



PD440FX Motherboard Specification Update

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The PD440FX motherboard may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are documented in this Specification Update.

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The PD440FX motherboard may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

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REVISION HISTORY

Date of Revision	Version	Description
May 1997	-001	This document is the first Specification Update for the Intel® PD440FX motherboard.
June 1997	-002	Added Specification Clarifications 1-3 and Documentation Changes 1-2.
July 1997	-003	Added Erratum 4 and Documentation Changes 3-5.
August 1997	-004	Modified Documentation Change 4. Added Specification Clarification 4 and Documentation Change 6.
September 1997	-005	Added Specification Change 1 and Erratum 5.
November 1997	-006	Updated status of Errata 4-5.
January 1998	-007	Added Erratum 6.
February 1998	-008	Added Specification Change 2 and Erratum 7.
April 1998	-009	Updated Specification Change 2.
June 1998	-010	Added Specification Change 5 and Documentation Change 7.

PREFACE

This document is an update to the specifications contained in the *PD440FX Motherboard Technical Product Specification* (Order number 282952). It is intended for hardware system manufacturers and software developers of applications, operating systems, or tools. It will contain Specification Changes, Errata, Specification Clarifications, and Documentation Changes.

Refer to the *Pentium® II Processor Specification Update* (Order number 243337) for specification updates concerning the Pentium II processor. Items contained in the *Pentium II Processor Specification Update* that either do not apply to the PD440FX motherboard or have been worked around are noted in this document. Otherwise, it should be assumed that any processor errata for a given stepping are applicable to the PBA revision(s) associated with that stepping.

Refer to the *82440FX PCIset Specification Update* (Order Number 297654) for specification updates concerning the 82440FX PCIset. Items contained in the *82440FX PCIset Specification Update* that either do not apply to the PD440FX motherboard or have been worked around are noted in this document. Otherwise, it should be assumed that any PCIset errata for a given stepping are applicable to the PBA revision(s) associated with that stepping.

Refer to the *82371SB PIIX3 Specification Update* (Order Number 297658) for specification updates concerning the 82371SB PIIX3. Items contained in the *82371SB PIIX3 Specification Update* that either do not apply to the PD440FX motherboard or have been worked around are noted in this document. Otherwise, it should be assumed that any PIIX3 errata for a given stepping are applicable to the Printed Board Assembly (PBA) revision(s) associated with that stepping.

Nomenclature

Specification Changes are modifications to the current published specifications. These changes will be incorporated in the next release of the specifications.

Errata are design defects or errors. Characterized errata may cause the PD440FX motherboard's behavior to deviate from published specifications. Hardware and software designed to be used with any given Printed Board Assembly (PBA) and BIOS revision level must assume that all errata documented for that PBA and BIOS revision level are present on all motherboards.

Specification Clarifications describe a specification in greater detail or further highlight a specification's impact to a complex design situation. These clarifications will be incorporated in the next release of the specifications.

Documentation Changes include typos, errors, or omissions from the current published specifications. These changes will be incorporated in the next release of the specifications.

Specification Update for PD440FX Motherboards

GENERAL INFORMATION

Basic PD440FX Motherboard Identification Information

AA Revision	PBA Revision	82440FX PCISet Stepping	BIOS Revision	Notes
667143-306	667142-306	A1	1.00.01.DT0	1-5
667143-307	667142-307	A1	1.00.03.DT0	1-5
667143-308	667142-308	A1	1.00.04.DT0	1-5
667143-309	667142-309	A1	1.00.05.DT0	1-5
667143-310	667142-310	A1	1.00.05.DT0	1-5
667143-311	667142-311	A1	1.00.06.DT0	1-5
668287-306	668250-306	A1	1.00.01.DT0	1-5
668287-307	668250-307	A1	1.00.03.DT0	1-5
668287-308	668250-308	A1	1.00.04.DT0	1-5
668287-309	668250-309	A1	1.00.05.DT0	1-5
668287-310	668250-310	A1	1.00.05.DT0	1-5
668287-311	668250-311	A1	1.00.05.DT0	1-5
668287-312	668250-312	A1	1.00.05.DT0	1-5
668287-313	668250-313	A1	1.00.06.DT0	1-5
668287-314	668250-314	A1	1.00.06.DT0	1-5
668289-306 671321-306 678458-306	668288-306	A1	1.00.01.DT0	1-5
668289-307 671321-307 678458-307	668288-307	A1	1.00.03.DT0	1-5
668289-308 671321-308 678458-308	668288-308	A1	1.00.04.DT0	1-5
668289-309 671321-309 678458-309	668288-309	A1	1.00.04.DT0	1-5
668289-310 678458-310	668288-310	A1	1.00.05.DT0	1-5
668289-311 678458-311	668288-311	A1	1.00.05.DT0	1-5
668289-312 678458-312	668288-312	A1	1.00.05.DT0	1-5
668289-313 678458-313	668288-313	A1	1.00.05.DT0	1-5

