



CN430TX Motherboard Specification Update

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The CN430TX 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 1997	-001	This document is the first Specification Update for the Intel® CN430TX motherboard.
October 1997	-002	Added Erratum 5-6, Specification Clarifications 1-2, and Documentation Changes 1-4.
November 1997	-003	Updated Errata 5-6. Updated Documentation Changes 1 and 3. Added Erratum 7 and Documentation Changes 5-6.
December 1997	-004	Added Errata 8-9 and Specification Clarifications 3-4.
January 1998	-005	Added Errata 10-11, Specification Clarification 5 and Documentation Change 7.
February 1998	-006	Added Errata 12-13.
March 1998	-007	Added Specification Change 1 and Erratum 14.
June 1998	-008	Added Documentation Change 8.
July 1998	-009	Added Erratum 15 and Documentation Change 9.
August 1998	-010	Added Erratum 16.
October 1998	-011	Updated status of Errata 14 and 16.

PREFACE

This document is an update to the specifications contained in the *CN430TX Motherboard Technical Product Specification* (Order Number 677606). 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 CN430TX 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 *82430TX PCIset Specification Update* (Order Number 297736) for specification updates concerning the 82430TX PCIset. Items contained in the *82430TX PCIset Specification Update* that either do not apply to the CN430TX 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 *82371AB PIIX4 Specification Update* (Order Number 297738) for specification updates concerning the 82371AB PIIX4. Items contained in the *82371AB PIIX4 Specification Update* that either do not apply to the CN430TX 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 CN430TX 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 CN430TX Motherboards

GENERAL INFORMATION

Basic CN430TX Motherboard Identification Information

AA Revision	PBA Revision	82430TX PCIset Stepping	BIOS Revision	Notes
681127-204	681128-204	A1	4C3NT0X0.86A.0016.P02	1, 2, 3, 4, 5
681127-205	681128-205	A1	4C3NT0X0.86A.0016.P02	1, 2, 3, 4, 5
681127-206	681128-206	A1	4C3NT0X0.86A.0018.P04	1, 2, 3, 4, 5
681127-207	681128-207	A1	4C3NT0X0.86A.0018.P04	1, 2, 3, 4, 5

NOTES:

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

Device	Stepping	S-Spec Numbers
82439TX	A1	L238
82371AB	B0	L23P

3. The following errata contained in the *82430TX PCIset Specification Update* (Order Number 297736) either do not apply to the CN430TX motherboard or have been worked around in this PBA and/or BIOS revision: 1S, 2S, 4S. All other errata associated with the PCIset apply to this PBA revision. For specific details of any erratum please refer to the *82430TX PCIset Specification Update*.
4. The following errata contained in the *82371AB PIIX4 Specification Update* (Order Number 297738) either do not apply to the CN430TX motherboard or have been worked around in this PBA and/or BIOS revision. All other errata associated with the PCIset apply to this PBA revision. For specific details of any erratum please refer to the *82371AB PIIX4 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 CN430TX 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 CN430TX 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	Change to Description of Bootable Controllers
NO.	PLANS	ERRATA
1	NoFix	System does not meet FCC Class B with unshielded USB cables
2	NoFix	Audio driver does not support Windows* 3.x session within OS/2* Warp*
3	Fix	Memory decrease warning message not displayed
4	Fix	Hard drive not detected on boot if user defined
5	Fix	LS-120 drive does not work as expected in Windows 95
6	NoFix	Serial mouse activity does not wake system after APM shutdown
7	Fixed	Stuck or depressed key during POST may cause system hang
8	Fixed	Keyboard auto-repeat and delay settings may not work as expected
9	Fixed	Disabling cache causes system hang
10	Fix	System BIOS may corrupt audio add-in card EEPROM
11	NoFix	Windows 95 will not boot if LS-120 drive is only device on IDE channel
12	NoFix	Advanced Power Management may suspend system during CD-ROM playback
13	Fix	BIOS may not disable floppy controller
14	NoFix	BIOS does not release IRQ if no mouse is present
15	NoFix	The BIOS will not support the Advanced Configuration and Power Interface (ACPI)
16	NoFix	System using 3-mode floppy drive cannot read XDF format diskettes
NO.	PLANS	SPECIFICATION CLARIFICATIONS
1	Doc	Use of reserved pin on NLX connector
2	Doc	NLX connector key dimensions
3	Doc	LS-120 drive configured as a boot device
4	Doc	Resource allocation with all PCI slots used

