



Intel® Desktop Board D875PBZ Specification Update

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Order Number: C40099-010

The Intel® Desktop Board D875PBZ 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 Intel® desktop board D875PBZ 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 2003	-001	This document is the first Specification Update for the Intel® Desktop Board D875PBZ. Added Specification Clarification 1.
July 2003	-002	Added Errata 1, 2. Added Specification Clarification 2. Added Documentation Change 1.
August 2003	-003	Added Documentation Change 2.
November 2003	-004	Added Specification Change 1, Specification Clarification 3 and Document Change 3.
January 2004	-005	Added Specification Changes 2, 3. Added Erratum 3. Added Specification Clarifications 4, 5.
March 2004	-006	Added Specification Change 4.
April 2004	-007	Added Erratum 4.
May 2004	-008	Added Specification Change 5. Updated Erratum 4. Added Specification Clarification 6, 7.
July 2004	-009	Updated Specification Clarifications 2 and 7.
August 2004	-010	Added Erratum 5.

PREFACE

This document is an update to the specifications contained in the *Intel® Desktop Board D875PBZ Technical Product Specification* (Order number C31765). 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 *Intel® Pentium® 4 Processor Specification Update* (Order number 249199) for specification updates concerning the Intel Pentium 4 processor and that may apply to the desktop board D875PBZ. Unless otherwise noted in this document, it should be assumed that any processor errata for a given stepping are applicable to the Altered Assembly (AA) revision(s) associated with that stepping.

Refer to the *Intel® 875P Chipset: 82875P Memory Controller Hub (MCH) Specification Update* (Order Number 252526) for specification updates concerning the 82875P MCH Controller and that may apply to the desktop board D875PBZ. Unless otherwise noted in this document, it should be assumed that any MCH errata for a given stepping are applicable to the Altered Assembly (AA) revision(s) associated with that stepping.

Refer to the *Intel® 82801ER I/O Controller Hub 5 (ICH5) Specification Update* (Order Number 252517) for specification updates concerning the 82801ER I/O Controller Hub and that may apply to the desktop board D875PBZ. Unless otherwise noted in this document, it should be assumed that any ICH 5 errata for a given stepping are applicable to the Altered Assembly (AA) 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 desktop board D875PBZ's behavior to deviate from published specifications. Hardware and software designed to be used with any given Altered Assembly (AA) and BIOS revision level must assume that all errata documented for that AA and BIOS revision level are present on all desktop boards.

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 the
Intel® Desktop Board D875PBZ**

GENERAL INFORMATION

Basic Desktop Board D875PBZ Identification Information

AA Revision	BIOS Revision	Notes
C27085-204	BZ87510A.86A.0019.P02	1-5
C27085-205	BZ87510A.86A.0023.P04	1-5
C27085-206	BZ87510A.86A.0026.P05	1-5
C27085-207	BZ87510A.86A.0047.P12	1-5
C27085-208	BZ87510A.86A.0089.P20	1-5
C26680-204	BZ87510A.86A.0019.P02	1-5
C26680-205	BZ87510A.86A.0026.P05	1-5
C26680-206	BZ87510A.86A.0047.P12	1-5
C26680-301	BZ87510A.86A.0076.P16	1-5
C26680-302	BZ87510A.86A.0083.P18	1-5
C26680-303	BZ87510A.86A.0089.P20	1-5

NOTES:

1. The AA number is found on a small label on the component side of the board.
2. The 82875P Chipset kit used on this AA revision consists of two components as follows:

Device	Stepping	S-Spec Numbers
82875P MCH	A2	SL744
82801ER ICH	A3	SL742

3. Refer to the *Intel® Pentium® 4 Processor Specification Update* (Order Number 249199) for errata related to the Pentium 4 processor and that may apply to the desktop board D875PBZ.
4. Refer to the *Intel® 875P Chipset: 82875P Memory Controller Hub (MCH) Specification Update* (Order Number 252526) for errata related to the 82875P MCH that may apply to the desktop board D875PBZ.
5. Refer to the *Intel® 82801ER I/O Controller Hub 5 (ICH5) Specification Update* (Order Number 252517) for errata related to the 82801ER I/O Controller Hub that may apply to the desktop board D875PBZ.