AA Revision	PBA Revision	82440FX PCIset Stepping	BIOS Revision	Notes
668289-314 678458-314	668288-314	A1	1.00.06.DT0	1-5
668289-315 678458-315	668288-315	A1	1.00.06.DT0	1-5
676794-301 676794-302	676350-301	A1	1.00.03.DT0	1-5
676794-303	676350-302	A1	1.00.04.DT0	1-5
676794-304	676350-303	A1	1.00.04.DT0	1-5
676794-305	676350-304	A1	1.00.05.DT0	1-5
676794-306	676350-305	A1	1.00.05.DT0	1-5
676794-307	676350-306	A1	1.00.05.DT0	1-5
676794-308	676350-307	A1	1.00.06.DT0	1-5

NOTES:

- The PBA number or AA number is found on a small label on the component side of the board.
- The 82440FX PCIset kit used on this PBA revision consists of three components as follows:

Device	Stepping	S-Spec Numbers
82441FX	A1	SU053
82442FX	A1	SU054
82371SB	B0	SU093

- The following errata are contained in the *Pentium® II Processor Specification Update* (Order Number 243337) for the Pentium II processor and either do not apply to the PD440FX motherboard or have been worked-around in this PBA and/or BIOS revision: 3, 10-11, 17, 27, 1AP-3AP. All other errata associated with the processor apply to this PBA revision.
- The following items are contained in the *Intel® 440FX PCIset Specification Update* (Order Number 297654) and either do not apply to the PD440FX motherboard or have been worked around in this PBA and/or BIOS revision:
 - 82441FX (PMC) Erratum 2.
 - All other errata associated with the PCIset apply to this PBA revision.
- The following items are contained in the *82371SB PIIX3 Stepping Information* (Order Number 297658) and either do not apply to the PD440FX motherboard or have been worked around in this PBA and/or BIOS revision: 1-9, 13. All other errata associated with the PIIX3 apply to this PBA revision.

Summary Table of Changes

The following table indicates the Specification Changes, Errata, Specification Clarifications, or Documentation Changes which apply to the PD440FX motherboard. Intel intends to fix some of the errata in a future revision of the motherboard, and to account for the other outstanding issues through documentation or specification changes as noted. This table uses the following notations:

CODES USED IN SUMMARY TABLE

- Doc: Document change or update that will be implemented.
- Fix: This erratum is intended to be fixed in a future revision of the motherboard or BIOS.
- Fixed: This erratum has been previously fixed.
- NoFix: There are no plans to fix this erratum.
- Shaded: This erratum is either new or modified from the previous version of the document.