NO.	PLANS	SPECIFICATION CLARIFICATIONS
5	Doc	Using shift print screen in BIOS Setup
NO.	PLANS	DOCUMENTATION CHANGES
1	Doc	Revision of Section 3.1.13, "USB Support"
2	Doc	Revision of Section 3.2.3.2, "Primary/Secondary IDE Master/Slave Configurations Submenus"
3	Doc	Revision of Section 1.12.3, "NLX Card Edge Connectors"
4	Doc	Revision of Section 1.9.2, "Resolutions and Refresh Rates"
5	Doc	Addition of "BIOS Beep Codes" table
6	Doc	Revision of Section 3.1.4, "PCI IDE Support"
7	Doc	Revision of Section 1.6.1.1, "EDO DRAM"
8	Doc	Change to description of Manufacturing Options
9	Doc	Addition of section describing real time clock

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
681128-204	4C3NT0X0.86A.0016.P02	1-16
	4C3NT0X0.86A.0017.P03	1-6, 8-16
	4C3NT0X0.86A.0018.P04	1-6, 10-16
	4C3NT0X0.86A.0019.P05	1-4, 11-16
	4C3NT0X0.86A.0022.P06	1-4, 11-16
681128-205	4C3NT0X0.86A.0016.P02	1-16
	4C3NT0X0.86A.0017.P03	1-6, 8-16
	4C3NT0X0.86A.0018.P04	1-6, 10-16
	4C3NT0X0.86A.0019.P05	1-4, 11-16
	4C3NT0X0.86A.0022.P06	1-4, 11-16
681128-206	4C3NT0X0.86A.0016.P02 [†]	1-16
	4C3NT0X0.86A.0017.P03 [†]	1-6, 8-16
	4C3NT0X0.86A.0018.P04	1-6, 10-16
	4C3NT0X0.86A.0019.P05	1-4, 11-16
	4C3NT0X0.86A.0022.P06	1-4, 11-16
681128-207	4C3NT0X0.86A.0016.P02 [†]	1-16
	4C3NT0X0.86A.0017.P03 [†]	1-6, 8-16
	4C3NT0X0.86A.0018.P04	1-6, 10-16
	4C3NT0X0.86A.0019.P05	1-4, 11-16
	4C3NT0X0.86A.0022.P06	1-4, 11-16

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 *CN430TX Motherboard Technical Product Specification* (Order Number 677606). All Specification Changes will be incorporated into a future version of that specification.

1. *Change to Description of Bootable Controllers*

In Section 3.2.7.1, Hard Drive Submenu, the description "Bootable ISA Cards" will be changed to "Bootable Add-in Cards."

ERRATA

1. ***System Does Not Meet FCC Class B with Unshielded USB Cables***

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: The system will not meet FCC Part 15 Class B requirements when unshielded USB cable is used. This is a violation of the USB v1.0 specification.

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.

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

PROBLEM: The CN430TX 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.

3. ***Memory Decrease Warning Message Not Displayed***

PROBLEM: During POST, the BIOS will not generate and display a memory decrease warning message on the screen.

IMPLICATION: The user will not be warned about a decrease in the amount of memory.

WORKAROUND: None.

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

4. ***Hard Drive Not Detected on Boot if User Defined***

PROBLEM: If the drive type in BIOS Setup is set to USER, the hard drive will not be detected by the motherboard at boot.

IMPLICATION: The hard drive will not be detected by the BIOS during the boot process and will not be available to the operating system.

WORKAROUND: None.

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

5. *LS-120 Drive Does Not Work as Expected in Windows* 95*

PROBLEM: After restarting Windows* 95 from MS-DOS* mode, the system BIOS does not configure the diskette parameter table correctly if an LS-120 drive is the only floppy drive in the system.