Summary Table of Changes

The following table indicates the Specification Changes, Errata, Specification Clarifications, or Documentation Changes that apply to the desktop board D875PBZ. Intel intends to fix some of the errata in a future revision of the desktop board, 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.
PlanFix:	This erratum may be fixed in a future revision of the desktop board, driver, 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 the SMBIOS specification listed in Table 3, Section 1.4
2	Doc	Change to description of the SMBIOS specification listed in Table 3, Section 1.4
3	Doc	Change to description of Section 2.11.1, DC Loading
4	Doc	Change to Thermal Considerations, Section 2.12
5	Doc	Change to description of Section 1.7.3.3, serial ATA RAID. Addition of RAID 1 support
NO.	PLANS	ERRATA
1	No Fix	Audio driver creates a popping noise during operating system startup
2	Plan Fix	Front panel audio connector signals routed incorrectly
3	Plan Fix	PCI slot 1 cannot be used with long PCI add-in cards
4	Plan Fix	System memory may be reduced in excess of the amount of AGP aperture size when 4GB of system memory are used
5	Plan Fix	Some systems may hang if the mouse is moved when entering standby mode
NO.	PLANS	SPECIFICATION CLARIFICATIONS
1	Doc	Add note that specifies Enhanced Mode IDE/Serial ATA requirements to Section 3.3.2, PCI IDE Support
2	Doc	Change to description of Table 22, Front Panel Audio Connector
3	Doc	Clarification of SMBus routing
4	Doc	Clarification of DDR voltage
5	Doc	Clarification of Section 2.11.1, DC Loading
6	Doc	Change to description of Section 2.11.3, Fan Connector Current Supply, Correction of processor and voltage regulator fan current
7	Doc	Change to description of Section 2.9.1, Front Panel Audio Connector/Jumper Block



NO.	PLANS	DOCUMENTATION CHANGES
1	Doc	Change to description of Section 1.4, Design Specifications
2	Doc	Addition of Memory Configuration Setting to Section 4.3, BIOS Setup, Main Menu
3	Doc	Removal of Intel® branding from subtitle of Section 1.9.2

SPECIFICATION CHANGES

The Specification Changes listed in this section apply to the *Desktop Board D875PBZ Technical Product Specification* (Order Number C31765). All Specification Changes will be incorporated into a future version of that specification.

1. **Change to Description of the SMBIOS Specification Listed in Table 3, Section 1.4**

Table 3, Section 1.4, SMBIOS specification will change as follows:

Table 3. Specifications

Reference Name	Specification Title	Version, Revision Date, and Ownership	The information is available from...
SMBIOS	<i>System Management BIOS</i>	Version 2.3.2, October 12, 2001, Distributed Management Taskforce, Inc (DMTF)	http://www.dmtf.org/standards/documents/SMBIOS/DSP0130.pdf

2. **Change to Description of the SMBIOS Specification Listed in Table 3, Section 1.4**

Table 3, Section 1.4, SMBIOS specification will change as follows:

Table 3. Specifications

Reference Name	Specification Title	Version, Revision Date, and Ownership	The information is available from...
SMBIOS	<i>System Management BIOS</i>	Version 2.3.4, December 6, 2002, Distributed Management Taskforce, Inc (DMTF)	http://www.dmtf.org/standards/documents/SMBIOS/DSP0134.pdf

3. **Change to Description of Section 2.11.1, DC Loading**

Table 39, Section 2.11.1, DC Loading, will change in its entirety as follows:

2.11.1 DC LOADING

Table 39 lists the DC loading characteristics of the board.

