



Intel® Desktop Board D845BG Specification Update

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Order Number: A83340-006

The Intel® Desktop Board D845BG 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 D845BG 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
January 2002	-001	This document is the first Specification Update for the Intel® Desktop Board D845BG.
February 2002	-002	Added Erratum 1. Updated General Information.
March 2002	-003	Added Specification Change 1. Added Specification Clarifications 1-4.
April 2002	-004	Added Specification Change 2.
September 2002	-005	Removed Printed Board Assembly (PBA) information from the document, as this reference is no longer valid. Updated Legal Disclaimer Section. Updated General Information Section.
October 2002	-006	Added Specification Change 3. Added Erratum 2.

PREFACE

This document is an update to the specifications contained in the *Intel® Desktop Board D845BG Technical Product Specification* (Order number *A75852*). 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 D845BG. 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® 845 Chipset: 82845 Memory Controller Hub (MCH) for DDR Specification Update* (Order Number 298603) for specification updates concerning the 82845 MCH Controller and that may apply to the desktop board D845BG. 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® 82801BA I/O Controller Hub 2 (ICH2) and Intel® 82801BAM I/O Controller Hub 2 Mobile (ICH2-M) Specification Update* (Order Number 298242) for specification updates concerning the 82801BA I/O Controller Hub and that may apply to the desktop board D845BG. Unless otherwise noted in this document, it should be assumed that any ICH 2 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 D845BG'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 D845BG

GENERAL INFORMATION

Basic Desktop Board D845BG Identification Information

AA Revision	BIOS Revision	Notes
A65261-402	PT84510A.86A.0015.P02	1-5
A65261-403	PT84510A.86A.0023.P04	1-5
A65251-402	PT84510A.86A.0012.P01	1-5
A65251-403	PT84510A.86A.0012.P01	1-5
A65251-404	PT84510A.86A.0023.P04	1-5
A65249-402	PT84510A.86A.0012.P01	1-5
A65249-403	PT84510A.86A.0012.P01	1-5
A65249-404	PT84510A.86A.0023.P04	1-5
A74060-402	PT84510A.86A.0012.P01	1-5
A74060-403	PT84510A.86A.0012.P01	1-5
A74060-404	PT84510A.86A.0021.P03	1-5
A74060-405	PT84510A.86A.0023.P04	1-5
A74063-402	PT84510A.86A.0012.P01	1-5
A74063-403	PT84510A.86A.0012.P01	1-5
A74063-404	PT84510A.86A.0021.P03	1-5
A74063-405	PT84510A.86A.0023.P04	1-5

NOTES:

- The AA number is found on a small label on the component side of the board.
- The 82845 Chipset kit used on this AA revision consists of three components as follows:

Device	Stepping	S-Spec Numbers
RG82845 MCH	B0	SL5YQ
82801BA ICH	B5	SL5WK
N82802AB 4Mbit FWH	A0 A1	SB48

- 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 D845BG.
- Refer to the *Intel® 845 Chipset: 82845 Memory Controller Hub (MCH) for DDR Specification Update* (Order Number 298603) for errata related to the 82845 MCH that may apply to the desktop board D845BG.
- Refer to the *Intel® 82801BA I/O Controller Hub 2 (ICH2) and Intel® 82801BAM I/O Controller Hub 2 Mobile (ICH2-M) Specification Update* (Order Number 298242) for errata related to the 82801BA I/O Controller Hub that may apply to the desktop board D845BG.

Summary Table of Changes

The following table indicates the Specification Changes, Errata, Specification Clarifications, or Documentation Changes that apply to the desktop board D845BG. 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 is intended to 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	Support for faster Intel® Pentium® 4 processors
2	Doc	Support for additional Intel Pentium 4 Processors
3	Doc	Support for additional Intel Pentium 4 Processors; Support for Intel® Celeron® processors
NO.	PLANS	ERRATA
1	Fix	System hang during POST may occur when using certain USB cameras
2	PlanFix	Wake from an ACPI sleep state using wake methodologies may fail
NO.	PLANS	SPECIFICATION CLARIFICATIONS
1	Doc	Change to description of Section 1.2.2 Manufacturing Options
2	Doc	Change to Section 1.2.4, Block Diagram, Figure 4
3	Doc	Change to description of Section 1.8.2.2, USB 2.0 Support (Optional)
4	Doc	Change to description of Section 1.12, CNR (Optional)

SPECIFICATION CHANGES

The Specification Changes listed in this section apply to the *Desktop Board D845BG Technical Product Specification* (Order Number A75852). All Specification Changes will be incorporated into a future version of that specification.

