



CU430HX Motherboard Specification Update

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The CU430HX 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
September 1996	-001	This document is the first Specification Update for the Intel CU430HX motherboard.
November 1996	-002	Added Specification Clarification 1 and Errata 1-2.
December 1996	-003	Added Errata 3-4, Specification Clarification 2 and Documentation Changes 1-32.
January 1997	-004	Added Erratum 5, Specification Clarification 3, PBA/BIOS Table and Updated Specification Clarification 2.
February 1997	-005	Updated Documentation Changes 6 and 17.
March 1997	-006	Added AA Revision to Motherboard Identification table. Revised format of PBA/BIOS revision table. Updated Erratum 1 and Documentation Changes 29-30. Added Erratum 6 and Documentation Changes 33-34.
April 1997	-007	Moved Specification Clarification 1 to Erratum 7. Added Documentation Change 35.
June 1997	-008	Added Specification Change 1 and Specification Clarifications 4-5. Updated Errata 2 and 6.
July 1997	-009	Added Specification Clarification 6, Erratum 8 and Documentation Changes 36-38.
August 1997	-010	Removed Specification Clarifications 1-6 and Documentation Changes 1-38, which were incorporated into revision -003 of the specification.
October 1997	-011	Removed Specification Change 1, which was incorporated into revision -003 of the specification. Updated Erratum 8 and Added Documentation Change 1.

PREFACE

This document is an update to the specifications contained in the *CU430HX Motherboard Technical Product Specification* (Order Number 281839). 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® Processor Specification Update* (Order Number 242480) for specification updates concerning the Pentium processor. Items contained in the *Pentium Processor Specification Update* that either do not apply to the CU430HX 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 Printed Board Assembly (PBA) revision(s) associated with that stepping.

Refer to the *82430HX PCIset Specification Update* (Order Number 297652) for specification updates concerning the 82430HX PCIset. Items contained in the *82430HX PCIset Specification Update* that either do not apply to the CU430HX 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 Printed Board Assembly (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 CU430HX 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 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 CU430HX 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 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 CU430HX Motherboards

GENERAL INFORMATION

Basic CU430HX Motherboard Identification Information

AA Revision	PBA Revision	82430HX PCIsset Stepping	BIOS Revision	Notes
664961-402	664962-402	A3	1.00.03.DK0	1, 2, 3, 4, 5
664961-403	664962-403	A3	1.00.04.DK0	1, 2, 3, 4, 5
664961-404	664962-404	A3	1.00.05.DK0	1, 2, 3, 4, 5
664961-405	664962-405	A3	1.00.05.DK0	1, 2, 3, 4, 5
664961-406	664962-406	A3	1.00.06.DK0	1, 2, 3, 4, 5

NOTES:

1. The PBA number is found on a small label on the component side of the board.
2. The 82430HX PCIsset kit used on this PBA revision consists of two different components as follows:

Device	Stepping	S-Spec Numbers
82439HX	A3	SU115
82371SB	B0	SU093

3. The following errata contained in the *82430HX PCIsset Specification Update* (Order Number 297652) either do not apply to the CU430HX motherboard or have been worked around in this PBA and/or BIOS revision. All other errata associated with the PCIsset apply to this PBA revision. For specific details of any erratum please refer to the *82430HX PCIsset Specification Update*.
4. The following errata contained in the *82371SB PIIIX3 Specification Update* (Order Number 297658) either do not apply to the CU430HX motherboard or have been worked around in this PBA and/or BIOS revision: 1-7. All other errata associated with the PCIsset apply to this PBA revision. For specific details of any erratum please refer to the *82371SB PIIIX3 Specification Update*.
5. The following errata contained in Part I of the *Pentium® Processor Specification Update* (Order Number 242480) either do not apply to the CU430HX motherboard or have been worked around in this PBA and/or BIOS revision: 5, 7, 9-11, 13-14, 16-17, 29, 31, 34, 36-37, 39, 40, 46, 48-50, 58, 60-64, 66-67, 69, 71, all DP errata, all AP errata, all TCP errata. All other errata in Part I may apply to this revision level of the motherboard, depending on the stepping of the processor or the specific software that is being executed. Also, some of these errata apply only to motherboards being used in an application development environment. For specific details of any erratum please refer to the *Pentium Processor Specification Update*.