Table 39. DC Loading Characteristics

Mode	DC Power	DC Current at:				
		+3.3 V	+5 V	+12 V	-12 V	+5 VSB
Minimum loading	190.00 W	5.00 A	11.00 A	9.00 A	0.03 A	0.60 A
Maximum loading	310.00 W	11.00 A	15.00 A	15.00 A	0.10 A	1.38 A

4. *Change to Thermal Considerations, Section 2.12*

Section 2.12, Thermal Considerations will change in its entirety as follows:

2.12 Thermal Considerations



CAUTION

The use of an Intel® Pentium® 4 processor operating above 2.80 GHz with this Intel® desktop board requires the following:

- *A chassis with appropriate airflow to ensure proper cooling of the components on the board*
- *A processor fan heatsink that meets the thermal performance targets for Pentium 4 processors operating above 2.80 GHz*

The use of an Intel Pentium 4 processor with 1 MB of L2 cache on this Intel desktop board requires the following:

- *A chassis with a maximum internal ambient temperature of 38 Degrees Celsius*
- *A processor heatsink that provides omnidirectional airflow so that air is drawn across the processor voltage regulator area (item A in Figure 27). Figure 26a illustrates an omnidirectional airflow heatsink.*

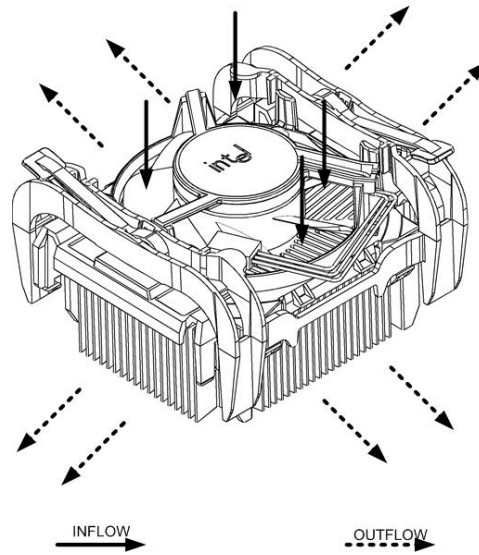


Figure 26a. Omnidirectional Airflow Heatsink

Failure to ensure appropriate airflow may result in reduced performance of both the processor and/or voltage regulator or, in some instances, damage to the desktop board. For a list of chassis that have been tested with Intel® desktop boards please refer to the following website:

<http://developer.intel.com/design/motherbd/cooling.htm>

All responsibility for determining the adequacy of any thermal or system design remains solely with the reader. Intel makes no warranties or representations that merely following the instructions presented in this document will result in a system with adequate thermal performance.



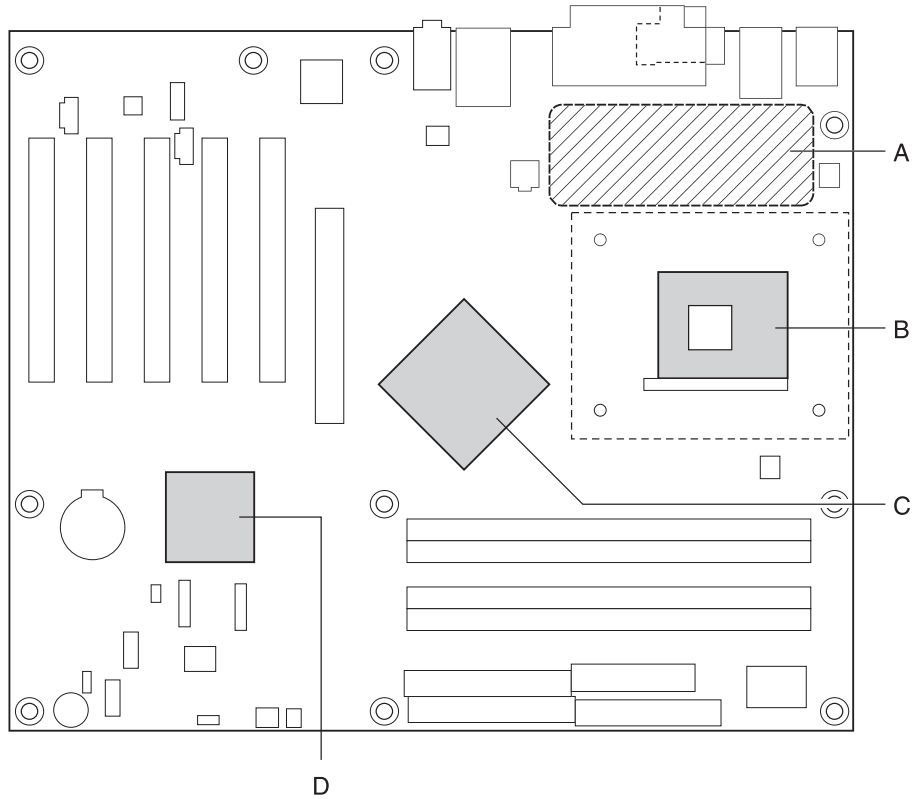
CAUTION

Ensure that the ambient temperature does not exceed the Desktop Board D875PBZ's maximum operating temperature. Failure to do so could cause components to exceed their maximum case temperature and malfunction. For information about the maximum operating temperature, see the environmental specifications in Section 2.14.