1. Support For Faster Intel® Pentium® 4 Processors

Section 1.6, Processor, will change in its entirety as follows:

1.6 Processor



CAUTION

Use only the processors listed below. Use of unsupported processors can damage the board, the processor, and the power supply. See the Intel® Desktop Board D845BG/D845PT Specification Update for the most up-to-date list of supported processors for these boards.

The D845BG and D845PT boards support a single Pentium® 4 processor (in a µPGA478 socket) with a system bus of 400 MHz. The D845BG and D845PT boards support the processors listed in Table 5. All supported onboard memory can be cached, up to the cachability limit of the processor. See the processor's data sheet for cachability limits.

Table 5. Supported Processors

Type	Designation	System Bus	L2 Cache Size
Pentium® 4 processor	1.5, 1.6, 1.7, 1.8, 1.9, and 2.0 GHz	400 MHz	256 KB
	2.0 and 2.1 GHz	400 MHz	512 KB



NOTE

Use only ATX12V- or SFX12V-compliant power supplies with the D845BG and D845PT boards. ATX12V and SFX12V power supplies have an additional power lead that provides required supplemental power for the Intel® Pentium 4 processor. Always connect the 20-pin and 4-pin leads of ATX12V and SFX12V power supplies to the corresponding connectors on the D845BG and D845PT boards, otherwise the board will not boot.

Do not use a standard ATX power supply. The board will not boot with a standard ATX power supply.

For information about	Refer to
Processor support	Section 1.3, page 18
Processor usage	Section 1.3, page 18
Power supply connectors	Section 2.8.2.3, page 61

2. Support For Additional Intel® Pentium® 4 Processors

Section 1.6, Processor, will change in its entirety as follows:

1.6 Processor



CAUTION

Use only the processors listed below. Use of unsupported processors can damage the board, the processor, and the power supply. See the Intel® Desktop Board D845BG/D845PT Specification Update for the most up-to-date list of supported processors for these boards.

The D845BG and D845PT boards support a single Pentium® 4 processor (in a μ PGA478 socket) with a system bus of 400 MHz. The D845BG and D845PT boards support the processors listed in Table 5. All supported onboard memory can be cached, up to the cachability limit of the processor. See the processor's data sheet for cachability limits.

Table 5. Supported Processors

Type	Designation	System Bus	L2 Cache Size
Pentium® 4 processor	1.5, 1.6, 1.7, 1.8, 1.9, and 2.0 GHz	400 MHz	256 KB
	1.6, 1.8, 2.0 and 2.2 GHz	400 MHz	512 KB

NOTE

Use only ATX12V or SFX12V compliant power supplies with the D845BG and D845PT boards. ATX12V and SFX12V power supplies have an additional power lead that provides required supplemental power for the Intel® Pentium® 4 processor. Always connect the 20-pin and 4-pin leads of ATX12V and SFX12V power supplies to the corresponding connectors on the D845BG and D845PT boards, otherwise the board will not boot.

Do not use a standard ATX power supply. The board will not boot with a standard ATX power supply.

For information about	Refer to
Processor support	Most recent D845BG Specification Update
Processor usage	Section 1.3, page 18
Power supply connectors	Section 2.8.2.3, page 61

3. Support For Additional Intel® Pentium® 4 Processors; Support For Intel® Celeron® Processors

Section 1.6, Processor, will change in its entirety as follows:

1.6 Processor

CAUTION

Use only the processors listed below. Use of unsupported processors can damage the board, the processor, and the power supply. See the Intel® Desktop Board D845BG/D845PT Specification Update for the most up-to-date list of supported processors for these boards.

The D845BG and D845PT boards support a single Pentium® 4 processor (in a µPGA478 socket) with a system bus of 400 MHz. The D845BG and D845PT boards support the processors listed in Table 5. All supported onboard memory can be cached, up to the cachability limit of the processor. See the processor's data sheet for cachability limits.