NO.	PLANS	SPECIFICATION CHANGES
1	Doc	Support for 300 MHz Pentium® II processors
2	Doc	Support for 333 MHz Pentium II processors
NO.	PLANS	ERRATA
1	Fix	System BIOS does not recognize bootable USB devices
2	NoFix	Cannot meet FCC Class B requirements using unshielded USB cable
3	NoFix	Audio driver does not support Windows* 3.x session within OS/2* Warp*
4	Fixed	Management extension ASIC may fail to reset at power-on
5	Fixed	Processor may fail to initialize at power-on reset
6	NoFix	System BIOS may corrupt audio add-in card EEPROM
7	NoFix	Advanced Power Management May Suspend System During CD-ROM Playback
NO.	PLANS	SPECIFICATION CLARIFICATIONS
1	Doc	Advanced Power Management (APM) will not function as expected with Universal Serial Bus (USB) enabled
2	Doc	PCI 2.1 Specification optional features
3	Doc	64 MB SIMM*s will cause performance degradation
4	Doc	Power supply considerations
5	Doc	The Intel® Celeron™ Processor
NO.	PLANS	DOCUMENTATION CHANGES
1	Doc	Revision of Section 1.10.5.4, Wavetable Upgrade
2	Doc	Revision of Section 6.2, Specifications
3	Doc	Revision of Section 1.8.1, 82441FX PCI Bridge and Memory Controller (PMC)
4	Doc	Change to description of serial port capabilities
5	Doc	Change to instructions for the CMOS clear jumper

NO.	PLANS	DOCUMENTATION CHANGES
6	Doc	Revision of Section 1.16.1, Power Supply Considerations
7	Doc	Change to description of Manufacturing Options

The errata described in this specification update apply to combinations of PBA revision and BIOS revision as shown in the table below. Descriptions of the individual errata referred to by number in the table below are found in the ERRATA section of this document.

PBA Revision	BIOS Revision	Errata That Apply
667142-306	1.00.01.DT0	1-2, 5
	1.00.03.DT0	1-2, 5
	1.00.04.DT0	1-2, 5
	1.00.05.DT0	1-2, 5
	1.00.06.DT0	1-2, 5
	1.00.09.DT0	1-2, 5
667142-307	1.00.01.DT0 [†]	1-2, 5
	1.00.03.DT0	1-2, 5
	1.00.04.DT0	1-2, 5
	1.00.05.DT0	1-2, 5
	1.00.06.DT0	1-2, 5
	1.00.09.DT0	1-2, 5
667142-308	1.00.01.DT0 [†]	1-2, 5
	1.00.03.DT0 [†]	1-2, 5
	1.00.04.DT0	1-2, 5
	1.00.05.DT0	1-2, 5
	1.00.06.DT0	1-2, 5
	1.00.09.DT0	1-2, 5
667142-309	1.00.01.DT0 [†]	1-2, 5
	1.00.03.DT0 [†]	1-2, 5
	1.00.04.DT0 [†]	1-2, 5
	1.00.05.DT0	1-2, 5
	1.00.06.DT0	1-2, 5
	1.00.09.DT0	1-2, 5
667142-310	1.00.01.DT0 [†]	1-2
	1.00.03.DT0 [†]	1-2
	1.00.04.DT0 [†]	1-2
	1.00.05.DT0	1-2
	1.00.06.DT0	1-2
	1.00.09.DT0	1-2

PBA Revision	BIOS Revision	Errata That Apply
667142-311	1.00.01.DT0 [†]	1-2
	1.00.03.DT0 [†]	1-2
	1.00.04.DT0 [†]	1-2
	1.00.05.DT0 [†]	1-2
	1.00.06.DT0	1-2
	1.00.09.DT0	1-2
668250-306	1.00.01.DT0	1-3, 5-6
	1.00.03.DT0	1-3, 5-6
	1.00.04.DT0	1-3, 5-6
	1.00.05.DT0	1-3, 5-6
	1.00.06.DT0	1-3, 5-6
	1.00.09.DT0	1-3, 5-6
668250-307	1.00.01.DT0 [†]	1-3, 5-6
	1.00.03.DT0	1-3, 5-6
	1.00.04.DT0	1-3, 5-6
	1.00.05.DT0	1-3, 5-6
	1.00.06.DT0	1-3, 5-6
	1.00.09.DT0	1-3, 5-6
668250-308	1.00.01.DT0 [†]	1-3, 5-6
	1.00.03.DT0 [†]	1-3, 5-6
	1.00.04.DT0	1-3, 5-6
	1.00.05.DT0	1-3, 5-6
	1.00.06.DT0	1-3, 5-6
	1.00.09.DT0	1-3, 5-6
668250-309	1.00.01.DT0 [†]	1-3, 5-6
	1.00.03.DT0 [†]	1-3, 5-6
	1.00.04.DT0 [†]	1-3, 5-6
	1.00.05.DT0	1-3, 5-6
	1.00.06.DT0	1-3, 5-6
	1.00.09.DT0	1-3, 5-6