IMPLICATION: Windows 95 will report the LS-120 drive as a hard drive instead of a floppy drive and will report a floppy drive available as Drive A. If drive A is subsequently accessed, the system will lock up. The problem does not occur if a 1.44 MB 3-1/2" floppy drive is also present as either drive A or drive B.

WORKAROUND: None.

STATUS: This erratum was fixed in BIOS revision 4C3NT0X0.86A.0019.P05.

6. *Serial Mouse Activity Does Not Wake System After APM Shutdown*

PROBLEM: The system BIOS does not recognize activity from a serial mouse as an APM event.

IMPLICATION: The system will not be restored from a power-managed state until keyboard activity occurs.

WORKAROUND: The system BIOS does recognize activity from a PS/2* style mouse.

STATUS: This erratum was fixed in BIOS revision 4C3NT0X0.86A.0019.P05.

7. *Stuck or Depressed Key During POST May Cause System Hang*

PROBLEM: The BIOS is unable to detect when a key on the keyboard is stuck or depressed during Power On Self Test (POST).

IMPLICATION: If a key is stuck or depressed during POST, the system BIOS will continue to read data from the keyboard, resulting in a system hang condition.

WORKAROUND: None.

STATUS: This erratum was fixed in BIOS revision 4C3NT0X0.86A.0017.P03.

8. *Keyboard Auto-Repeat Rate and Delay Settings May Not Work As Expected*

PROBLEM: The keyboard auto-repeat rate and delay settings in BIOS Setup do not accept any user changes. The keyboard auto-repeat rate will always be 10 seconds and delay 1/2 second.

IMPLICATION: No changes can be made to the keyboard auto-repeat rate or the keyboard auto-repeat delay settings.

WORKAROUND: None.

STATUS: This erratum was fixed in BIOS revision 4C3NT0X0.86A.0018.P04.

9. *Disabling Cache Causes System Hang*

PROBLEM: If the BIOS Setup option is set to disable cache, the system BIOS disables the L1 cache first and does not disable the L2 cache.

IMPLICATION: If the cache is disabled, the system hangs during Power-On Self Test (POST).

WORKAROUND: None.

STATUS: This erratum was fixed in BIOS revision 4C3NTOX0.86A.0018.P04.

10. *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 was fixed in BIOS revision 4C3NTOX0.86A.0019.P05.

11. *Windows* 95 Will Not Boot if LS-120 Drive is Only Device on IDE Channel*

PROBLEM: An LS-120 drive will not be recognized by Windows* 95 if it is the only device on the IDE channel.

IMPLICATION: If an LS-120 drive is the only device on an IDE channel, a black screen with a cursor blinking in the upper left hand corner will be displayed when Windows 95 is starting to boot and the system will hang.

WORKAROUND: The LS-120 drive is recognized when connected as either the master or the slave on an IDE channel with another device.

STATUS: This erratum will not be fixed.

12. *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.

13. BIOS May Not Disable Floppy Controller

PROBLEM: Even though the floppy disk controller is set to be disabled in BIOS Setup, the floppy controller resources are still being allocated by the BIOS.

IMPLICATION: The floppy disk controller will have a yellow exclamation mark next to it in Windows® 95 Device Manager and will not be functional. A removable disk A: will be displayed by Windows Explorer. Selecting the removable disk drive will cause an error that the media in the drive is not formatted.

WORKAROUND: None.

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

14. BIOS Does Not Release IRQ if No Mouse is Present

PROBLEM: The BIOS does not release the default IRQ12 used by a PS/2* mouse even if no mouse is detected in the system.

IMPLICATION: Some system resources may not be assigned an IRQ in a system with a large number of peripherals.

WORKAROUND: None.

STATUS: This erratum will not be fixed.

15. The BIOS Will Not Support the Advanced Configuration and Power Interface (ACPI)

PROBLEM: BIOS support for the Advanced Configuration and Power Interface has not been added to the BIOS.

IMPLICATION: Users will not be able to use the ACPI configuration and power management options supported by an ACPI aware operating system. Plug and Play configuration of system resources and Advanced Power Management (APM) are supported by the BIOS.