CAUTION

Ensure that proper airflow is maintained in the processor voltage regulator circuit. Failure to do so may result in damage to the voltage regulator circuit. The processor voltage regulator area (item A in Figure 27) can reach a temperature of up to 85 °C in an open chassis.

Figure 27 shows the locations of the localized high temperature zones.



OM15885

Item	Description
A	Processor voltage regulator area
B	Processor
C	Intel® 82875P MCH
D	Intel® 82801ER ICH5-R

Figure 27. Localized High Temperature Zones

Table 41 provides maximum case temperatures for components on the Desktop Board D875PBZ that are sensitive to thermal changes. The operating temperature, current load, or operating frequency could affect case temperatures. Maximum case temperatures are important when considering proper airflow to cool the Desktop Board D875PBZ.

Table 41. Thermal Considerations for Components

Component	Maximum Case Temperature
Intel® Pentium® 4 processor	For processor case temperature, see processor datasheets and processor specification updates
Intel® 82875P MCH	99 °C (under bias)
Intel® 82801ER ICH5-R	115 °C (under bias)
For information about	Refer to
Intel Pentium 4 processor datasheets and specification updates	Section 1.2, page 16

5. ***Change to Description of Section 1.7.3.3, Serial ATA RAID. Addition of RAID 1 Support***

Section 1.7.3.3 will change in its entirety as follows:

1.7.3.3 Serial ATA RAID

The ICH5-R supports RAID (Redundant Array of Independent Drives) level 0 and level 1 on the Serial ATA ports. RAID 0 provides the ability to support striping. Two physical drives, of identical size, can be teamed together to create one logical drive. As data is written or retrieved from the logical drive, both drives operate in parallel, thus increasing the throughput. RAID 1 provides the support of disk mirroring. Data is written simultaneously to two physical drives, of identical size, providing fault tolerance if one of the two drives fails.

⇒ NOTE

The ICH5-R provides support for RAID 0, RAID 1 and RAID boot in Windows XP and Windows 2000 only.*

ERRATA

1. **Audio Driver Creates a Popping Noise During Operating System Startup**

PROBLEM: The audio jack-sensing feature requires reading the impedance of the device connected to the audio jack. A voltage is needed so a current can be measured, and the impedance is derived from the voltage and current. The application of the voltage results in a popping noise that is emitted from the speakers.

IMPLICATION: A popping noise from the speakers may be heard at the end of the operating system startup tune, while loading Microsoft Windows operating systems.

WORKAROUND: None.

STATUS: This erratum will not be fixed.

2. **Front Panel Audio Connector Signals Routed Incorrectly**

PROBLEM: The front panel audio connector pin definition is not correct. Pin 4 is defined as +5 V and should be ground. Pin 7 is defined as ground and should be +5V.

IMPLICATION: Front panel audio cards that route their +5 V rail to Pin 4 will not function correctly.

WORKAROUND: Front panel audio cards that require +5 V should route the +5 V rail to Pin 7.

STATUS: This erratum may be fixed in a future hardware revision.

3. **PCI Slot 1 Cannot be Used With Long PCI Add-in Cards**

PROBLEM: A tall capacitor is located 3 ¼ inches behind PCI slot 1.

IMPLICATION: PCI cards conforming to the PCI specification may not be useable in PCI slot 1.

WORKAROUND: None.

STATUS: This erratum may be fixed in a future hardware revision.

4. **System Memory May Be Reduced in Excess of the Amount of AGP Aperture Size When 4GB of System Memory are Used**

PROBLEM: The AGP aperture size setting in the system BIOS will consume, from available system memory, 2 times the amount applied in the AGP aperture setting when the maximum of 4 GB of system memory is installed.

