



DB440FX Motherboard Specification Update

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The DB440FX 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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REVISION HISTORY

Date of Revision	Version	Description
May 1997	-001	This document is the first Specification Update for the Intel® DB440FX motherboard.
June 1997	-002	Added Specification Clarifications 1-3 and Documentation Changes 1-2.
July 1997	-003	Added Erratum 3 and Documentation Changes 3-5.
August 1997	-004	Modified Documentation Change 4.
September 1997	-005	Added Specification Change 1 and modified Specification Clarification 3.
February 1998	-006	Added Specification Change 2 and Erratum 4.
June 1998	-007	Added Specification Changes 3-4, Specification Clarification 4 and Documentation Change 6.

PREFACE

This document is an update to the specifications contained in the *DB440FX 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 DB440FX 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 DB440FX 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 DB440FX 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 DB440FX 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 DB440FX Motherboards

GENERAL INFORMATION

Basic DB440FX Motherboard Identification Information

AA Revision	PBA Revision	82440FX PCIset Stepping	BIOS Revision	Notes
669523-504	669525-504	A1	1.00.01.DU0	1-5
669523-505	669525-505	A1	1.00.01.DU0	1-5
669523-506	669525-506	A1	1.00.01.DU0	1-5
669523-604	669525-604	A1	1.00.02.DU0	1-5
669523-605	669525-605	A1	1.00.02.DU0	1-5
669523-606	669525-606	A1	1.00.03.DU0	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 DB440FX 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 DB440FX 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 DB440FX 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 DB440FX 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
3	Doc	Removal of option to scan user flash area
4	Doc	Removal of option to detect viruses during boot process
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	Fix	Management extension ASIC may fail to reset at power-on
4	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 Mbyte DIMMs will cause performance degradation
4	Doc	The Intel® Celeron™ processor
NO.	PLANS	DOCUMENTATION CHANGES
1	Doc	Revision of Section 1.11.3, Wavetable Upgrade
2	Doc	Revision of Section 6.2, Specifications
3	Doc	Revision of Section 1.7.1, 82441FX PCI Bridge and Memory Controller (PMC)
4	Doc	Change to description of serial port capabilities
5	Doc	Change to instructions for the Clear CMOS jumper
6	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 to This Combination
669525-504	1.00.01.DU0	1-4
	1.00.02.DU0	1-4
	1.00.03.DU0	1-4
669525-505	1.00.01.DU0	1-4
	1.00.02.DU0	1-4
	1.00.03.DU0	1-4
669525-506	1.00.01.DU0	1-4
	1.00.02.DU0	1-4
	1.00.03.DU0	1-4
669525-604	1.00.01.DU0 [†]	1-4
	1.00.02.DU0	1-4
	1.00.03.DU0	1-4
669525-605	1.00.01.DU0 [†]	1-4
	1.00.02.DU0	1-4
	1.00.03.DU0	1-4
669525-606	1.00.01.DU0 [†]	1-4
	1.00.02.DU0 [†]	1-4
	1.00.03.DU0	1-4

[†] 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 *DB440FX Motherboard Technical Product Specification* (Order Number 282971). All Specification Changes will be incorporated into a future version of that specification.

1. **Support for 300 MHz Pentium® II Processors**

Motherboards with PBA revision levels -604 and greater support 300 MHz Pentium® II processors. Section 1.1, Overview and Section 1.5, Microprocessor, will be modified to add 300 MHz to the list of supported processor speeds.

Section 1.20.1, Processor Frequency, will be replaced in its entirety as follows:

PROCESSOR FREQUENCY (J8H1-A, B, C)

The motherboard must be configured 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 Frequencies

Processor Freq. (MHz)	Jumpers J8H1-A	Jumpers J8H1-B	Jumpers J8H1-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	4.0
300	1-2	2-3 and 4-5	2-3	66	33	8.33	4.5

2. **Support for 333 MHz Pentium II Processors**

Motherboards with PBA revision levels -604 and greater support 333 MHz Pentium II processors. Section 1.1, Overview and Section 1.5, Microprocessor, will be modified to add 333 MHz to the list of supported processor speeds.

BIOS revision 1.00.03.DU0 or later is required for the motherboard to properly support a 333 MHz processor.

3. **Removal of Option to Scan User Flash Area**

The option to scan the user flash area during POST and run an executable file loaded in that area has been removed from the system BIOS in BIOS revision 1.00.03.DU0. Section 4.5.11, Scan User Flash Area, will be deleted. References to the option in Table 32, Memory Map, and Table 39, Overview of the Setup Screens, will be deleted.

4. *Removal of Option to Detect Viruses During Boot Process*

The option to detect and clean viruses during the boot process has been removed from the system BIOS in BIOS revision 1.00.02.DU0. Section 3.16, Boot Virus Detection and Cleaning, and Section 4.5.12, Boot Virus Detection, will be deleted. References to the option in Table 39, Overview of the Setup Screens, will be deleted.

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

Processor Freq. (MHz)	Jumpers J8H1-A	Jumpers J8H1-B	Jumpers J8H1-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: Higher speed processors may increase system electro-magnetic emissions. It is the responsibility of the system integrator to verify that a system using a 333 MHz processor with this motherboard meets 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. ***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 will be fixed in a future PBA revision.

4. *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 *DB440FX Motherboard Technical Product Specification* (Order Number 282971). 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 1.7.4, USB Support, and Section 3.8, 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 1.18.1, Expansion Connectors:

The following optional features in the PCI 2.1 Specification are not implemented on the DB440FX 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 DIMMs Will Cause Performance Degradation**

The following will be added to Section 1.6, Main Memory:

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

BIOS 1.00.02.DU0 has been modified and no longer causes this performance degradation when 64 MB DIMMs are installed.

4. **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 *DB440FX Motherboard Technical Product Specification* (Order Number 282971). All Documentation Changes will be incorporated into a future version of that specification.

1. **Revision of Section 1.11.3, 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 1.18.1 for more information.

3. **Revision of Section 1.7.1, 82441FX PCI Bridge and Memory Controller (PMC)**

The 4th 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 one keyed 10-pin serial header located onboard for cabling to the back panel. The 16450- and 16550A-compatible UART allows data transfers at speeds up to 115.2 Kbaud with BIOS serial port support.

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

Section 1.20.3, Clear CMOS Jumper, will be replaced in its entirety as follows:

CLEAR CMOS (J8H1-C)

This jumper resets 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. *Change to Description of Manufacturing Options*

The following will be added as the first paragraph of Section 1.2, Motherboard Manufacturing Options:

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.

