



## Product Brief

# Intel® Desktop Boards D845GRG and D845GBV for the Intel® Pentium® 4 Processor in the mPGA478-pin package

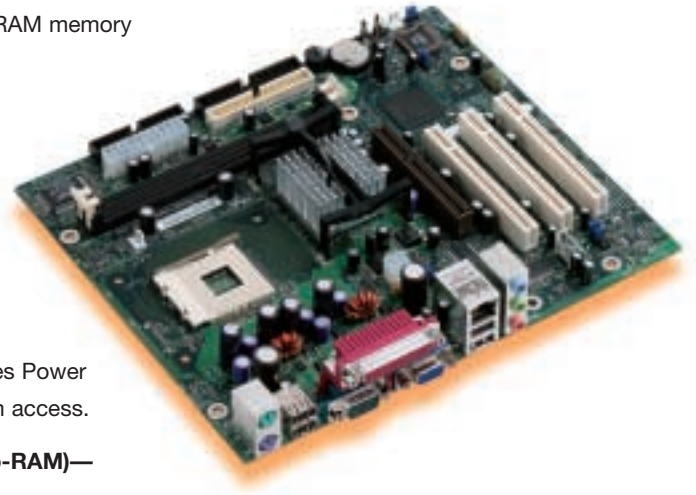
## A Versatile Solution Featuring Cutting Edge Technology

The Intel® Desktop Boards D845GRG and D845GBV expand the Intel® Pentium® 4 processor platform-based family of boards to include integrated graphics. Featuring the Intel® 845G chipset, these desktop boards deliver cutting-edge technology and versatility to meet the needs of today's computing environment.

As an industry leader, Intel continues its tradition of delivering innovative desktop board technologies with Intel Desktop Boards D845GRG and D845GBV.

Platform enhancements include:

- **Intel® Extreme Graphics with 48MB Dynamic Memory**—Next generation integrated graphics provides enhanced visual effects
- **Supports the Intel® Pentium® 4 processor in the mPGA478-pin package, including the 533MHz system bus**—greater bandwidth for high-performance processors
- **Designed to support up to 2GB\*\* DDR266 SDRAM memory**—double the bandwidth of PC133 SDRAM memory
- **Integrated Hi-Speed USB 2.0 technology†**— up to 40 times the performance of USB 1.1
- **Intel® Active Monitor**—monitors system temperatures, power supply voltages, and fan speeds.
- **Intel® Rapid BIOS Boot**—accelerates Power on Self Test (POST) for faster system access.
- **Instantly Available PC (suspend-to-RAM)**—enables advanced power saving features.



## Cutting Edge Features in a Flexible and Cost-Effective Integrated Graphics Platform

With Intel Desktop Boards D845GRG and D845GBV, system integrators can now design and build flexible, cost-effective solutions that span multiple market segments.

Intel Desktop Boards D845GRG and D845GBV each offer the choice between using the integrated Intel® Extreme Graphics or a high-end AGP add-in card. Intel Extreme Graphics are the perfect solution for business applications and deliver performance for the home and small office user. While integrated Intel Extreme Graphics offer a low-cost, high-performance graphics solution, the AGP slot enables those requiring ultra high frame rates and graphics clarity to add a high-end graphics card. In addition, AGP Digital Display (ADD) cards allow display flexibility by offering Digital Video Out (DVO) circuitry or TV-out encoders.

Hi-Speed USB 2.0 allows the use of multiple high-bandwidth peripherals ranging from PC cameras to portable storage devices. With 40 times the performance of USB 1.1, users can burn CDs six times faster, backup data 11 times faster, and watch full-motion DVD video at TV quality. Hi-Speed USB 2.0 allows users to make a seamless transition to higher-speed technologies with full plug-and-play capability and complete backwards compatibility. The ease-of-use of this technology provides greater customer satisfaction.

Intel Desktop Boards D845GRG and D845GBV support Pentium® 4 processors including both 533MHz and 400MHz system bus in the mPGA478-pin package. This presents the opportunity to offer Intel's highest performance processors with an integrated graphics solution. Three PCI slots on Intel Desktop Board D845GRG (microATX) and six PCI slots on Intel Desktop Board D845GBV (ATX) allow you to expand the capabilities of these boards and an AGP slot enables customized graphics solutions. Analog Devices\* SoundMAX\* with SPX audio delivers exceptional sound and the flexibility to upgrade to multi-channel playback using CNR cards when desired. User satisfaction and system performance are further enhanced through Intel Rapid BIOS Boot, Ultra ATA/100 disk support, and up to six Hi-Speed USB 2.0 ports.

