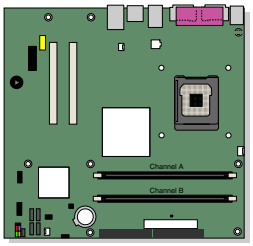
Intel® Desktop Board D910GLDW Product Guide



Order Number: C81201-001

Revision History

Revision	Revision History	Date
-001	First release of the Intel® Desktop Board D910GLDW Product Guide.	August 2004

If an FCC declaration of conformity marking is present on the board, the following statement applies:

FCC Declaration of Conformity

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions related to the EMC performance of this product, contact:

Intel Corporation
5200 N.E. Elam Young Parkway
Hillsboro, OR 97124
1-800-628-8686

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications to the equipment not expressly approved by Intel Corporation could void the user's authority to operate the equipment.

Canadian Department of Communications Compliance Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numerique német pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Réglement sur le broullage radioélectrique édicté par le ministére des Communications du Canada.

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

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Preface

This Product Guide gives information about board layout, component installation, BIOS update, and regulatory requirements for Intel® Desktop Board D910GLDW.

Intended Audience

The Product Guide is intended for technically qualified personnel. It is not intended for general audiences.

Information Layout

The chapters in this Product Guide are arranged as follows:

1 Desktop Board Features: a summary of product features

2 Installing and Replacing Desktop Board Components: instructions on how to install the desktop board and other hardware components

3 BIOS: instructions on how to update the BIOS

A Error Messages and Indicators: information about BIOS error messages and beep codes

B Regulatory Compliance: safety and EMC regulations, product certification

Conventions

The following conventions are used in this manual:

WARNING

Warnings indicate conditions that, if not observed, can cause personal injury.

CAUTION

Cautions warn the user about how to prevent damage to hardware or loss of data.

NOTE

Notes call attention to important information.

Terminology

The table below gives descriptions to some common terms used in the product guide.

Term	Description
GB	Gigabyte (1,073,741,824 bytes)
GHz	Gigahertz (one billion hertz)
KB	Kilobyte (1024 bytes)
MB	Megabyte (1,048,576 bytes)
Mbit	Megabit (1,048,576 bits)
MHz	Megahertz (one million hertz)

Box Contents

- Intel Desktop Board
- I/O shield
- One IDE cable
- Two SATA cables (second cable optional)
- One diskette drive cable
- Quick Reference Guide
- Configuration and battery caution statement label
- Intel® Express Installer CD-ROM

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1 Desktop Board Features

This chapter briefly describes the main features of the Intel® Desktop Board D910GLDW. Table 1 summarizes the major features of the desktop board.

Table 1. Feature Summary

Form Factor	• MicroATX (9.60" x 9.60") Intel Desktop Board D910GLDW
Processor	Support for an Intel® Celeron® processor in the LGA775 package
Main Memory	• Two 184-pin, 2.5 V SDRAM Dual Inline Memory Module (DIMM) sockets • 400/333 MHz single or dual channel DDR SDRAM interface • Designed to support up to 2 GB of system memory **NOTE:** *For the latest list of tested memory, refer to the Intel World Wide Web site at:* http://support.intel.com/support/motherboards/desktop/
Chipset	Intel® 910GL Express Chipset consisting of: • Intel® 82910GL Graphics and Memory Controller Hub (GMCH) with Direct Media Interface • Intel® 82801FB I/O Controller Hub (ICH6)
Graphics	Intel 910GL Express Chipset with Intel® Graphics Media Accelerator 900
Audio	• Intel 910GL Express Chipset • Intel® High Definition Audio codec
Expansion Capabilities	• Two PCI bus add-in card connectors (SMBus routed to slot 2) • One PCI Express x1 connector
Peripheral Interfaces	• Up to eight USB 2.0 ports: — Four ports routed to the back panel — Four ports routed to two USB headers • Four Serial ATA (SATA) channels, via the ICH6, one device per channel • One IDE interface with ATA-66/100 support (two devices) • One diskette drive interface • One parallel port • One serial port • PS/2* keyboard and mouse ports
BIOS	• 4 Mbit flash memory • Support for SMBIOS • Intel® Rapid BIOS Boot • Intel® Express BIOS Update

continued

Table 1. Feature Summary (continued)

Power Management	• Support for Advanced Configuration and Power Interface (ACPI) • Suspend to RAM (STR) • Wake on USB, PCI, PCI Express, PS/2, LAN, and front panel
Hardware Management	Hardware monitor with: • Three fan sensing inputs used to monitor fan activity • Remote diode temperature sensing • Intel® Precision Cooling Technology fan speed control that automatically adjusts processor fan speed based on processor temperature and chassis fan speeds based on system temperature • Voltage sensing to detect out of range values

Related Links:

For more information about Intel Desktop Board D910GLDW, including the Technical Product Specification (TPS), BIOS updates, and device drivers, go to:

http://support.intel.com/support/motherboards/desktop/

Manufacturing Option

Table 2 shows the manufacturing option for the Desktop Board D910GLDW.