Table 5. Supported Processors

Type	Designation	System Bus	L2 Cache Size
Pentium® 4 processor	1.4, 1.5, 1.6, 1.7, 1.8, 1.9, and 2 GHz	400 MHz	256 KB
	1.6A, 1.8, 2A and 2.20, 2.40, 2.50, and 2.60 GHz	400 MHz	512 KB
Celeron® processor	1.7, 1.8	400 MHz	128 KB

 **NOTE**

BIOS revision PT84510A.86A.0023.P04 or later is required to support 2A GHz Pentium® 4 processors and higher.

 **NOTE**

BIOS revision PT84510A.86A.0029.P07 or later is required to support 2A GHz Pentium 4 processors and higher.

 **NOTE**

BIOS revision PT84510A.86A.0023.P04 or later is required to support 1.7 GHz Celeron® processors and higher.

 **NOTE**

Use only ATX12V or SFX12V compliant power supplies with the D845BG and D845PT boards. ATX12V and SFX12V power supplies have an additional power lead that provides required supplemental power for the Intel® Pentium® 4 processor. Always connect the 20-pin and 4-pin leads of ATX12V and SFX12V power supplies to the corresponding connectors on the D845BG and D845PT boards, otherwise the board will not boot.

Do not use a standard ATX power supply. The board will not boot with a standard ATX power supply.

For information about	Refer to
Processor support	Most recent D845BG Specification Update
Processor usage	Section 1.3, page 18
Power supply connectors	Section 2.8.2.3, page 61

ERRATA

1. ***System Hang During POST May Occur When Using Certain USB Cameras***

PROBLEM: During the system boot, certain USB cameras may cause a hang during POST if the camera is on during the boot process.

IMPLICATION: Some USB cameras may cause a system hang if the camera is on during system boot due to the BIOS incorrectly identifying the camera as a bootable device.

WORKAROUND: Ensure that the USB camera is off during the system boot process.

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

2. ***Wake From an ACPI Sleep State Using Wake Methodologies May Fail***

PROBLEM: The desktop board hardware leaves the Resume Well Power OK (RSM_PWROK) signal deasserted before and after the resume well power (VccSus3_3 and VccSus1_8) is valid, instead of asserting it for 10 ms after valid power, which is required by the Intel® 82801BA I/O Controller Hub 2 (ICH2) and Intel® 82801BAM I/O Controller Hub 2 Mobile (ICH2-M) Datasheet (order number 290687). The result is that LAN wake attempts may fail.

NOTE: Wake from LAN* using the MagicPacket* utility will not be affected by this errata.

IMPLICATION: Users that take advantage of LAN wake methods to wake systems from an ACPI sleep state may experience some wake failures.

WORKAROUND: None.

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

SPECIFICATION CLARIFICATIONS

The Specification Clarifications listed in this section apply to the *Desktop Board D845BG Technical Product Specification* (Order Number A75852). All Specification Clarifications will be incorporated into a future version of that specification.

1. **Change to Description of Section 1.2.2 Manufacturing Options**

Section 1.2.2, Manufacturing Options will change in its entirety, as follows:

1.2.2 MANUFACTURING OPTIONS

Table 3 describes the D845BG and D845PT boards' manufacturing options. Not every manufacturing option is available in all marketing channels. Please contact your Intel representative to determine which manufacturing options are available to you.

Table 3. Manufacturing Options

CNR	One Communication and Networking Riser (CNR) connector (slot shared with PCI bus connector 6 on the D845BG board and with PCI bus connector 3 on the D845PT board)
LAN	Intel® 82562ET 10/100 Mbit/sec Platform LAN Connect (PLC) device
USB 2.0	Support for USB 2.0 devices. The USB 2.0 option uses the NEC μPD720100 USB 2.0 host controller and supports up to four USB ports. This option is currently available only on certain versions of the D845BG board.