### Enhanced Ease of Integration

Once again, Intel is leading the way by improving ease of integration. The new Intel® Express Installer 3.0 delivers an improved look and feel and the ability to check for and automatically download the latest drivers. Intel® Express Installer 3.0 automates driver installation which helps save the integrator time and money. Key system integration components including IDE and floppy cables, back panel I/O shield, and configuration labels are also provided with boxed Intel desktop boards. A three-year limited warranty and comprehensive support for boxed Intel desktop boards provides industry-leading investment protection.

### Value-add Software Solutions

With the digital revolution in full swing, demands on today's PC continue to increase. The PC not only needs to handle basic computing functions, it also needs to provide web access, internet communication, and process complex and advanced digital applications. To handle these challenges, boxed Intel desktop boards provide software applications that really add value to your system, including Norton\* Internet Security\* for virus protection and Internet security, RealOne\* with DFX\* for streaming media, NTI CD-Maker\* for CD creation, and MacroMedia\* Shockwave\* for high performance internet 3D graphics.

### Complete Solutions in the Box

Intel® desktop boards based on the Intel® 845G chipset deliver competitive price points and the option of two form factors. These desktop solutions include integrated Intel® Extreme Graphics with 48MB Dynamic Memory, AC'97 Audio, up to six Hi-Speed USB 2.0 ports, and the option of integrated LAN or CNR. The following Intel desktop board configurations feature the Intel® 845G chipset with support for DDR200/266 SDRAM memory:

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<b>Intel® Desktop Board D845GRG</b>	microATX, Intel® Extreme Graphics, 1.5V 4X AGP connector, AC'97 audio, 3-PCI slots, CNR, and up to 6 Hi-Speed USB 2.0 ports
<b>Intel® Desktop Board D845GRGL</b>	microATX, Intel® Extreme Graphics, 1.5V 4X AGP connector, AC'97 audio, 3-PCI slots, LAN, and up to 6 Hi-Speed USB 2.0 ports
<b>Intel® Desktop Board D845GBV</b>	ATX, Intel® Extreme Graphics, 1.5V 4X AGP connector, AC'97 audio, 6-PCI slots, CNR, and up to 6 Hi-Speed USB 2.0 ports
<b>Intel® Desktop Board D845GBVL</b>	ATX, Intel® Extreme Graphics, 1.5V 4X AGP connector, AC'97 audio, 6-PCI slots, LAN, and up to 6 Hi-Speed USB 2.0 ports

## Intel® Desktop Board D845GRG, D845GBV, and Features and Benefits

### Features

### Benefits

Support for the Intel® Pentium® 4 Processor with mPGA478 package	Supports Pentium® 4 processors in the mPGA478-pin package and Intel® NetBurst™ microarchitecture, including 533-MHz and 400-MHz system bus
Intel® 845G chipset featuring Intel® Extreme Graphics with 48MB Dynamic Memory and AGP 4X/2X 1.5V connector	Provides low cost, high quality integrated graphics with the flexibility to upgrade via a high-end AGP graphics card.
Intel® Rapid BIOS Boot	Reduced boot time enables faster system access
Two DDR SDRAM DIMM sockets	Designed to support up to 2GB** of double-data-rate SDRAM memory (DDR200 or DDR266)
Ultra ATA/100	Enables fast IDE interface for transfers to storage devices
Three PCI slots (Desktop Board D845GRG) Six PCI slots (Desktop Board D845GBV)	Expansion slots for custom system configurations and or future add-in card upgrades
Six Hi-Speed USB 2.0 ports	Two dual-stack rear connectors and header for two front panel USB connectors
Communication and Networking Riser (CNR) support (optional)	Plug-and-play technology designed to support integrated LAN, HPNA, modem or audio cards for overall system cost savings and flexibility
Integrated Intel® PRO/100 network connection (optional)	On-board 10/100 Mbps Ethernet LAN connectivity
AC'97 Audio with SoundMAX* with SPX and microphone pre-amplifier	Exceptional audio performance and excellent value
Instantly available PC (suspend-to-RAM)	Power-management mode reduces PC power consumption and provides immediate PC access using advanced wake-up logic
Hardware management ASIC	Allows remote monitoring of system conditions for lower total cost of ownership
Three-year limited warranty††	Expanded investment protection for boxed Intel® desktop boards only

### Boxed Intel® Desktop Boards D845GRG and D845GBV Solution includes:

- Desktop Board
- ATX compliant I/O shield
- Floppy and IDE cables
- Board and back panel I/O layout stickers
- Quick Start Guide
- Intel® Express Installer CD, including:
  - Norton® Internet Security\*
  - Intel® Active Monitor
  - SoundMAX\*with SPX
  - RealOne\* with DFX\*
  - NTI CD-Maker\*
  - Macromedia\* Shockwave\*
  - Software Drivers
  - Product Guide
  - Desktop Board Three-year Limited Warranty††