PBA Revision	BIOS Revision	Errata That Apply
668250-310	1.00.01.DT0 [†]	1-3, 6
	1.00.03.DT0 [†]	1-3, 6
	1.00.04.DT0 [†]	1-3, 6
	1.00.05.DT0	1-3, 6
	1.00.06.DT0	1-3, 6
	1.00.09.DT0	1-3, 6
668250-311	1.00.01.DT0 [†]	1-3, 6
	1.00.03.DT0 [†]	1-3, 6
	1.00.04.DT0 [†]	1-3, 6
	1.00.05.DT0	1-3, 6
	1.00.06.DT0	1-3, 6
	1.00.09.DT0	1-3, 6
668250-312	1.00.01.DT0 [†]	1-3, 6
	1.00.03.DT0 [†]	1-3, 6
	1.00.04.DT0 [†]	1-3, 6
	1.00.05.DT0	1-3, 6
	1.00.06.DT0	1-3, 6
	1.00.09.DT0	1-3, 6
668250-313	1.00.01.DT0 [†]	1-3, 6
	1.00.03.DT0 [†]	1-3, 6
	1.00.04.DT0 [†]	1-3, 6
	1.00.05.DT0 [†]	1-3, 6
	1.00.06.DT0	1-3, 6
	1.00.09.DT0	1-3, 6
668250-314	1.00.01.DT0 [†]	1-3, 6
	1.00.03.DT0 [†]	1-3, 6
	1.00.04.DT0 [†]	1-3, 6
	1.00.05.DT0 [†]	1-3, 6
	1.00.06.DT0	1-3, 6
	1.00.09.DT0	1-3, 6

PBA Revision	BIOS Revision	Errata That Apply
668288-306	1.00.01.DT0	1-3, 4-6
	1.00.03.DT0	1-3, 4-6
	1.00.04.DT0	1-3, 4-6
	1.00.05.DT0	1-3, 4-6
	1.00.06.DT0	1-3, 4-6
	1.00.09.DT0	1-3, 4-6
668288-307	1.00.01.DT0 [†]	1-3, 4-6
	1.00.03.DT0	1-3, 4-6
	1.00.04.DT0	1-3, 4-6
	1.00.05.DT0	1-3, 4-6
	1.00.06.DT0	1-3, 4-6
	1.00.09.DT0	1-3, 4-6
668288-308	1.00.01.DT0 [†]	1-3, 4-6
	1.00.03.DT0 [†]	1-3, 4-6
	1.00.04.DT0	1-3, 4-6
	1.00.05.DT0	1-3, 4-6
	1.00.06.DT0	1-3, 4-6
	1.00.09.DT0	1-3, 4-6
668288-309	1.00.01.DT0 [†]	1-3, 4-6
	1.00.03.DT0 [†]	1-3, 4-6
	1.00.04.DT0	1-3, 4-6
	1.00.05.DT0	1-3, 4-6
	1.00.06.DT0	1-3, 4-6
	1.00.09.DT0	1-3, 4-6
668288-310	1.00.01.DT0 [†]	1-3, 4-6
	1.00.03.DT0 [†]	1-3, 4-6
	1.00.04.DT0 [†]	1-3, 4-6
	1.00.05.DT0	1-3, 4-6
	1.00.06.DT0	1-3, 4-6
	1.00.09.DT0	1-3, 4-6