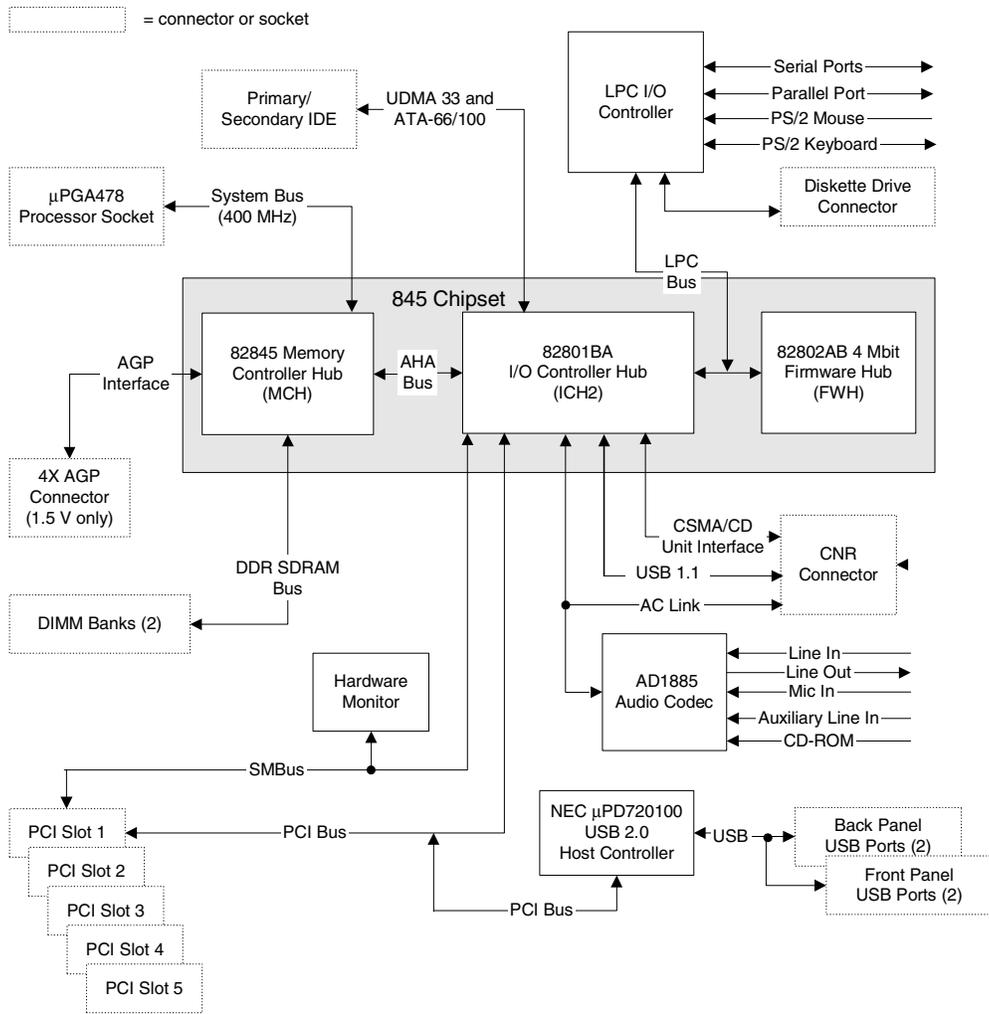
For information about	Refer to
Available configurations for the D845BG and D845PT boards	Section 1.3, page 18

NOTE

USB Routing to the CNR connector only supports USB 1.1 CNR devices

2. **Change to Section 1.2.4, Block Diagram, Figure 4**

Section 1.2.4, Block Diagram, Figure 4 will correct CNR USB routing:



OM13009A

Figure 4. Block Diagram with Optional USB 2.0 Support

3. **Change to Description of Section 1.8.2.2, USB 2.0 Support (Optional)**

Section 1.8.2.2, USB 2.0 Support (Optional), will change in its entirety as follows:

1.8.2.2 USB 2.0 Support (Optional)

NOTE

The USB 2.0 option is currently available only on the D845BG board. All D845BG boards with the NEC μ PD720100 USB 2.0 host controller have only four PCI bus connectors.

The D845BG board supports USB 2.0 using the NEC μ PD720100 USB 2.0 host controller, which is a manufacturing option. The port routing is implemented as shown in Figure 7. The NEC μ PD720100 controller is connected through the PCI bus and provides support for up to four USB ports:

- Two ports implemented with stacked back panel connectors, adjacent to the audio connectors
- Two ports routed to the front panel USB connector

For more than four USB devices, an external hub can be connected to any of the ports. D845BG boards with the USB 2.0 option fully support OHCI and EHCI and use OHCI- and EHCI-compatible drivers.

