



Intel[®] Desktop Board D945GNT Specification Update

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The Intel[®] Desktop Board D945GNT 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.

Revision History

Revision	Revision History	Date
-001	This document is the first Specification Update for the Intel® Desktop Board D945GNT.	May 26, 2005
-002	Added Erratum 1 and updated General Information table.	October 2005
-003	Updated Erratum 1. Added Erratum 2. Updated Basic Desktop Board D945GNT Identification Information table.	June 2006
-004	Added Specification Changes 1, Erratum 3 and updated General Information table.	July 2006
-005	Updated General Information table and added Specification Changes 2.	November 2006
-006	Updated General Information table and added Specification Changes 3.	February 2007
-007	Updated the General Information table.	November 2007

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The Intel® Desktop Board D945GNT 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:

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Specification Update for the Intel[®] Desktop Board D945GNT

This document is an update to the specifications contained in the *Intel[®] Desktop Board D945GNT Technical Product Specification* (Order number D14069). 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.

For specification updates concerning the Intel processor that may apply to this desktop board, refer to the following:

- *Intel[®] Pentium[®] D Processor 900Δ Sequence and Intel[®] Pentium[®] Processor Extreme Edition 955Δ, 965Δ Specification Update* (Order Number 310307)
- *Intel[®] Pentium[®] D Processor 800Δ Sequence and Intel[®] Pentium[®] Processor Extreme Edition 840Δ Specification Update* (Order Number 306832)
- *Intel[®] Celeron[®] D Processors 300Δ Sequence Specification Update* (Order Number 302354)
- *Intel[®] Pentium[®] 4 Processor Specification Update* (Order Number 249199)

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[®] 945G/945GZ/945P/945PL Express Chipset Family Specification Update* (Order Number 307503) for specification updates concerning the 82945G GMCH Controller and that may apply to the desktop board D945GNT. Unless otherwise noted in this document, it should be assumed that any GMCH errata for a given stepping are applicable to the Altered Assembly (AA) revision(s) associated with that stepping.

Refer to the *Intel[®] I/O Controller Hub 7 (ICH7) Family Specification Update* (Order Number 307014) for specification updates concerning the 82801GB ICH7 and 82801GR ICH7R I/O Controller Hub and that may apply to the desktop board D945GNT. Unless otherwise noted in this document, it should be assumed that any ICH 7 errata for a given stepping are applicable to the Altered Assembly (AA) revision(s) associated with that stepping.

Terminology

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 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.

General Information

Basic Desktop Board D945GNT Identification Information

AA Revision	BIOS Revision	Notes
C96315-409	NT94510J.86A.4089	1-2
C96315-408	NT94510J.86A.4076	1-2
C96315-407	NT94510J.86A.3996	1-2
C96315-406	NT94510J.86A.3996	1-2
C96315-405	NT94510J.86A.3528	1-2
C96315-404	NT94510J.86A.3239	1-2
C96315-403	NT94510J.86A.2487	1-2
C96315-402	NT94510J.86A.1616	1-2
C96315-401	NT94510J.86A.1042	1-2
C96320-407	NT94510J.86A.4089	1-2
C96320-406	NT94510J.86A.4076	1-2
C96320-405	NT94510J.86A.3996	1-2
C96320-404	NT94510J.86A.3996	1-2
C96320-403	NT94510J.86A.3996	1-2
C96320-402	NT94510J.86A.3528	1-2
C96320-401	NT94510J.86A.3239	1-2
C96320-400	NT94510J.86A.2487	1-2
C96320-305	NT94510J.86A.1616	1-2
C96320-304	NT94510J.86A.0980	1-2
C96324-406	NT94510J.86A.4089	1-2
C96324-405	NT94510J.86A.4076	1-2

AA Revision	BIOS Revision	Notes
C96324-404	NT94510J.86A.3996	1-2
C96324-403	NT94510J.86A.3996	1-2
C96324-402	NT94510J.86A.3528	1-2
C96324-401	NT94510J.86A.3239	1-2
C96324-400	NT94510J.86A.2487	1-2
C96324-305	NT94510J.86A.1616	1-2
C96324-304	NT94510J.86A.0980	1-2

NOTES:

1. The AA number is found on a small label on the component side of the board.
2. The 945 Chipset kit used on this AA revision consists of two components as follows:

Device	Stepping	S-Spec Numbers
82945G GMCH	A2	SL8FU
82801GB ICH7	A1	SL8FX
82801GR ICH7R	A1	SL8FY

Summary of Changes

The following table indicates the Specification Changes, Errata, Specification Clarifications, or Documentation Changes that apply to the Intel® Desktop Board D945GNT. 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.