## Intel® Desktop Boards D845GRG and D845GBV Technical Specifications

### Processor

**Processors Supported (via mPGA478 connector)** Intel® Pentium® 4 processors with Intel® NetBurst™ microarchitecture including a 533MHz or 400MHz system bus in the mPGA478-pin package and supporting frequencies starting at 1.4 GHz

**Intel® 845G Chipset** Intel® 82845G Graphics Memory Controller Hub (GMCH) with Accelerated Hub Architecture bus  
Intel 82801DB I/O Controller Hub (ICH4) with Accelerated Hub Architecture bus  
Intel 82802AB Firmware Hub (FWH)

### Memory Controller Hub (MCH)

Designed to support up to 2GB\*\* (w/512Mb technology) of DDR266 SDRAM memory

**Intel® ICH4 I/O** Ultra ATA/66/100

**Controller Hub** Ultra DMA/33  
Six PCI request-grant pairs for support of six PCI bus masters

**I/O Features** Integrated super I/O LPC bus controller  
Six (Desktop Board D845GBV) or three (Desktop Board D845GRG) PCI local bus slots  
Communication and Networking Riser (CNR) (optional), shared with PCI slot  
Power management support for ACPI 1.0 PC2001 compliance

**USB 2.0** Integrated Intel ICH4 controllers

- Four back panel ports (two dual stack)
- Two front panel ports (header requiring cable to front panel)

### Firmware Hub

**System BIOS** 4-Mb Flash EEPROM with Intel/AMI\* BIOS featuring plug-and-play, IDE drive auto-configure  
Advanced configuration and power interface V1.0b, DMI 2.0, multilingual support

**Intel® Rapid BIOS Boot** Optimized POST for faster access to PC from power-on

### System Memory

**Memory Capacity** Two 184-pin DIMM connectors supporting up to two double-sided DIMMS

**Memory Type** Double Data Rate (DDR) PC266 or PC200 SDRAM

**Memory Voltage** 2.5V

### Hardware Management Features

Voltage and temperature sense  
Fan-sensor inputs used to monitor fan activity

### Wake-Up From Network

Wired for Management (WfM) 2.0 compatible  
Support for system wake up using an add-in network interface card with remote wake-up capability or PCI

### Expansion Capabilities

Three (Desktop Board D845GRG) or six (Desktop Board D845GBV) PCI bus add-in card connectors  
Optional Communication and Networking Riser (CNR) connector shared with PCI slot 3 (Desktop Board D845GRG) or PCI slot 6 (Desktop Board D845GBV)  
One 1.5V 4X AGP connector

### Jumpers and Front Panel Connectors

**Jumpers** Single configuration jumper design  
Jumper access for BIOS configuration mode

**Front Panel Connector** Reset, HD LED, Power LEDs, power on/off, standby header

### Mechanical

**Board Style** Desktop Board D845GRG—  
µATX 1.0 compliant board size  
Desktop Board D845GBV—  
ATX 2.03 compliant board size

**Board Size** Desktop Board D845GRG—9.6" x 8.2"  
Desktop Board D845GBV—12.0" x 8.2"

### Baseboard Power

**Requirements** Desktop Board D845GRG—  
ATX12V or SFX12V  
Desktop Board D845GBV—ATX12V

### Environment

**Operating Temperature** 0° C to +55° C

**Storage Temperature** -40° C to +70° C

### Regulations

#### Safety Regulations

U.S. and Canada UL 1950—CSA 950-95  
U.S. and Canadian recognition component marks  
Europe UL classified to IEC 950

#### EMI/RFI regulations:

*Intended for use in systems meeting the following*

US FCC Class B (DofC—Cover off testing)  
Canada IC Class B  
Europe EU Class B (Res, Com, Light Industry)  
Japan VCCI, Class B (ITE)

Power requirements vary. Complies with US CRF via EN55022 + 6db in system configurations with an open chassis and EU Directive 89/336/EEC and use via EN55022 and EN50082-1 in a representative chassis.

**Ordering Information—See Intel's Web site at [www.intel.com](http://www.intel.com)**

**For the most current product information available, visit Intel's Web site at: [developer.intel.com/design/motherbd/](http://developer.intel.com/design/motherbd/)**

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The Intel, Desktop Boards D845GRG and D845GBV 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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\* Other names and brands may be claimed as the property of others.

\*\* Designed to support up to 2GB DDR266 SDRAM memory using 512Mb technology. Currently validated to 1.0GB using 256Mb technology.  
Visit <http://developer.intel.com/support/motherboards/desktop/> for latest validated memory support.

† Not supported on all operating systems. See product guide for details.

†† Three-year limited warranty applies to boxed Intel® desktop boards, only.