NOTE

USB Routing to the CNR connector only supports USB 1.1 CNR devices

NOTE

The USB 2.0 option requires an operating system that officially supports USB 2.0. USB 2.0 support has been tested with Windows 2000 and Windows XP drivers and is not currently supported by any other operating system.*

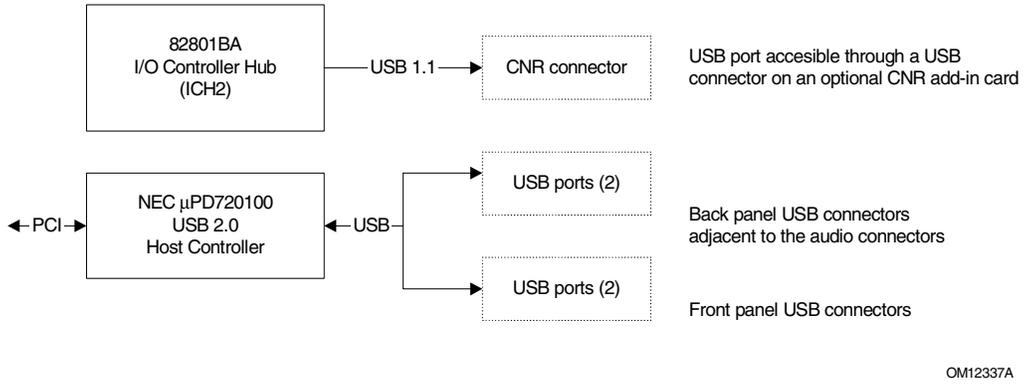


Figure 7. USB 2.0 Port Configuration (Optional)

4. Change to Description of Section 1.12, CNR (Optional)

Section 1.12, CNR (Optional), will change in its entirety as follows:

CNR (Optional)

The CNR connector provides an interface that supports the audio, modem, USB, and LAN interfaces of the Intel® 845 chipset. Figure 9 shows the signal interface between the riser and the ICH2.

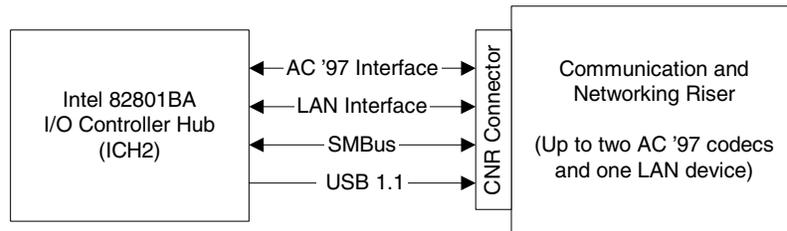


Figure 9. ICH2 and CNR Signal Interface

The interfaces supported by the CNR include the following:

- AC '97 interface: supports audio and/or modem functions on the CNR card.
- LAN interfaces: an eight-pin interface for use with Platform LAN Connection (PLC) based devices.
- SMBus interface: provides Plug-and-Play functionality for the CNR card.
- USB interface: provides a USB 1.1 interface for the CNR card.

The CNR connector includes power signals required for power management and for CNR card operation. To learn more about the CNR, refer to the CNR specification.

The onboard two-channel audio subsystem can be upgraded to four- or six-channel audio using a CNR audio upgrade card in a slave configuration. CNR audio upgrade cards are available in multiple configurations from several different vendors supporting analog or S/P-DIF digital connections. A list of vendors supplying CNR audio upgrade cards compatible with the D845BG/D845PT boards' onboard audio subsystem, as well as an installation guide for these cards with SoundMAX* with SPX* are available on the following web site:

<http://developer.intel.com/technology/cnr/>

NOTE

If you install a CNR card that cannot support a multichannel audio upgrade, the D845BG and D845PT boards' integrated audio codec will be disabled. This only applies to D845BG and D845PT boards that have both the onboard audio subsystem and a CNR.

NOTE

The brand and type of audio codec used on the CNR card must match that of the D845BG/D845PT boards' codec (Analog Devices AD1885).

For information about	Refer to
Obtaining the CNR specification	Section 1.5, page 19