



Intel® Desktop Board D865GVHZ Specification Update

Release Date: December 2004

Order Number: C59430-008

The Intel® Desktop Board D865GVHZ 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.

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL® PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN INTEL'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, INTEL ASSUMES NO LIABILITY WHATSOEVER, AND INTEL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF INTEL PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. INTEL PRODUCTS ARE NOT INTENDED FOR USE IN MEDICAL, LIFE SAVING, LIFE SUSTAINING APPLICATIONS.

Intel may make changes to specifications and product descriptions at any time, without notice.

Designers must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined". Intel reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them.

The Intel® desktop board D865GVHZ 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.

Contact your local Intel sales office or your distributor to obtain the latest specifications before placing your product order.

Copies of documents which have an ordering number and are referenced in this document, or other Intel literature, may be obtained from:

Intel Corporation
P.O. Box 5937
Denver, CO 80217-9808

or call in North America 1-800-548-4725, Europe 44-0-1793-431-155, France 44-0-1793-421-777,
Germany 44-0-1793-421-333, other Countries 708-296-9333

Intel, Pentium, Celeron, and the Intel logo are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

* Other names and brands may be claimed as the property of others.

Copyright © 2003, 2004 Intel Corporation.

CONTENTS

REVISION HISTORY v

PREFACE vi

Specification Update for the Intel® Desktop Board D865GVHZ

GENERAL INFORMATION 3

SPECIFICATION CHANGES 5

ERRATA 10

SPECIFICATION CLARIFICATIONS 11

DOCUMENTATION CHANGES 13



REVISION HISTORY

Date of Revision	Version	Description
December 2003	-001	This document is the first Specification Update for the Intel® Desktop Board D865GVHZ.
January 2004	-002	Added Specification Changes 1, 2.
March 2004	-003	Added Specification Change 3.
April 2004	-004	Added Erratum 1.
May 2004	-005	Updated Erratum 1. Added Specification Clarification 1.
July 2004	-006	Updated Specification Clarification 1.
November 2004	-007	Added Erratum 2.
December 2004	-008	Added Documentation Change 1.

PREFACE

This document is an update to the specifications contained in the *Intel® Desktop Board D865GVHZ Technical Product Specification* (Order number C53955). 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 D865GVHZ. 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® 865G/865GV Chipset Specification Update* (Order Number 252515) for specification updates concerning the 82865GV GMCH Controller and that may apply to the desktop board D865GVHZ. 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® 82801EB 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 D865GVHZ. 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 D865GVHZ'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 D865GVHZ**

GENERAL INFORMATION

Basic Desktop Board D865GVHZ Identification Information

AA Revision	BIOS Revision	Notes
C52211-102	BF86510A.86A.0049.P11	1-5
C52211-103	BF86510A.86A.0049.P11	1-5
C52211-104	BF86510A.86A.0049.P11	1-5
C52211-105	BF86510A.86A.0056.P14	1-5
C52211-106	BF86510A.86A.0060.P16	1-5
C52211-107	BF86510A.86A.0060.P16	1-5

NOTES:

1. The AA number is found on a small label on the component side of the board.
2. The 82865GV Chipset kit used on this AA revision consists of two components as follows:

Device	Stepping	S-Spec Numbers
82865GV GMCH	A2	SL77X
82801EB ICH5	A3	SL73Z

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 D865GVHZ.
4. Refer to the *Intel® 865/865GV Chipset Specification Update* (Order Number 252515) for errata related to the 82865GV GMCH that may apply to the desktop board D865GVHZ.
5. Refer to the *Intel® 82801EB 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 D865GVHZ.

Summary Table of Changes

The following table indicates the Specification Changes, Errata, Specification Clarifications, or Documentation Changes that apply to the desktop board D865GVHZ. 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.
Plan Fix:	This erratum may be fixed in a future revision of the desktop board, driver, or BIOS.
Fixed:	This erratum has been previously fixed.
No Fix:	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 Section 2.11.1, DC Loading
3	Doc	Change to Thermal Considerations, Section 2.12
ERRATA		
1	Plan Fix	System memory may be reduced in excess of the amount of AGP aperture size when 4GB of system memory are used
2	Plan Fix	System may intermittently hang at POST code 75 with SATA hard disk drives attached
NO.	PLANS	SPECIFICATION CLARIFICATIONS
1	Doc	Change to description of Section 2.9.1, Front Panel Audio Connector/Jumper Block
NO.	PLANS	DOCUMENTATION CHANGES
1	Doc	Change to Section 2.8.2.2, Table 25, Front Panel Audio Connector

SPECIFICATION CHANGES

The Specification Changes listed in this section apply to the *Intel® Desktop Board D865GVHZ Technical Product Specification* (Order Number C53955). 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 2.3.4, December 6, 2002, Distributed Management Taskforce, Inc (DMTF)	http://www.dmtf.org/standards/documents/SMBIOS/DSP0134.pdf

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

Table 43, Section 2.11.1, DC Loading, will change in its entirety as follows:

2.11.1 DC LOADING

Table 43 lists the DC loading characteristics of the board.