IMPLICATION: When 4GB of system memory are used, and system memory is allocated to AGP aperture size in BIOS Setup, available system memory may be reduced by twice the amount allocated. A similar impact to available system memory may occur from any allocation of system memory when 4 GB of system memory is used. For example, increasing the video frame buffer in BIOS may also reduce available memory in excess of the amount requested.

WORKAROUND: None.

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

5. *Some Systems May Hang if the Mouse is Moved When Entering Standby Mode*

PROBLEM: Moving the mouse after placing the system into standby with the mouse may cause the system to immediately awaken and hang.

IMPLICATION: The system may hang if the user is moving the mouse directly after using the mouse to place the system into standby mode.

WORKAROUND: None.

STATUS: This erratum may be fixed in a future board revision.

SPECIFICATION CLARIFICATIONS

The Specification Clarifications listed in this section apply to the *Desktop Board D875PBZ Technical Product Specification* (Order Number C31765). All Specification Clarifications will be incorporated into a future version of that specification.

1. **Add Note That Specifies Enhanced Mode IDE/Serial ATA Requirements to Section 3.3.2, PCI IDE Support**

NOTE

The Enhanced mode IDE/Serial ATA BIOS option requires support for resources up to a maximum six devices, and has been tested with Windows 2000 and Windows XP. This BIOS option should be set to Legacy mode when used with operating systems that support a maximum of two IDE channels (four devices).

2. **Change to Description of Table 22, Front Panel Audio Connector**

Table 22, Front Panel Audio Connector will change in its entirety as follows:

Table 22. Front Panel Audio Connector

Pin	Signal Name	Pin	Signal Name
1	Mono Mic in (Stereo Mic 1)	2	Ground
3	Mono Mic Bias (Stereo Mic 2)	4	+5 V
5	RIGHT_OUT	6	Right channel return
7	No connect	8	Key
9	LEFT_OUT	10	Left channel return

INTEGRATOR'S NOTE

The front panel audio connector is alternately used as a jumper block for routing audio signals. Refer to Section 2.9.1 on page 72 for more information.

3. **Clarification of SMBus Routing**

Section 2.8.2.1 will change in its entirety as follows:

2.8.2.1 Expansion Slots

The Desktop Board D875PBZ has the following expansion slots:

- AGP connector: The AGP connector is keyed for Universal 0.8 V AGP 3.0 cards or 1.5 V AGP 2.0 cards only. Do not install a legacy 3.3 V AGP card. The AGP connector is not mechanically compatible with legacy 3.3 V AGP cards.
- Five PCI rev 2.2 compliant local bus slots: The SMBus is routed to PCI bus connector 2 only (ATX expansion slot 6). PCI add-in cards with SMBus support can access sensor data and other information residing on the Desktop Board D875PBZ.

⇒ NOTE

The SMBus routing to the PCI bus connectors does not conform to the PCI Engineering Change Notice (ECN) “Addition of the SMBus to the PCI Connector ECN”, dated October 5th, 2000. The ECN specifies that SMBus signals must be routed to all PCI bus connectors. On this board, SMBus signals are routed to PCI bus connector 2 only.

Add-in cards that implement PCI bus connector pins A40 and A41 for any purpose other than SMBCLK (SMBus clock) and SMBDAT (SMBus data) should not be installed in PCI bus connector 2.

For information about

Addition of the SMBus to the PCI Connector ECN

Refer to

http://www.pcisig.com/data/specifications/smb_ecn_040501.pdf

⇒ NOTE

This document references back-panel slot numbering with respect to processor location on the Desktop Board D875PBZ. The AGP slot is not numbered. PCI slots are identified as PCI slot #x, starting with the slot closest to the processor. Figure 19 on page 66 illustrates the Desktop Board D875PBZ’s PCI slot numbering.

