



WS440BX Motherboard Specification Update

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Order Number: 725855-005

The WS440BX 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 WS440BX 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 |
|-------------------------|----------------|---|
| October 1998 | -001 | This document is the first Specification Update for the Intel® WS440BX motherboard. |
| May 1999 | -002 | Added Erratum 2. |
| June 1999 | -003 | Added Specification Change 1. |
| July 1999 | -004 | Added Erratum 3. |
| August 1999 | -005 | Added Erratum 4. |

PREFACE

This document is an update to the specifications contained in the WS440BX Motherboard Technical Product Specification (Order number 702587). 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 WS440BX 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 *82443BX Specification Update* (Order Number 290639) for specification updates concerning the 82443BX PCI A.G.P. Controller. Items contained in the *82443BX Specification Update* that either do not apply to the WS440BX motherboard or have been worked around are noted in this document. Otherwise, it should be assumed that any controller errata for a given stepping are applicable to the PBA revision(s) associated with that stepping.

Refer to the *Intel® 82371EB (PIIX4E) Specification Update* (Order Number 290635) for specification updates concerning the 82371EB PIIX4E. Items contained in the *Intel 82371EB (PIIX4E) Specification Update* that either do not apply to the WS440BX motherboard or have been worked around are noted in this document. Otherwise, it should be assumed that any PIIX4E 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 WS440BX 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 WS440BX Motherboards

GENERAL INFORMATION

Basic WS440BX Motherboard Identification Information

| AA Revision | PBA Revision | 440BX AGPSet Stepping | BIOS Revision | Notes |
|-------------|--------------|-----------------------|-----------------------|-------|
| 724651-103 | 724648-103 | B1 | 4W4SB0X0.86A.0006.P01 | 1-5 |
| 724651-104 | 724648-104 | B1 | 4W4SB0X0.86A.0006.P01 | 1-5 |
| 724651-105 | 724648-105 | B1 | 4W4SB0X0.86A.0006.P01 | 1-5 |
| 724651-106 | 724648-106 | B1 | 4W4SB0X0.86A.0009.P02 | 1-5 |
| 724754-103 | 724753-103 | B1 | 4W4SB0X0.86A.0006.P01 | 1-5 |
| 724754-104 | 724753-104 | B1 | 4W4SB0X0.86A.0006.P01 | 1-5 |
| 724754-105 | 724753-105 | B1 | 4W4SB0X0.86A.0006.P01 | 1-5 |
| 724754-106 | 724753-106 | B1 | 4W4SB0X0.86A.0006.P01 | 1-5 |
| 724754-107 | 724753-107 | B1 | 4W4SB0X0.86A.0009.P02 | 1-5 |

NOTES:

- The PBA number or AA number is found on a small label on the component side of the board.
- The 440BX AGPset kit used on this PBA revision consists of two components as follows:

| Device | Stepping | S-Spec Numbers |
|---------|----------|----------------|
| 82443BX | B1 | SL2T5 SL2T6 |
| 82371EB | A0 | SL2MY |

- 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 WS440BX motherboard or have been worked-around in this PBA and/or BIOS revision: 3, 10-11, 17, 27-28, 32, 41, 50, 1AP-3AP. All other errata associated with the processor apply to this PBA revision.
- The following items are contained in the *Intel® 82443BX Specification Update* (Order Number 290639) and either do not apply to the WS440BX motherboard or have been worked around in this PBA and/or BIOS revision: Erratum 3. All other errata associated with the AGPset apply to this PBA revision.
- The following items are contained in the *Intel® 82371EB (PIIX4E) Specification Update* (Order Number 290635) and either do not apply to the WS440BX motherboard or have been worked around in this PBA and/or BIOS revision: None. All other errata associated with the PIIX4E 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 WS440BX 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 the Intel® Pentium® III processor |
| NO. | PLANS | ERRATA |
| 1 | NoFix | Advanced Power Management may suspend system during CD-ROM playback |
| 2 | Fix | Key combination locks keyboard if user password is set |
| 3 | Fixed | System may fail to boot with powered USB hub attached |
| 4 | NoFix | BIOS does not implement S4BIOS power state |