WORKAROUND: None.

STATUS: This erratum will not be fixed.

16. System Using 3-Mode Floppy Drive Cannot Read XDF Format Diskettes

PROBLEM: The buffer area that stores floppy drive parameters does not have room to store the speed information to allow a 3-mode floppy drive to read a diskette in the XDF format.

IMPLICATION: A system that has a 3-mode floppy drive cannot be used to install a program or operating system, such as PC-DOS 7.0, that is distributed on XDF format diskettes.

WORKAROUND: None.

STATUS: This erratum will not be fixed.

SPECIFICATION CLARIFICATIONS

The Specification Clarifications listed in this section apply to the *CN430TX Motherboard Technical Product Specification* (Order Number 677606). All Specification Clarifications will be incorporated into a future version of that specification.

1. Use of Reserved Pin on NLX Connector

The following note will be added to the bottom of table 6 of section 1.12.3, NLX Card Edge Connectors:

Pin number A135 of the NLX connector is used for a LAN adapter option on a riser card.

2. NLX Connector Key Dimensions

The following note will be added to section 1.3, Form Factor:

The two edge card connector keys on the motherboard have a dimension of .074 inches +/- .002 inches each.

3. LS-120 Drive Configured as a Boot Device

The second paragraph in Section 1.7.4.1, LS-120 Support will be replaced in its entirety as follows:

The motherboard allows connection of an LS-120 compatible drive and a standard 3.5-inch diskette drive. The LS-120 drive can be configured as a boot device, if selected as a floppy device in the BIOS setup utility.

4. Resource Allocation With All PCI Slots Used

The BIOS assigns resources to PCI boot devices (video cards and SCSI controllers, for example) during POST when Plug and Play is enabled in BIOS Setup. PCI and ISA non-boot devices (network cards and audio, for example) will not have resources assigned by the BIOS during POST. A Plug and Play operating system assigns resources to PCI and ISA non-boot devices when it loads.

5. Using Shift Print Screen in BIOS Setup

In order to use the Shift Print Screen function to print screens from BIOS Setup, PnP OS must be set to no. If PnP OS is set to yes in BIOS Setup, the Shift Print Screen function will not work. The BIOS does not assign resources to the parallel port when PnP OS is set to yes in BIOS Setup. Resources for the parallel port will be allocated by the plug and play operating system when it loads. If PnP OS is set to no, the BIOS allocates resources to the parallel port.

DOCUMENTATION CHANGES

The Documentation Changes listed in this section apply to the *CN430TX Motherboard Technical Product Specification* (Order Number 677606). All Documentation Changes will be incorporated into a future version of the appropriate CN430TX motherboard documentation.

1. **Revision of Section 3.1.13, USB Support**

This section will be replaced in its entirety as follows:

USB LEGACY SUPPORT

USB legacy support enables USB keyboards and mice to be used even when no operating system USB drivers are in place. By default, USB legacy support is disabled. USB legacy support is only intended to be used in accessing BIOS Setup and installing an operating system that supports USB.

This sequence describes how USB legacy support operates in the default (disabled) mode.

1. When you power up the computer, USB legacy support is disabled.
2. POST begins.
3. USB legacy support is temporarily enabled by the BIOS. This allows you to use a USB keyboard to enter the Setup program or the maintenance mode.
4. POST completes and disables USB legacy support (unless it was set to Enabled while in Setup).
5. The operating system loads. While the operating system is loading, USB keyboards and mice are not recognized. After the operating system loads the USB drivers, the USB devices are recognized.

To install an operating system that supports USB, enable USB Legacy support in BIOS Setup and follow the operating system's installation instructions. Once the operating system is installed and the USB drivers configured, USB legacy support is no longer used. USB Legacy Support can be left enabled in BIOS Setup if needed.

Notes on using USB legacy support:

- If USB legacy support is enabled, don't mix USB and PS/2* keyboards and mice. For example, do not use a PS/2 keyboard with a USB mouse, or a USB keyboard and a PS/2 mouse.
- Do not use USB devices with an operating system that does not support USB. USB legacy is not intended to support the use of USB devices in a non USB operating system.
- USB legacy support is for keyboards and mice only. Hubs and other USB devices are not supported.