4. Clarification of DDR Voltage

Section 1.6.1 will change as follows:

1.6.1 MEMORY FEATURES

The Desktop Board D875PBZ has four DIMM sockets and supports the following memory features:

- 2.6 V (only) 184-pin DDR SDRAM DIMMs with gold-plated contacts
- Unbuffered, single-sided or double-sided DIMMs with the following restriction:
Double-sided DIMMs with x16 organization are not supported.
- 4 GB maximum total system memory. Refer to Section 2.2.1 on page 49 for information on the total amount of addressable memory.
- Minimum total system memory: 64 MB
- ECC and non-ECC DIMMs supported
- Serial Presence Detect
- DDR400 and DDR333 SDRAM DIMMs

5. *Clarification of Section 2.11.1, DC Loading*

Clarification to Section 2.11.1, DC Loading, will be added as follows:

2.11.1 DC LOADING

Table 39 lists the DC loading characteristics of the board. This data is based on a DC analysis of all active components within the board that impact its power delivery subsystems. The analysis does not include PCI add-in cards. Minimum values assume a light load placed on the board that is similar to an environment with no applications running and no USB current draw. Maximum values assume a load placed on the board that is similar to a heavy gaming environment with a 500 mA current draw per USB port. These calculations are not based on specific processor values or memory configurations but are based on the minimum and maximum current draw possible from the board's power delivery subsystems to the processor, memory, and USB ports.

Use the datasheets for add-in cards, such as PCI and AGP, to determine the overall system power requirements. The selection of a power supply at the system level is dependent on the system's usage model and not necessarily tied to a particular processor speed.

6. ***Change to Description of Section 2.11.3, Fan Connector Current Supply, Correction of Processor and Voltage Regulator Fan Current***

Section 2.11.3, Fan Connector Current Supply will change in its entirety as follows:

2.11.3 FAN CONNECTOR CURRENT CAPABILITY



CAUTION

The processor fan must be connected to the processor fan connector, not to a chassis fan connector. Connecting the processor fan to a chassis fan connector may result in onboard component damage that will halt fan operation.

Table 40 lists the current capability of the fan connectors on the Desktop Board D875PBZ.

Table 40. Fan Connector Current Capability

Fan Connector	Maximum Available Current
Processor fan	1600 mA
Front chassis fan	600 mA
Rear chassis fan	600 mA
Voltage regulator fan	1600 mA

7. ***Change to Description of Section 2.9.1, Front Panel Audio Connector/Jumper Block***

Section 2.9.1, Front Panel Audio Connector/Jumper Block will change in its entirety as follows:

2.9.1 FRONT PANEL AUDIO CONNECTOR/JUMPER BLOCK

This connector has two functions:

- With jumpers installed, the audio line out signals are routed to the back panel audio line out connector.
- With jumpers removed, the connector provides audio line out and mic in signals for front panel audio connectors.

Table 37 describes the two configurations of this connector/jumper block.


CAUTION

Do not place jumpers on this block in any configuration other than the one described in Table 37. Other jumper configurations are not supported and could damage the Desktop Board.

Table 37. Front Panel Audio Connector/Jumper Block

Jumper Setting	Configuration
<p>1 <input type="checkbox"/> 2 3 <input type="checkbox"/> 4 5 <input checked="" type="checkbox"/> 6 7 <input type="checkbox"/> 9 <input checked="" type="checkbox"/> 10</p> <p>5 and 6 9 and 10</p>	Front out signals if 6-channel audio (line out signals if 2-channel audio) are routed to the back panel line out connector. The back panel audio line out connector is shown in Figure 16 on page 58.
<p>1 <input type="checkbox"/> 2 3 <input type="checkbox"/> 4 5 <input type="checkbox"/> 6 7 <input type="checkbox"/> 9 <input type="checkbox"/> 10</p> <p>No jumpers installed</p>	Mic in and front out signals if 6-channel audio (line out signals if 2-channel audio) are available for connection to front panel audio connectors. Table 22 on page 62 lists the names of the signals available on this connector when no jumpers are installed.


INTEGRATOR'S NOTE

When the jumpers are removed and this connector is used for front panel audio, the back panel audio line out and mic in connectors are disabled.

DOCUMENTATION CHANGES

The Documentation Changes listed in this section apply to the *Desktop Board D875PBZ Technical Product Specification* (Order Number C31765). All Documentation Changes will be incorporated into a future version of that specification.