PBA Revision	BIOS Revision	Errata That Apply
668288-311	1.00.01.DT0 [†]	1-3, 6
	1.00.03.DT0 [†]	1-3, 6
	1.00.04.DT0 [†]	1-3, 6
	1.00.05.DT0	1-3, 6
	1.00.06.DT0	1-3, 6
	1.00.09.DT0	1-3, 6
668288-312	1.00.01.DT0 [†]	1-3, 6
	1.00.03.DT0 [†]	1-3, 6
	1.00.04.DT0 [†]	1-3, 6
	1.00.05.DT0	1-3, 6
	1.00.06.DT0	1-3, 6
	1.00.09.DT0	1-3, 6
668288-313	1.00.01.DT0 [†]	1-3, 6
	1.00.03.DT0 [†]	1-3, 6
	1.00.04.DT0 [†]	1-3, 6
	1.00.05.DT0	1-3, 6
	1.00.06.DT0	1-3, 6
	1.00.09.DT0	1-3, 6
668288-314	1.00.01.DT0 [†]	1-3, 6
	1.00.03.DT0 [†]	1-3, 6
	1.00.04.DT0 [†]	1-3, 6
	1.00.05.DT0 [†]	1-3, 6
	1.00.06.DT0	1-3, 6
	1.00.09.DT0	1-3, 6
668288-315	1.00.01.DT0 [†]	1-3, 6
	1.00.03.DT0 [†]	1-3, 6
	1.00.04.DT0 [†]	1-3, 6
	1.00.05.DT0 [†]	1-3, 6
	1.00.06.DT0	1-3, 6
	1.00.09.DT0	1-3, 6

PBA Revision	BIOS Revision	Errata That Apply
676350-301	1.00.01.DT0 [†]	1-2, 4-5
	1.00.03.DT0	1-2, 4-5
	1.00.04.DT0	1-2, 4-5
	1.00.05.DT0	1-2, 4-5
	1.00.06.DT0	1-2, 4-5
	1.00.09.DT0	1-2, 4-5
676350-302	1.00.01.DT0 [†]	1-2, 4-5
	1.00.03.DT0 [†]	1-2, 4-5
	1.00.04.DT0	1-2, 4-5
	1.00.05.DT0	1-2, 4-5
	1.00.06.DT0	1-2, 4-5
	1.00.09.DT0	1-2, 4-5
676350-303	1.00.01.DT0 [†]	1-2, 4-5
	1.00.03.DT0 [†]	1-2, 4-5
	1.00.04.DT0	1-2, 4-5
	1.00.05.DT0	1-2, 4-5
	1.00.05.DT0	1-2, 4-5
	1.00.09.DT0	1-2, 4-5
676350-304	1.00.01.DT0 [†]	1-2, 4-5
	1.00.03.DT0 [†]	1-2, 4-5
	1.00.04.DT0 [†]	1-2, 4-5
	1.00.05.DT0	1-2, 4-5
	1.00.06.DT0	1-2, 4-5
	1.00.09.DT0	1-2, 4-5
676350-305	1.00.01.DT0 [†]	1-2
	1.00.03.DT0 [†]	1-2
	1.00.04.DT0 [†]	1-2
	1.00.05.DT0	1-2
	1.00.06.DT0	1-2
	1.00.09.DT0	1-2

PBA Revision	BIOS Revision	Errata That Apply
676350-306	1.00.01.DT0 [‡]	1-2
	1.00.03.DT0 [‡]	1-2
	1.00.04.DT0 [‡]	1-2
	1.00.05.DT0	1-2
	1.00.06.DT0	1-2
	1.00.09.DT0	1-2
676350-307	1.00.01.DT0 [‡]	1-2
	1.00.03.DT0 [‡]	1-2
	1.00.04.DT0 [‡]	1-2
	1.00.05.DT0 [‡]	1-2
	1.00.06.DT0	1-2
	1.00.09.DT0	1-2

[‡] Note: This combination of BIOS revision and PBA revision has not undergone regression testing. Use of a PBA with down-revision BIOS is an untested combination and is undertaken at the user's risk.

SPECIFICATION CHANGES

The Specification Changes listed in this section apply to the *PD440FX Motherboard Technical Product Specification* (Order Number 282952). All Specification Changes will be incorporated into a future version of that specification.

1. Support for 300 MHz Pentium® II Processors

The motherboard supports 300 MHz Pentium® II processors. Section 1.1, Overview and Section 1.6, Microprocessor, will be modified to add 300 MHz to the list of supported processor speeds.