Summary Table of Changes

The following table indicates the Specification Changes, Errata, Specification Clarifications, or Documentation Changes which apply to the CU430HX 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	ERRATA
1	Fixed	ECC non-detection of single/double bit errors on partial memory writes
2	Fixed	BIOS does not support no-emulation mode for CD-ROM boot
3	Fix	System BIOS does not recognize bootable USB devices
4	Fixed	CMOS checksum may be lost if power is cycled during boot
5	Fixed	Resource conflict with onboard ATI* video
6	NoFix	Slave on secondary IDE channel is not disabled
7	NoFix	Cannot meet FCC Class B requirements using unshielded USB cable
8	Fixed	Management extension ASIC may fail to reset at power-on
NO.	PLANS	DOCUMENTATION CHANGES
1	Doc	Revision of Section 3.12.12, "Security Screen"

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
664962-402	1.00.03.DK0	1-8
	1.00.04.DK0	1-3, 5-8
	1.00.05.DK0	1, 3, 5-8
	1.00.06.DK0	1, 3, 5-7
664962-403	1.00.03.DK0 [‡]	1-8
	1.00.04.DK0	2-3, 5-8
	1.00.05.DK0	3, 5-8
	1.00.06.DK0	3, 5-7
664962-404	1.00.03.DK0 [‡]	1-8
	1.00.04.DK0 [‡]	2-3, 5-8
	1.00.05.DK0	3, 5-8
	1.00.06.DK0	3, 5-7
664962-405	1.00.03.DK0 [‡]	1-8
	1.00.04.DK0 [‡]	2-3, 5-8
	1.00.05.DK0	3, 5-8
	1.00.06.DK0	3, 5-7
664962-406	1.00.03.DK0 [‡]	1-7
	1.00.04.DK0 [‡]	2-3, 5-7
	1.00.05.DK0 [‡]	3, 5-7
	1.00.06.DK0	3, 5-7

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.

ERRATA

1. ***ECC Non-detection of Single/Double Bit Errors on Partial Memory Writes***

PROBLEM: When the 82439HX TXC performs a partial write to main memory (data less than a 64-bit quadword) in ECC mode, single bit errors are corrected but not logged. Double bit errors are not detected or logged.

IMPLICATION: Normally, the controller is able to buffer writes and group them into quadwords. In all these cases where 64 bits are written to memory at a time, both single and double bit errors will be signaled to the operating system. Single bit errors will be corrected using the information contained in the checkbits that are stored with the data in memory. Double bit errors cannot be corrected by the memory controller, but the operating system can warn the user that the error has occurred.

If the controller must perform a partial write, a read-merge-write cycle will occur so that the proper checkbits can be regenerated across the entire 64 bits to be written into DRAM. If erroneous data is read during this cycle, the following will occur:

For single bit errors, the error will be corrected based on the memory checkbits. The corrected data will be written back to memory, but the error will not be flagged to the system, so the user will not receive information from the error log that could be useful in isolating a failing memory module.

For double-bit errors, no error will be detected or signaled to the operating system. The erroneous data will be rewritten to memory and a set of regenerated checkbits will be rewritten at the same time, marking the erroneous data as correct.

WORKAROUND: None. However, for ECC systems that require only single bit error protection, the A1 stepping of the 430HX PCIset does provide this level of reliability.

STATUS: This erratum was fixed in PBA revision 664926-403 when using BIOS revision 1.00.04.DK0.

2. ***BIOS Does Not Support No-Emulation Mode for CD-ROM Boot***

PROBLEM: The system BIOS does not support booting from an "El Torito" bootable CD-ROM using the no-emulation mode format.

IMPLICATION: Booting from a CD-ROM using no emulation mode is not supported. For example, Microsoft Windows* NT* Version 4.0 uses no-emulation mode for its boot CD-ROM.

WORKAROUND: Boot the computer from a floppy or hard disk, then install or run the program from the CD-ROM.

STATUS: This erratum was fixed in BIOS revision 1.00.05.DK0.

3. ***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.

4. CMOS Checksum May Be Lost If Power Is Cycled During Boot

PROBLEM: If the computer power is turned off during a short portion of the boot process, the CMOS checksum byte is not updated. The next time the computer is turned on, the message "CMOS Checksum Invalid" will be displayed.

IMPLICATION: When the message is displayed, the correct checksum has already been recalculated and stored. No user action is required to recover from the error. If the additional message:

Date and Time Not Set
Press <F1> for Setup, <Esc> to Boot

is displayed, the user must reset the current date and time using the BIOS Setup program.

WORKAROUND: None.

STATUS: This erratum was fixed in BIOS revision 1.00.04.DK0.

5. Resource Conflict with Onboard ATI* Video

PROBLEM: The system may fail to initialize a 3COM 3C595 bus mastering network card when configured as a Windows* NT* 3.51 server or workstation. Windows NT reports that there is a conflict with the resources of the 3COM 3C595 network card and the onboard ATI* video.

IMPLICATION: The resource conflict will not allow the server to logon to the domain controller. Attaching to the network as a workstation may be intermittent.

WORKAROUND: None.