1. Change to Description of Section 1.4, Design Specifications

Section 1.4, Design Specifications, will change in its entirety as follows:

1.4 Design Specifications

Table 3 lists the specifications applicable to the Desktop Board D875PBZ.

Table 3. Specifications

Reference Name	Specification Title	Version, Revision Date, and Ownership	The information is available from...
AC '97	<i>Audio Codec '97</i>	Revision 2.2, September 2000, Intel Corporation.	ftp://download.intel.com/ia/scalableplatforms/ac97r22.pdf
ACPI	<i>Advanced Configuration and Power Interface Specification</i>	Version 1.0b, July 7, 1999, Intel Corporation, Microsoft Corporation, and Toshiba Corporation.	http://www.acpi.info/spec.htm
AGP	<i>Accelerated Graphics Port Interface Specification</i>	Revision 3.0, September, 2002, Intel Corporation.	http://www.agpforum.org/specs_specs.htm
ASF	<i>Alert Standard Format (ASF) Specification</i>	Version 1.03, June 20, 2001, DMTF, Intel Corporation.	http://www.dmtf.org/standards/documents/ASF/DSP0114.pdf
ATA/ATAPI-5	<i>Information Technology-AT Attachment with Packet Interface - 5 (ATA/ATAPI-5)</i>	Revision 3, February 29, 2000, Contact: T13 Chair, Seagate Technology.	http://www.t13.org/
ATX	<i>ATX Specification</i>	Version 2.1, June 2002, Intel Corporation.	http://www.formfactors.org/developer/specs/atx/atx2_1.pdf

continued

Table 3. Specifications (continued)

Reference Name	Specification Title	Version, Revision Date and Ownership	The information is available from...
ATX12V	<i>ATX/ATX12V Power Supply Design Guide</i>	Version 1.2, August 2000, Intel Corporation.	http://www.formfactors.org/developer/specs/atx/atxspecs.htm
BIS	<i>Boot Integrity Services (BIS) Application Programming Interface (API)</i>	Version 1.0, August 4, 1999, Intel Corporation.	http://www.intel.com/labs/manage/wfm/wfmspecs.htm
DDR SDRAM	<i>Double Data Rate (DDR) SDRAM Specification</i>	Version 2.0, May 2002, JEDEC Solid State Technology Association.	http://www.jedec.org/
	<i>Design Specification for a 184 Pin DDR Unbuffered DIMM</i>	Revision 1.0, October 2001, JEDEC Solid State Technology Association.	http://www.jedec.org/
	<i>Intel® JEDEC DDR 200/266 Unbuffered DIMM Specification Addendum</i>	Revision 0.9, September 27, 2001, Intel Corporation.	http://developer.intel.com/technology/memory/index.htm
EHCI	<i>Enhanced Host Controller Interface Specification for Universal Serial Bus</i>	Revision 1.0, March 12, 2002, Intel Corporation.	http://developer.intel.com/technology/usb/download/ehci-r10.pdf
EPP	<i>IEEE Std 1284.1-1997 (Enhanced Parallel Port)</i>	Version 1.7, 1997, Institute of Electrical and Electronic Engineers.	http://standards.ieee.org/reading/ieee/std_public/description/busarch/1284.1-1997_desc.html
EI Torito	<i>Bootable CD-ROM Format Specification</i>	Version 1.0, January 25, 1995, Phoenix Technologies Limited and International Business Machines Corporation.	http://www.phoenix.com/resources/specs-cdrom.pdf
LPC	<i>Low Pin Count Interface Specification</i>	Revision 1.0, September 29, 1997, Intel Corporation.	http://www.intel.com/design/chipsets/industry/lpc.htm

continued

Table 3. Specifications (continued)