The following notations are used in the 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 Section 2.8.2.3, Add-in Card Connectors
2	Doc	Changes to Section 1.9.2 Audio Connectors
3	Doc	Changes to Section 1.10.3.1 Intel® 82573E/82573V/82574V Gigabit Ethernet Controller
No.	Plans	Errata
1	Plan Fix	Hardware Monitoring and Fan Control Could Fail and Only Run at a Maximum or Minimum PWM for CPU Fan
2	Plan Fix	Digital Noise May Affect Audio Quality When Using the Rear MIC Input on boards with a 6-Channel (5.1) Audio Subsystem
3	Plan Fix	The placement of capacitors behind PCI Express* x1 connector slot 1 may prohibit some PCI Express x1 add-in cards from properly connecting to the motherboard

Specification Changes

1. The following note will be added to the Technical Product Specification in Section 2.8.2.3 Add-in Card Connectors:

 **NOTE**

Capacitors required for the audio circuitry are located within the ATX keep-out area near PCI Express x1 slot 1, and may limit the use of some PCI Express x1 cards.*

2. The following note will be added to the Technical Product Specification in Section 1.9.2 Audio Connectors:

INTEGRATOR'S NOTES

Electrostatic discharge (ESD) can damage desktop board components. Front-panel connectors should provide sufficient protection to prevent ESD damage to components inside the chassis enclosure.

3. Section 1.10.3.1 of the Technical Specification will be updated in its entirety as follows to remove reference to Jumbo frame support.

1.10.3.1 Intel® 82573E/82573V/82574V Gigabit Ethernet Controller

The Intel® 82573E/82573V/82574V Gigabit Ethernet Controller supports the following features:

- PCI Express link
- 10/100/1000 IEEE 802.3 compliant
- Compliant to IEEE 802.3x flow control support
- TCP, IP, UDP checksum offload
- Transmit TCP segmentation
- Advanced packet filtering
- Full device driver compatibility
- PCI Express Power Management Support

Errata

1. Hardware Monitoring and Fan Control Could Fail and Only Run at a Maximum or Minimum PWM for CPU Fan

PROBLEM: The Hardware Monitoring and Fan Control may only support up to 3.6V on its Pulse Width Modulation (PWM) outputs. The 4-pin fans used with the Intel Desktop board could have a pull up voltage as high as 5.25V, potentially causing failures in the circuit used for fan control on this Intel Desktop Board.

IMPLICATION: If Hardware Monitoring and Fan Control fails due to this erratum, the CPU fan could run at either 100% PWM, or at a minimum PWM (normally set to 30% PWM for four-pin CPU fans). A failure at 100% PWM could result in louder system acoustics. A failure at minimum PWM may result in the reduced heat sink efficiency being insufficient to fully support the processor thermal requirements at some higher work loads. A variety of conditions such as room temperature, heat sink characteristics, application, workload and chassis design will affect the impact of the PWM failure. If the thermal requirements of the processor are not met, the processor will attempt to reduce its own temperature. Depending on the severity of the ASIC failure, this may result in a noticeable performance reduction.

WORKAROUND: None

STATUS: This erratum has been fixed. Refer to the Product Change Notification 105498-01 available at <http://developer.intel.com/design/pcn/MTHRBRD/index.htm>.

2. Digital Noise May Affect Audio Quality When Using the Rear MIC Input on boards with a 6-Channel (5.1) Audio Subsystem

PROBLEM: Digital noise may affect audio quality when using the rear MIC input on boards with a 6-Channel (5.1) Audio Subsystem. The digital noise can affect the MIC signal via the Codec's MIC bias voltage.

IMPLICATION: Digital noise may be heard on the rear MIC input when systems are used in the following configuration: input monitor enabled in drivers, MIC boost set to 20dB gain, and MIC volume set to maximum. The digital noise may be heard when recording voice, during voice chat, when dragging window around the screen, or when opening and closing windows. No noise issues have been associated with the front panel MIC input.

WORKAROUND: None

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

3. The placement of capacitors behind PCI Express* x1 connector slot 1 may prohibit some PCI Express x1 add-in cards from properly connecting to the motherboard

PROBLEM: Due to the design and placement of the audio circuitry on this motherboard, it was necessary to position capacitors in the keep-out zone behind PCI Express* x1 connector slot 1.

IMPLICATION: Some PCI Express x1 add-in cards may not fully connect to PCI Express x1 connector slot 1, due to interference between capacitors in the keep-out zone and I/O connectors on the add-in card that are located on the I/O bracket, in line with the edge fingers on the card.

WORKAROUND: None

STATUS: May be fixed in a later hardware revision.