Table 43. 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

3. **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 24). Figure 23a illustrates an omnidirectional airflow heatsink.

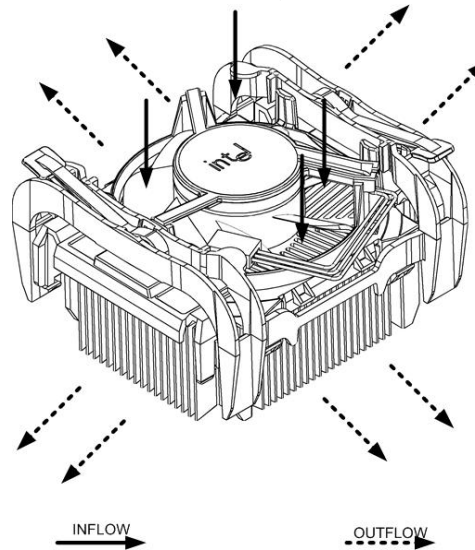


Figure 23a. Omnidirectional Airflow Heatsink

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.

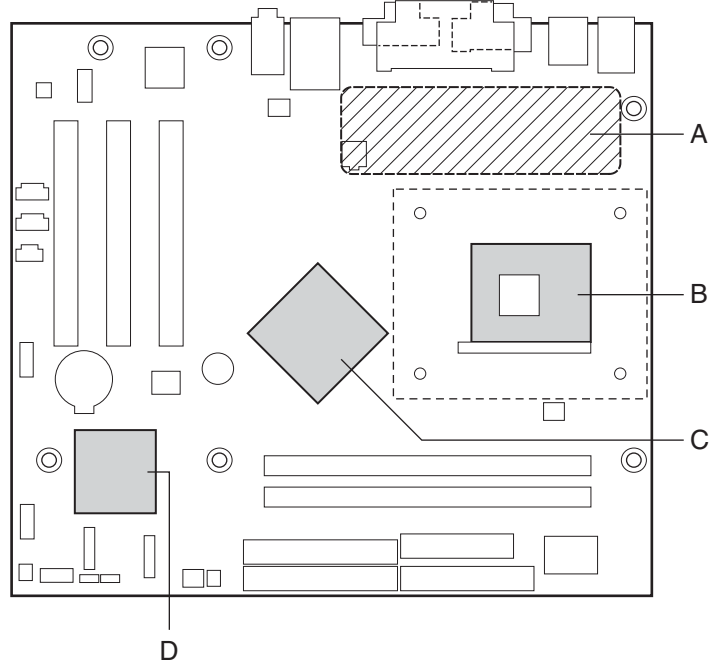
**CAUTION**

Ensure that the ambient temperature does not exceed the Desktop Board'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 24) can reach a temperature of up to 85 °C in an open chassis.

Figure 24 shows the locations of the localized high temperature zones.



OM16414

Item	Description
A	Processor voltage regulator area
B	Processor
C	Intel® 82865GV GMCH
D	Intel® 82801EB ICH5

Figure 24. Localized High Temperature Zones

Table 45 provides maximum case temperatures for the Desktop Board D865GVHZ components 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 D865GVHZ.

Table 45. Thermal Considerations for Components

Component	Maximum Case Temperature
Intel® Pentium® 4 processor	For processor case temperature, see processor datasheets and processor specification updates
Intel® 82865GV GMCH	99 °C (under bias)
Intel® 82801EB ICH5	115 °C (under bias)

For information about	Refer to
Intel Pentium 4 processor datasheets and specification updates	Section 1.2, page 16

ERRATA

1. ***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.

2. ***System May Intermittently Hang at POST Code 75 with SATA Hard Disk Drives Attached***

PROBLEM: An intermittent hang at POST code 75 may be observed when SATA Hard Disk Drives are used. This intermittent hang is due to an erroneous circuit race condition in the system clock when spread spectrum is enabled by BIOS.

IMPLICATION: The system hang is exhibited when the system clock's internal circuitry is erroneously enabled when spread spectrum is enabled on PLL1.

WORKAROUND: The user will need to reset the system, which allows the SATA Hard Disk Drives to be reinitialized.

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

SPECIFICATION CLARIFICATIONS

The Specification Clarifications listed in this section apply to the *Intel® Desktop Board D865GVHZ Technical Product Specification* (Order Number C53955). All Specification Changes will be incorporated into a future version of that specification.

1. **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 41 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 41. Other jumper configurations are not supported and could damage the Desktop Board.

Table 41. Front Panel Audio Connector/Jumper Block

Jumper Setting	Configuration
	<p>Audio line out signals are routed to the back panel audio line out connector. The back panel audio line out connector is shown in Figure 14 on page 61</p>
	<p>Table 25 on page 64 lists the names of the signals available on this connector when no jumpers are installed.</p>

 **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 *Intel® Desktop Board D865GVHZ Technical Product Specification* (Order Number C53955). All Documentation Changes will be incorporated into a future version of that specification.

1. **Change to Section 2.8.2.2, Table 25, Front Panel Audio Connector**

Table 25 in Section 2.8.2.2 will be replaced in its entirety as follows:

Table 25. Front Panel Audio Connector

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