2. **Revision of Section 3.2.3.2, Primary/Secondary IDE Master/Slave Configurations Submenus**

The third through seventh rows in this table will be replaced in its entirety as follows:

Program Item	Configuration Options, Auto or User enabled
Cylinders	Reports the number of cylinders for the hard disk drive (Auto enabled) or enables the user to the specify the number of cylinders for the hard disk (User enabled)
Heads	Reports the number of heads for the hard disk drive (Auto enabled) or enables the user to the specify the number of heads for the hard disk (User enabled)
Sectors	Reports the number of sectors for the hard disk drive (Auto enabled) or enables the user to the specify the number of sectors for the hard disk (User enabled)
Maximum Capacity	Reports the maximum capacity of the hard disk (calculated from the number of cylinders, heads, and sectors)

3. Revision of Section 1.12.3, NLX Card Edge Connectors

Table 7, Signals, NLX Riser with Supplemental Connector in this section will be replaced in its entirety as follows:

Table 7. Signals, NLX Riser with Supplemental Connector

Pin	Signal Name	Type	I/O *	Description	Signal Type
X1	CD_IN_LT	AUDIO	I	CDROM line in left.	Analog 1V RMS
X2	AGND	PWR	NA	Low pass filtered ground for audio circuitry on the riser.	NA
X3	MIC_IN	AUDIO	I	Not Supported	Analog 1V RMS
X4	LINE_OUT_LT	AUDIO	O	Not Supported	Analog 1V RMS
X5	FP_SPKR_EN	AUDIO	I	Not Supported	TTL
X6	VOL_DN#	AUDIO	I	Not Supported	TTL
X7	GND	PWR	NA	Ground	NA
X8	SMI#	SYS	I	Not Supported	open drain
X9	RESERVED	RES	NA	Reserved	NA
X10	RESERVED	RES	NA	Reserved	NA
X11	RESERVED	RES	NA	Reserved	NA
X12	AGND	PWR	NA	Low pass filtered ground for audio circuitry on the riser.	NA
X13	MODEM_MIC	AUDIO	O	Pre-amplified microphone mono output signal from motherboard to telephony device.	Analog 1V RMS

Continued

Table 7. Signals, NLX Riser with Supplemental Connector (continued)

Pin	Signal Name	Type	I/O *	Description	Signal Type
Y1	CD_IN_RT	AUDIO	I	CDROM line in right.	Analog 1V RMS
Y2	CD_IN_GND	PWR	I	Isolated CDROM Ground.	NA
Y3	AVCC	PWR	O	Clean power from the motherboard to audio circuitry on the NLX riser; could be an isolated power source; 1.5 Ampere max. Limitation because of the connector / gold finger limitation.	5-9V DC
Y4	LINE_OUT_RT	AUDIO	O	Not Supported	Analog 1V RMS
Y5	FP_MIC_EN	AUDIO	I	Not Supported	TTL
Y6	VOL_UP#	AUDIO	I	Not Supported	TTL
Y7	AC_RST#	AC'97	O	Not Supported	TTL
Y8	AC_SD_IN	AC'97	I	Not Supported	TTL
Y9	GROUND	PWR	NA	Digital (main motherboard) ground plane.	NA
Y10	AC_SD_OUT	AC'97	O	Not Supported	TTL
Y11	AC_SYNC	AC'97	O	Not Supported	TTL
Y12	AC_BIT_CLK	AC'97	I	Not Supported	TTL
Y13	MODEM_SPKR	AUDIO	O	Analog mono output signal from telephony device to motherboard.	Analog 1V RMS

* In The I/O column is relative to motherboard:

O= output, from motherboard to riser; I= input, from riser to motherboard

4. Revision of Section 1.9.2, Resolutions and Refresh Rates

The following will be added to the end of this section:

Text only video modes supported:

80x25x4

Text only video modes not supported:

132x43x4

132x25x4

5. Addition of BIOS Beep Codes Section

The following will be added after Section 4.2. Remaining tables will be renumbered accordingly.