Section 1.13.1, Processor Configuration, will be replaced in its entirety as follows:

PROCESSOR CONFIGURATION (J9C1-A, B, C)

These jumpers are for configuring the motherboard for the frequency of the installed processor. Table 1 shows the jumper settings for each frequency and the corresponding host bus, PCI bus, and ISA bus frequencies.

Table 1. Jumper Settings for Processor and Host Bus Frequencies

Processor Freq. (MHz)	Jumpers J9C1-A	Jumpers J9C1-B	Jumpers J9C1-C	Host Bus Freq. (MHz)	PCI Bus Freq. (MHz)	ISA Bus Freq. (MHz)	Bus/Processor Freq. Ratio
233	2-3	2-3 and 5-6	2-3	66	33	8.33	3.5
266	1-2	1-2 and 4-5	2-3	66	33	8.33	4
300	1-2	2-3 and 4-5	2-3	66	33	8.33	4.5

Note: All other jumper settings for internal processor frequencies on this motherboard are reserved.

2. Support for 333 MHz Pentium II Processors

The motherboard supports 333 MHz Pentium II processors. Section 1.1, Overview and Section 1.6, Microprocessor, will be modified to add 333 MHz to the list of supported processor speeds.

BIOS revision 1.00.09.DT0 or later is required for the motherboard to properly support a 333 MHz processor.

The following line will be added to Table 2, Jumper Settings for Processor and Host Bus Frequencies:

Processor Freq. (MHz)	Jumpers J9C1-A	Jumpers J9C1-B	Jumpers J9C1-C	Host Bus Freq. (MHz)	PCI Bus Freq. (MHz)	ISA Bus Freq. (MHz)	Bus/Processor Freq. Ratio
333	1-2	1-2 and 5-6	2-3	66	33	8.33	5.0

Note: Conformity with FCC open chassis emission standards was verified with processor speeds up to 300 MHz, the highest processor speed available at the time the motherboard was introduced.

Higher speed processors may increase system electro-magnetic emissions. It is the responsibility of the system integrator to verify that a system based on this motherboard and any new higher speed processor, including the newly announced 333 MHz Pentium® II processor, complies with EMC emission standards.

ERRATA

1. ***System BIOS Does Not Recognize Bootable USB Devices***

PROBLEM: The system BIOS does not recognize a USB keyboard or mouse during a system boot. A USB keyboard or mouse is not recognized until an operating system that supports USB is loaded.

IMPLICATION: 1. The user is not able to use a USB keyboard to enter the BIOS Setup or to respond to error messages that are displayed before an operating system with USB support is loaded.

2. The user is not able to use a USB keyboard or mouse with any operating system that does not have USB support.

WORKAROUND: Use a standard PS/2* style keyboard and mouse in any configuration where input is required before an operating system with USB support is loaded.

STATUS: This erratum will be fixed in a future BIOS revision.

2. ***Cannot Meet FCC Class B Requirements Using Unshielded USB Cable***

PROBLEM: The motherboard will generate excessive electromagnetic radiation on unshielded USB cables, even if no device or a low speed (sub-channel) USB device is attached to the cable.

IMPLICATION: Systems based on this motherboard will not meet FCC Part 15 Class B requirements when unshielded USB cable is used. Although this condition is a violation of the USB v1.0 specification, it is not believed to have any effect on normal USB device operation.

WORKAROUND: Use USB devices with shielded cable that meet the requirements for high speed (fully-rated) USB devices.

STATUS: This erratum will not be fixed.

3. ***Audio Driver Does Not Support Windows* 3.x Session Within OS/2* Warp****

PROBLEM: The PD440FX motherboard audio drivers for OS/2* Warp* or Windows* 3.x do not support audio during a Windows 3.x session within OS/2 Warp.

IMPLICATION: No audio is available during a Windows 3.x session within OS/2 Warp. Normal audio support will be available in native OS/2 Warp.

WORKAROUND: None.

STATUS: This erratum will not be fixed.