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 |
|---------------------|-----------------------|--------------------------|
| 724648-103 | 4W4SB0X0.86A.0006.P01 | 1-3 |
| | 4W4SB0X0.86A.0009.P02 | 1-3 |
| | 4W4SB0X0.86A.0010.P03 | 1-2 |
| | 4W4SB0X0.86A.0011.P04 | 1-2 |
| 724648-104 | 4W4SB0X0.86A.0006.P01 | 1-3 |
| | 4W4SB0X0.86A.0009.P02 | 1-3 |
| | 4W4SB0X0.86A.0010.P03 | 1-2 |
| | 4W4SB0X0.86A.0011.P04 | 1-2 |
| 724648-105 | 4W4SB0X0.86A.0006.P01 | 1-3 |
| | 4W4SB0X0.86A.0009.P02 | 1-3 |
| | 4W4SB0X0.86A.0010.P03 | 1-2 |
| | 4W4SB0X0.86A.0011.P04 | 1-2 |
| 724648-106 | 4W4SB0X0.86A.0006.P01 | 1-3 |
| | 4W4SB0X0.86A.0009.P02 | 1-3 |
| | 4W4SB0X0.86A.0010.P03 | 1-2 |
| | 4W4SB0X0.86A.0011.P04 | 1-2 |
| 724753-103 | 4W4SB0X0.86A.0006.P01 | 1-3 |
| | 4W4SB0X0.86A.0009.P02 | 1-3 |
| | 4W4SB0X0.86A.0010.P03 | 1-2 |
| | 4W4SB0X0.86A.0011.P04 | 1-2 |
| 724753-104 | 4W4SB0X0.86A.0006.P01 | 1-3 |
| | 4W4SB0X0.86A.0009.P02 | 1-3 |
| | 4W4SB0X0.86A.0010.P03 | 1-2 |
| | 4W4SB0X0.86A.0011.P04 | 1-2 |
| 724753-105 | 4W4SB0X0.86A.0006.P01 | 1-3 |
| | 4W4SB0X0.86A.0009.P02 | 1-3 |
| | 4W4SB0X0.86A.0010.P03 | 1-2 |
| | 4W4SB0X0.86A.0011.P04 | 1-2 |

| PBA Revision | BIOS Revision | Errata That Apply |
|---------------------|-----------------------|--------------------------|
| 724753-106 | 4W4SB0X0.86A.0006.P01 | 1-3 |
| | 4W4SB0X0.86A.0009.P02 | 1-3 |
| | 4W4SB0X0.86A.0010.P03 | 1-2 |
| | 4W4SB0X0.86A.0011.P04 | 1-2 |
| 724753-107 | 4W4SB0X0.86A.0006.P01 | 1-3 |
| | 4W4SB0X0.86A.0009.P02 | 1-3 |
| | 4W4SB0X0.86A.0010.P03 | 1-2 |
| | 4W4SB0X0.86A.0011.P04 | 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 *WS440BX Motherboard Technical Product Specification* (Order Number 702587). All Specification Changes will be incorporated into a future version of that specification.

1. **Support for the Intel® Pentium® III Processor**

The following will be added to the processor section in section 1.1, Overview:

Intel® Pentium® III processor with host bus frequency of 100 MHz.

The first sentence in section 1.2 will be replaced in its entirety as follows:

The motherboard supports a single Pentium III processor or Pentium II processor.

The following will be added to the list of supported processors in Section 1.2, Microprocessor:

| Processor Type | Processor Speed (in MHz) | Host Bus Speed (in MHz) | Packaging Type) |
|------------------------|--------------------------|-------------------------|------------------|
| Pentium III processor* | 450 | 100 | S.E.C. Cartridge |
| | 500 | 100 | |
| | 550 | 100 | |

* The motherboard supports the Pentium III processor at 450 MHz and 500 MHz with BIOS version 4W4SB0X0.86A.0009.P02 or later. The motherboard supports the Pentium III processor at 550 MHz with BIOS version 4W4SB0X0.86A.0011.P04 or later. Earlier BIOS versions will identify the processor as a Pentium II processor and will not work reliably with a Pentium III processor.

The last sentence of Section 1.2.1, Second-Level Cache, will be replaced in its entirety as follows:

All supported onboard memory can be cached, up to the limits of the microprocessor. Refer to the microprocessor data sheet for the amount of memory that your processor can cache.

In Section 4.3, Main Menu, the following option will be added to Table 57:

| Feature | Options | Description |
|-------------------------|--|---|
| Processor Serial Number | <ul style="list-style-type: none"> • Disabled (default) • Enabled | Disabled blocks the processor from reporting the processor serial number to the operating system or software. |

ERRATA

1. ***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.

2. ***Key Combination Locks Keyboard if User Password is Set***

PROBLEM: If a user password has been set in the BIOS Setup program, the <Ctrl><Alt><L> key combination will lock the keyboard. The user password must be entered to unlock the keyboard and resume use of the system.

IMPLICATION: Software that requires that key combination for some other purpose can only be used if the user password feature is turned off.

WORKAROUND: None.

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

3. ***System May Fail to Boot With Powered USB Hub Attached***

PROBLEM: If a powered USB hub is connected to the system with no USB device plugged into the hub, the system may boot very slowly or not boot at all. The hub will work normally if the system completes the boot process or if it is connected to the USB port after boot.

IMPLICATION: A powered USB hub may require multiple reboots before the system can be used.

WORKAROUND: Unplug the hub during the boot process, or plug a USB device that does not have an integrated USB hub into the onboard hub before booting the system.

STATUS: This erratum was fixed in BIOS revision 4W4SB0X0.86A.0010.P03.

4. ***BIOS Does Not Implement S4BIOS Power State***

PROBLEM: The S4BIOS (Suspend to Disk) power state has not been implemented in the motherboard BIOS. (In Section 3.5.2, the S4BIOS power state is referred to as S4 Suspend to disk.)

IMPLICATION: The user will not be able to suspend the system to a state that includes saved context information.

WORKAROUND: None.

STATUS: This erratum will not be fixed.