STATUS: This erratum was fixed with revision 3.0 of the ATI Mach64* drivers for Windows NT 3.51 available at <http://www.intel.com>.

6. Slave on Secondary IDE Channel Is Not Disabled

PROBLEM: If the IDE Device Configuration option in BIOS Setup is set to disable the secondary IDE slave device, it will not be disabled in the following configuration:

- ATAPI device attached as master to the secondary IDE connector.
- ATAPI device attached as slave to the secondary IDE connector.

IMPLICATION: In the above configuration, any ATAPI device attached as a secondary slave will remain enabled even if the BIOS setting for the secondary slave is set to disabled.

WORKAROUND: None.

STATUS: This erratum will not be fixed.

7. *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.

8. *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 a PBA revision 664962-406.

DOCUMENTATION CHANGES

The Documentation Changes listed in this section apply to the *CU430HX Motherboard Technical Product Specification* (Order Number 281839). All Documentation Changes will be incorporated into a future version of the appropriate CU430HX motherboard documentation.

1. Revision of Section 3.12.12, Security Screen

This section will be replaced in its entirety as follows:

This section describes the options that can be set to restrict access to the Setup program and to restrict who can boot the computer.

An administrative password and a user password can be set for the Setup program and for booting the computer, with the following restrictions:

- The administrative password gives unrestricted access to view and change all the Setup options in the Setup program. This is administrative mode.
- The user password gives restricted access to view and change Setup options in the Setup program. This is user mode. The level of user-mode access is set with the User Privilege Level option. See Section 0 for information about the User Privilege Level option.
- If only the administrative password is set, pressing the <Enter> key at the password prompt of the Setup program allows the user restricted access to Setup. The restricted access is the level set for the User Privilege Level option.
- If both the administrative and user passwords are set, users can enter either the administrative password or the user password to access Setup. Users have access to Setup respective to which password is entered.
- Setting the user password restricts who can boot the computer. The password prompt will be displayed before the computer is booted. If only the administrative password is set, the computer boots without asking for a password. If both passwords are set, the user can enter either password to boot the computer.

Table 46 shows the effects of setting the administrative password and user password. This table is for reference only and is not displayed on the screen.

Table 46. Administrative and User Password Functions

Password Set	Administrative Mode	User Mode	Setup Options	Password to Enter Setup	Password During Boot
Neither	Can change all options *	Can change all options *	None	None	None
Administrative only	Can change all options	Can change a limited number of options **	Administrative Password User Privilege Level	Administrative	None
User only	N/A	Can change all options	Enter Password Clear User Password	User	User
Administrative and user set	Can change all options	Can change a limited number of options **	Administrative Password User Privilege Level Enter Password	Administrative or user	Administrative or user

- * If no password is set, any user can change all Setup options.
- ** The level of user access is set with the User Privilege Level option. See Section 0 for more information about the User Privilege Level option.

USER PASSWORD

Reports if there is a user password set. There are no options.

ADMINISTRATIVE PASSWORD

Reports if there is an administrative password set. There are no options.

ENTER PASSWORD

Sets the user password. The password can be up to seven alphanumeric characters.

SET ADMINISTRATIVE PASSWORD

Sets the administrative password. The password can be up to seven alphanumeric characters.

USER PRIVILEGE LEVEL

Sets the level of access users can have to the Setup program. This option can be set only by an administrative user with access to the administrative password. This option is displayed only when an administrative password is set. The options are:

- Limited Access **(default)**
- No access
- View Only
- Full Access

The following table specifies the permitted access to Setup for each option:

Table 47. Access for User Privilege Level Options

Option	Access
Limited Access	User can access the Setup program and can change the following options: System Date, System Time, User Password, Unattended Start, and Security Hot-Key. Other Setup options are not visible.
No access	User cannot access the Setup program.
View Only	User can access the Setup program and view options, but cannot change any options.
Full Access	User can access the Setup program and can change all options except User Privilege Level and Set Administrative Password.

CLEAR USER PASSWORD

Clears the current user password. The user password must be set to enable this field.

UNATTENDED START

Controls when the security password is requested. The user password must be set to enable this field. The options are:

- Enabled (the system boots, but the keyboard is locked until the user password is entered)
- Disabled (the system does not boot until the user password is entered) **(default)**

SECURITY HOT KEY (CTRL-ALT-)

Sets a hot key that locks the keyboard until the user password is entered. All alphabetic keys are valid entries for this field. When a user presses this key while holding down the <Ctrl> and <Alt> keys, the keyboard locks and the keyboard LEDs flash to indicate that the keyboard is locked.

⇒ NOTE

If the user sets the Security hot key and the APM hot key (see Section 3.12.9.4) to the same key, the APM function has priority.