4. **Management Extension ASIC May Fail to Reset at Power-On**

PROBLEM: If external system devices, such as monitors or printers, are already powered on at system power-on, they may provide an offset potential of greater than 200 mV DC between the Vcc power plane and the ground plane of the motherboard. This can cause an intermittent internal reset failure in the management extension ASIC used on the motherboard. If the internal reset fails, no data conversions will occur and the ASIC registers that store temperature, voltage and fan speed data will be set to zero.

IMPLICATION: If LANDesk® software or other management software attempts to query the ASIC for temperature, voltage or fan speed information, it will receive invalid data. Any system alerts based on the status of those parameters will not occur.

The monitoring of these three parameters is the only function affected by this erratum. The rest of the system will function normally in all other respects. Applications that do not use management software to monitor these hardware parameters are not affected by this erratum.

WORKAROUND: Power down the system and all external devices connected to it. While all external devices are still turned off, power the system on again. Turning off all external devices reduces the offset potential to a low value that allows the management ASIC to reset when power is turned on again.

STATUS: This erratum was fixed in the following PBA revisions: 668288-311, 676350-305.

5. **Processor May Fail to Initialize at Power-on Reset**

PROBLEM: In some very rare cases, a slow power supply ramp on the Vccp signal can cause the Pentium® II processor to enter its test state rather than completing normal initialization. This will cause a system hang. This erratum has only been observed when the system is powered off and on again in a very short time and is dependent on the other devices present in the system configuration.

IMPLICATION: The system will not complete the boot sequence.

WORKAROUND: Turn the system off and wait for a longer time before rebooting. Intel has found that for most system configurations a one minute wait before repowering will allow a normal boot.

STATUS: This erratum was fixed in the following PBA revisions: 668288-311, 676350-305, 668250-310, 667142-310.

6. **System BIOS May Corrupt Audio Add-In Card EEPROM**

PROBLEM: Audio add-in cards using the Yamaha OPL3-SA2 or OPL3-SA3 audio codec have the same hardware identification number that is used by the Yamaha audio device integrated on the motherboard. This causes the system BIOS to inadvertently write information into the audio add-in card's serial EEPROM during system startup, thereby corrupting the audio add-in card's EEPROM contents.

IMPLICATION: The audio add-in card will not operate and no audio will be available.

WORKAROUND: Disable the onboard audio in BIOS Setup before installing an audio add-in card.

STATUS: This erratum will not be fixed.

7. *Advanced Power Management May Suspend System During CD-ROM Playback*

PROBLEM: ATAPI devices (such as CD-ROM and DVD drives) do not reset the inactivity timer that is used by Advanced Power Management to determine when to place the system into suspend mode.

IMPLICATION: When playback of an audio CD or a DVD file is the only system activity, the system will go into suspend mode when the inactivity timer expires.

WORKAROUND: Temporarily disable the Low-power standby and Shut off monitor options on the Display Properties, Screen Saver menu. This menu is available from the Windows* 95 Control Panel.

STATUS: This erratum will not be fixed.

SPECIFICATION CLARIFICATIONS

The Specification Clarifications listed in this section apply to the *PD440FX Motherboard Technical Product Specification* (Order Number 282952). All Specification Clarifications will be incorporated into a future version of that specification.

1. *Advanced Power Management (APM) Will Not Function as Expected with Universal Serial Bus (USB) Enabled*

The following will be added to Section 1.8.4, Universal Serial Bus Support and Section 3.1.7, Advanced Power Management:

Advanced Power Management will not function as expected when a USB keyboard or mouse is used. USB activity is not monitored by the APM event counter, therefore, activity from a USB keyboard or mouse will not keep the system awake or bring a system out of APM sleep mode. If a USB keyboard or mouse is being used, APM should be disabled.

2. *PCI 2.1 Specification Optional Features*

The following will be added to Section 1.12.5, Add-in Board Expansion Connectors:

The following optional features in the PCI 2.1 Specification are not implemented on the PD440FX motherboard:

- Cache Support Pins **SBO#** and **SDONE** (Section 2.2.7)
- **PRSNTx#** (Section 2.2.8)
- **CLKRUN#** (Section 2.2.8)
- 64 Bit Bus Extension Pins (Section 2.2.9)
- 66 MHz support (Section 2.2.8)
- JTAG/Boundary scan (Section 2.2.10)

3. *64 MB SIMM*s Will Cause Performance Degradation*

The following will be added to Section 1.7, Main Memory:

In order to allow use of 64 MB SIMM*s, the BIOS changes to slower memory access parameters when 64 MB SIMMs are detected in the system. This will result in some performance degradation if 64 MB SIMMs are installed.