Reference Name	Specification Title	Version, Revision Date and Ownership	The information is available from...
OHCI	<i>OpenHCI – Open Host Controller Interface Specification for USB</i>	Release 1.0a, October 10, 1996, Compaq computer Corp., Microsoft Corporation, and National Semiconductor Corp.	http://www.usb.org/developers/docs.html
PCI	<i>PCI Local Bus Specification</i>	Revision 2.2, December 18, 1998, PCI Special Interest Group.	http://www.pcisig.com/specifications
	<i>PCI Bus Power Management Interface Specification</i>	Revision 1.1, December 18, 1998, PCI Special Interest Group.	http://www.pcisig.com/specifications
Plug and Play	<i>Plug and Play BIOS Specification</i>	Version 1.0a, May 5, 1994, Compaq Computer Corporation, Phoenix Technologies Limited, and Intel Corporation.	http://www.microsoft.com/whdc/hwdev/tech/PnP/default.msp
PXE	<i>Preboot Execution Environment</i>	Version 2.1, September 20, 1999, Intel Corporation.	ftp://download.intel.com/labs/manage/wfm/download/pxespec.pdf
Serial ATA (SATA)	<i>Serial ATA: High Speed Serialized AT Attachment</i>	Revision 1.0, August 29, 2001, APT Technologies, Inc., Dell Computer Corporation, IBM Corporation, Intel Corporation, Maxtor Corporation, Seagate Technology.	http://www.serialata.com/

continued

Table 3. Specifications (continued)

Reference Name	Specification Title	Version, Revision Date and Ownership	The information is available from...
SMBIOS	<i>System Management BIOS</i>	Version 2.3.1, March 16, 1999, American Megatrends Incorporated, Award Software International Incorporated, Compaq Computer Corporation, Dell Computer Corporation, Hewlett-Packard Company, Intel Corporation, International Business Machines Corporation, Phoenix Technologies Limited, and SystemSoft Corporation.	http://www.dmtf.org/download/standards/DSP0119.pdf
UHCI	<i>Universal Host Controller Interface Design Guide</i>	Revision 1.1, March 1996, Intel Corporation.	http://www.usb.org/developers/docs.html
USB	<i>Universal Serial Bus Specification</i>	Revision 2.0, April 27, 2000, Compaq Computer Corporation, Hewlett-Packard Company, Lucent Technologies Inc., Intel Corporation, Microsoft Corporation, NEC Corporation, and Koninklijke Philips Electronics N.V.	http://www.usb.org/developers/docs.html
WfM	<i>Wired for Management Baseline</i>	Version 2.0, December 18, 1998, Intel Corporation.	http://www.intel.com/labs/manage/wfm/wfmspecs.htm

2. **Addition of Memory Configuration Setting to Section 4.3, BIOS Setup, Main Menu**

Section 4.3, BIOS Setup, Main Menu, will change in its entirety as follows:

4.3 Main Menu

To access this menu, select Main on the menu bar at the top of the screen.

Maintenance	Main	Advanced	Security	Power	Boot	Exit
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Table describes the Main menu. This menu reports processor and memory information and is for configuring the system date and system time.

Table 51. Main Menu

Feature	Options	Description
BIOS Version	No options	Displays the version of the BIOS.
Processor Type	No options	Displays processor type.
Hyper-Threading Technology	Disabled Enabled (default)	Disables/enables Hyper-Threading Technology. This option is present only when a processor that supports Hyper-Threading Technology is installed.
Processor Speed	No options	Displays processor speed.
System Bus Speed	No options	Displays the system bus speed.
System Memory Speed	No options	Displays the system memory speed.
Cache RAM	No options	Displays the size of second-level cache.
Total Memory	No options	Displays the total amount of RAM.
Memory Mode	No options	Displays the memory mode (Dual Channel or Single Channel).
Memory Channel A Slot 0 Memory Channel A Slot 1 Memory Channel B Slot 0 Memory Channel B Slot 1	No options	Displays the amount and type of RAM in the DIMM sockets.
Memory Configuration (Note)	Non-ECC ECC	Allow the user to turn error reporting on or off if the system and all of the memory installed supports ECC (Error Correction Code).
Language	<ul style="list-style-type: none"> English (default) (other language loaded on the board) 	Selects the current default language used by the BIOS.
System Time	Hour, minute, and second	Specifies the current time.
System Date	Day of week Month/day/year	Specifies the current date.

Note: Memory Configuration setting is only available when ECC memory is installed.

3. *Removal of Intel® Branding From Subtitle of Section 1.9.2*

Section 1.9.2 Subtitle will change as follows:

1.9.2 FLEX 6 AUDIO SUBSYSTEM