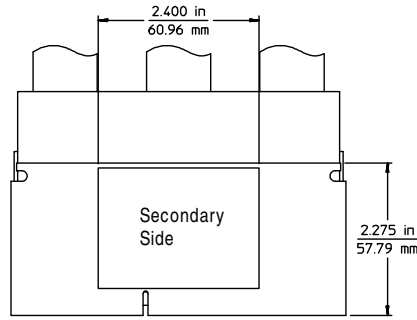
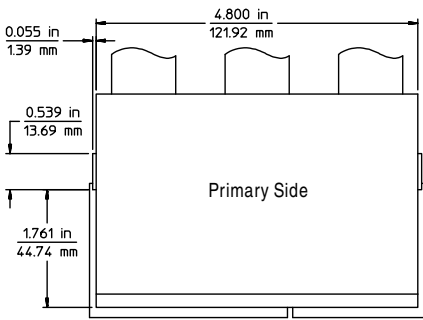
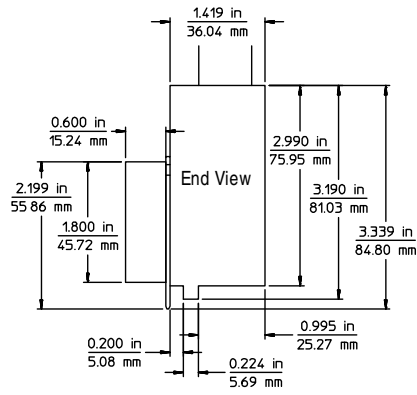
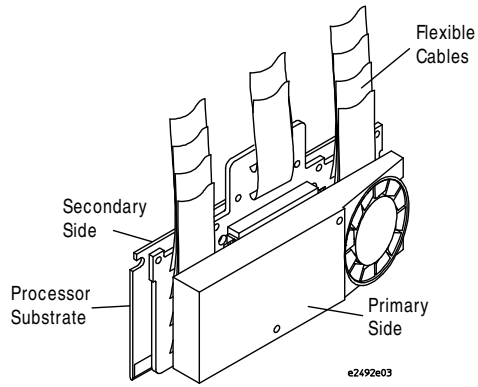


Figure 4. Slot 1 keep-out dimensions

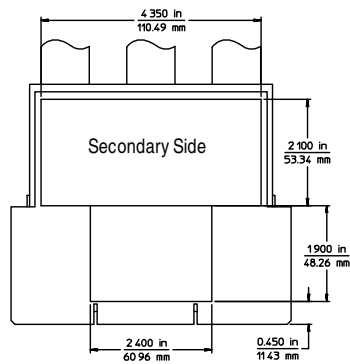
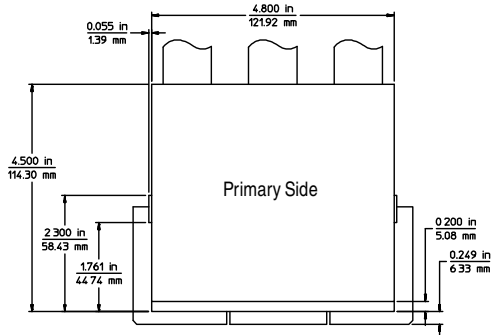
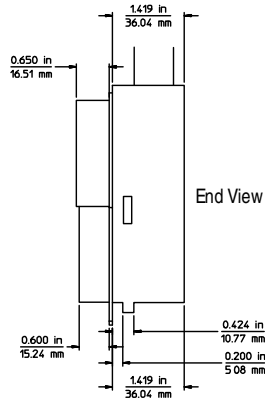
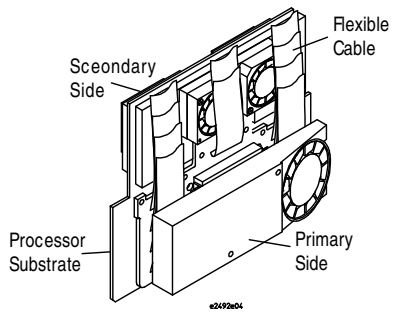


Figure 5. Slot 2 keep-out dimensions

Ordering Information

HP E2492S

Preprocessor for the Intel Pentium II processor requires

- HP 16505A
- HP E3493B run-control or equivalent
- HP 16500B/C mainframe with any set of the logic analysis card configurations listed below

Logic Analysis Cards

HP 16555A/D

(3 cards required)
1M/2M-Sample,
110-MHz state/500-MHz timing
logic analyzer module

HP 16556A/D

(3 cards required)
1M/2M-Sample,
100 MHz state/400-MHz timing
logic analyzer module

HP 16550A

(2 cards required)
4K-Sample, 100-MHz state/500-MHz
timing logic analyzer module

HP 16500B/C

(required)
Logic Analysis System Mainframe

HP 16505A

(required)
Prototype Analysis System

HP B4600A

(optional)
System Performance Analysis

HP E3493B

(Recommended. A run-control unit is required for inverse assembly.)
Processor Probe

Warranty Information

This Hewlett-Packard product has a warranty against defects in material and workmanship for a period of one year from date of shipment. During this warranty period, Hewlett-Packard Company will, at its option, either repair or replace products that prove to be defective.

Related HP Literature

HP 16500C Logic Analysis System and HP 16505A Prototype Analyzer,
Pub. Number: 5965-3187E

HP E2467A Intel APIC Bus Preprocessor Interface,
Pub. Number: 5965-3000E

HP E3493B Pentium® Pro/Pentium II Processor Probe,
Pub. Number: 5965-6036E

For more information about Hewlett-Packard test & measurement products, applications, services, and for a current sales office listing, visit our web sites,
<http://www.hp.com/go/tmdir>
<http://www.hp.com/go/emulator>
<http://www.hp.com/go/logicanalyzer>

You can also contact one of the following centers and ask for a test and measurement sales representative.

United States:
Hewlett-Packard Company
Test and Measurement Call Center
P.O. Box 4026
Englewood, CO 80155-4026
1 800 452 4844

Canada:
Hewlett-Packard Canada Ltd.
5150 Spectrum Way
Mississauga, Ontario
L4W 5G1
(905) 206 4725

Europe:
Hewlett-Packard
European Marketing Centre
P.O. Box 999
1180 AZ Amstelveen
The Netherlands
(31 20) 547 9900

Japan:
Hewlett-Packard Japan Ltd.
Measurement Assistance Center
9-1, Takakura-Cho, Hachioji-Shi,
Tokyo 192, Japan
Tel: (81-426) 56-7832
Fax: (81-426) 56-7840

Latin America:
Hewlett-Packard
Latin American Region Headquarters
5200 Blue Lagoon Drive
9th Floor
Miami, Florida 33126
U.S.A.
(305) 267 4245/4220

Australia/New Zealand:
Hewlett-Packard Australia Ltd.
31-41 Joseph Street
Blackburn, Victoria 3130
Australia
1 800 629 485

Asia Pacific:
Hewlett-Packard Asia Pacific Ltd
17-21/F Shell Tower, Times Square,
1 Matheson Street, Causeway Bay,
Hong Kong
Tel: (852) 2599 7777
Fax: (852) 2506 9285

Technical information in this document is subject to change without notice