BIOS BEEP CODES

Whenever a recoverable error occurs during Power-On Self Test (POST), the BIOS displays an error message describing the problem. The BIOS also issues a beep code (one long tone followed by two short tones) during POST if the video configuration fails (no card installed or faulty) or if an external ROM module does not properly checksum to zero.

An external ROM module (e.g video BIOS) can also issue audible errors, usually consisting of one long tone followed by a series of short tones. For more information on the beep codes issued, check the documentation for that external device.

There are several POST routines that issue a POST Terminal Error and shut down the system if they fail. Before shutting down the system, the terminal-error handler issues a beep code signifying the test point error, writes the error to I/O port 80h, attempts to initialize the video and writes the error in the upper left corner of the screen (using both mono and color adapters).

If POST completes normally, the BIOS issues one short beep before passing control to the operating system.

Table 43. BIOS Beep Codes

Beeps	Port 80h Code	Explanation
1-2-2-3	16h	BIOS ROM checksum
1-3-1-1	20h	Test DRAM refresh
1-3-1-3	22h	Test 8742 Keyboard Controller
1-3-3-1	28h	Autosize DRAM
1-3-3-2	29h	Initialize POST Memory Manager
1-3-3-3	2Ah	Clear 512 KB base RAM
1-3-4-1	2Ch	RAM failure on address line xxxx
1-3-4-3	2Eh	RAM failure on data bits xxxx of low byte of memory bus
1-4-1-1	30h	RAM failure on data bits xxxx of high byte of memory bus
2-1-2-2	45h	POST device initialization
2-1-2-3	46h	Check ROM copy right notice
2-2-3-1	58h	Test for unexpected interrupts
2-2-4-1	5Ch	Test RAM between 512 and 640 KB
1-2	98h	Search for option ROMs. One long, two short beeps on checksum failure

6. Revision of Section 3.1.4, PCI IDE Support

This section will be replaced in its entirety as follows:

If you select "Auto" in Setup, the BIOS automatically sets up the two local bus IDE connectors with independent I/O channel support. The IDE interface supports hard drives up to PIO Mode 4 and recognizes any ATAPI devices, including CD-ROM drives, tape drives and Ultra DMA drives (see Section 5.2 for the supported version of ATAPI). Add-in ISA IDE controllers are not supported. The BIOS determines the capabilities of each drive and configures them to optimize capacity and performance. To take advantage of the high capacities typically available today, hard drives are automatically configured for Logical Block Addressing (LBA) and to PIO Mode 3 or 4, depending on the capability of the drive. You can override the auto-configuration options by specifying manual configuration in Setup. The ATAPI Specification recommends that ATAPI devices be configured as shown in Table 29.

7. Revision of Section 1.6.1.1, EDO DRAM

The note in this section will be replaced in its entirety as follows:

⇒ NOTE

Due to loading anomalies, EDO DIMMs with a n x 4 DRAM base are not supported. For example, a DIMM that uses sixteen 16 Mbit x 4 devices should not be used.

8. Change to Description of Manufacturing Options

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.

256 KB or 512 KB PDSRAM second-level cache (L2) soldered onto the motherboard

9. Addition of Section Describing Real Time Clock

The following will be added as Section 1.8.5:

1.8.5 Real-Time Clock, CMOS SRAM, and Battery

The real-time clock is compatible with DS1287 and MC146818 components. The clock provides a time-of-day clock and a multicentury calendar with alarm features and century rollover. The real-time clock supports 256 bytes of battery-backed CMOS SRAM in two banks that are reserved for BIOS use.

The time, date, and CMOS values can be specified in the Setup program. The CMOS values can be returned to their defaults by using the Setup program.

An external coin-cell battery powers the real-time clock and CMOS memory. When the computer is not plugged into a wall socket, the battery has an estimated life of three years. When the computer is plugged in, the 3.3 V standby current from the power supply extends the life of the battery. The clock is accurate to ± 13 minutes/year at 25 °C with 3.3 V applied.