4. *Power Supply Considerations*

The PD440FX motherboard has been designed to be configured in a system that uses a power supply that complies with the recommendations of ATX Specification Version 2.01. See Documentation Change 6 for the specific recommendations that must be met by a power supply for the motherboard.

5. *The Intel® Celeron™ Processor*

While the Intel® Celeron™ processor uses the same P6 microarchitecture as the Pentium® II processor, there are some differences. No qualification or compatibility testing has been performed using the Celeron processor and the BIOS does not contain support for this processor. A Celeron processor will be identified as a Pentium II processor by the system. While the Celeron processor may appear to work in the motherboard, the reliability of operation is not known.

DOCUMENTATION CHANGES

The Documentation Changes listed in this section apply to the *PD440FX Motherboard Technical Product Specification* (Order Number 282952). All Documentation Changes will be incorporated into a future version of that specification.

1. **Revision of Section 1.10.5.4, Wavetable Upgrade**

This second paragraph in this section will be replaced in its entirety as follows:

Compatible wavetable cards are available from several vendors.

2. **Revision of Section 6.2, Specifications**

The following note will be added to the table entry for PCI compliance:

NOTE: Certain optional PCI features have not been implemented on this motherboard, see section 1.14 for more information.

3. **Revision of Section 1.8.1, 82441FX PCI Bridge and Memory Controller (PMC)**

The 3rd bullet in this section will be replaced in its entirety as follows:

- Fully synchronous PCI bus interface
 - 25/30/33 MHz
 - PCI to DRAM data transfers up to or greater than 100 MB/sec
 - Up to 5 PCI bus masters in addition to the PIIX3

4. **Change to Description of Serial Port Capabilities**

Section 1.9.1, Serial Ports, will be replaced in its entirety as follows:

The motherboard has two 9-pin D-Sub serial port connectors located on the back panel. The 16450 and 16550A compatible UARTs allow data transfers at speeds up to 115.2 Kbaud with BIOS serial port support.

5. **Change to Instructions for the CMOS Clear Jumper**

Section 1.13.3, CMOS Clear Jumper, will be replaced in its entirety as follows:

CMOS CLEAR (J9C1-C)

This jumper is for resetting the CMOS settings to the default values. The default setting for this jumper is pins 5-6 (keep CMOS settings). To reset the CMOS settings to the default values, turn off the computer, move the jumper to pins 4-5, then turn on the computer. When the computer displays the message "NVRAM cleared by jumper," turn off the computer and return the jumper to pins 5-6 to restore normal operation.

Caution: This procedure should only be done if, after a BIOS update, the system does not boot to a point where Setup can be entered or if, after CMOS default settings have been restored from within the Setup program, the system does not boot to the operating system.

6. *Revision of Section 1.16.1, Power Supply Considerations*

Section 1.16.1, Power Supply Considerations, will be replaced in its entirety as follows:

For typical configurations, the motherboard is designed to operate with at least a 200 W power supply (see Section 6.2 for the specification). A higher-wattage power supply should be used for heavily-loaded configurations. The power supply must comply with the following recommendations found in the indicated sections of that specification:

- The potential relation between 3.3VDC and +5VDC power rails (Section 4.2)
- The current capability of the +5VSB line (Section 4.2.1.2)
- All timing parameters (Section 4.2.1.3)
- All voltage tolerances (Section 4.2.2)

7. *Change to Description of Manufacturing Options*

The first paragraph of Section 1.2, Motherboard Manufacturing Options, will be replaced in its entirety as follows:

The following are manufacturing options. Not all manufacturing options are available in all marketing channels. Please contact your Intel representative to determine what manufacturing options are available to you.