Table 2. Manufacturing Option

Option	Description
LAN	Intel® 82562EZ 10/100 Mbit/sec Platform LAN Connect (PLC) device with RJ-45 connector

Supported Operating Systems

The desktop board supports the following operating systems:

- Microsoft Windows* XP
- Microsoft Windows 2000

Desktop Board Components

Figure 1 shows the approximate location of the major components on the Desktop Board D910GLDW.

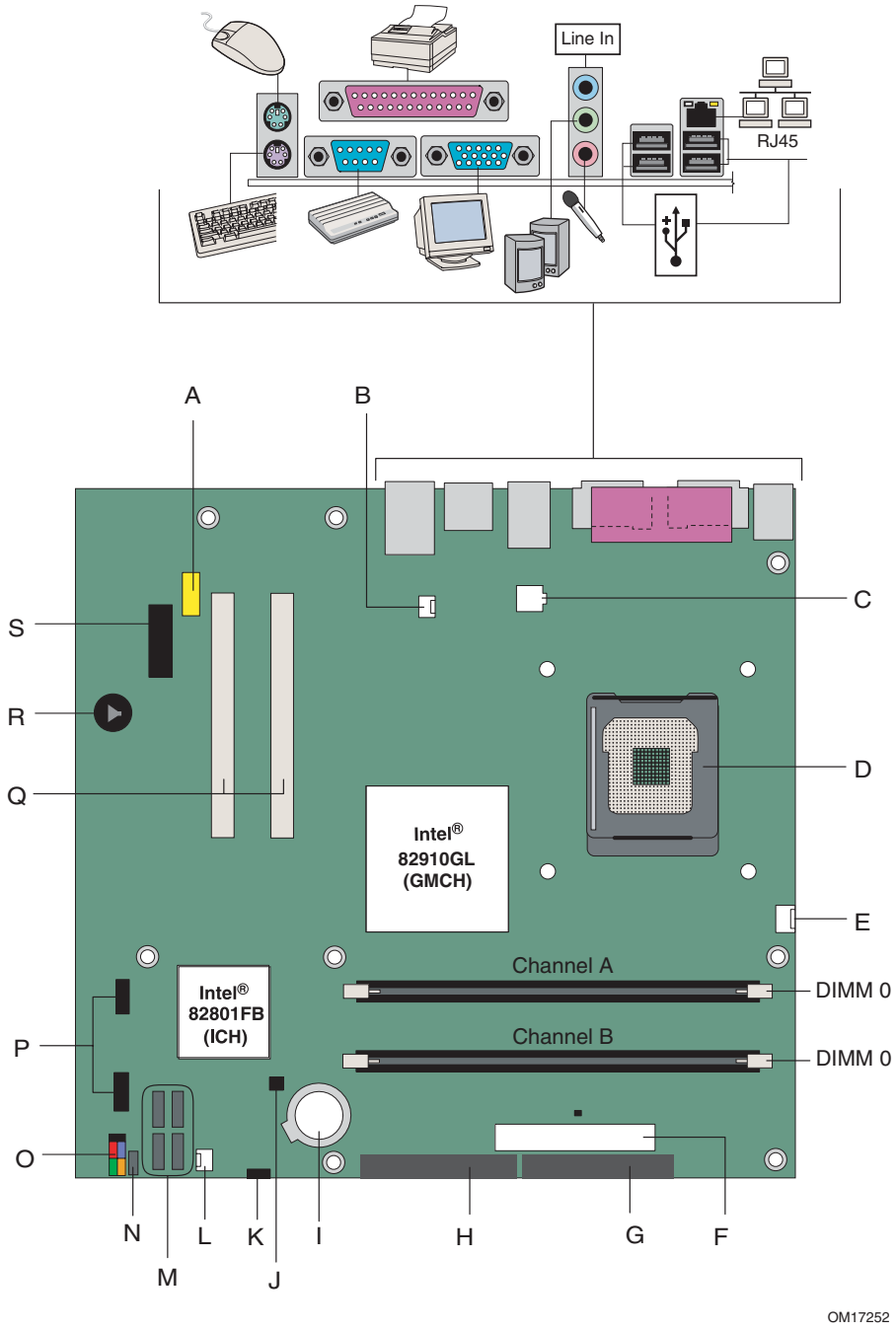


Figure 1. Intel Desktop Board D910GLDW Components

Table 3. Desktop Board D910GLDW Components

Label	Description
A	Front panel audio header (yellow)
B	Rear chassis fan header (fan speed control)
C	12 V processor core voltage connector (2x2)
D	Processor socket
E	Processor fan header (4-pin, fan speed control)
F	Main power connector (2x12)
G	Diskette drive connector
H	Primary IDE connector
I	Battery
J	Chassis intrusion header
K	BIOS configuration jumper
L	Front chassis fan header (fan speed control)
M	Serial ATA connectors (four)
N	Alternate power LED header
O	Front panel header
P	USB 2.0 headers (black)
Q	PCI bus add-in card connectors
R	Speaker
S	PCI Express x1 connector

Related Links:

Go to the following links for more information about:

- Intel Desktop Board D910GLDW — http://www.intel.com/design/motherbd http://support.intel.com/support/motherboards/desktop
- Supported processors — http://support.intel.com/support/motherboards/desktop
- Audio software and utilities — http://www.intel.com/design/motherbd
- LAN software and drivers — http://www.intel.com/design/motherbd

Processor

CAUTION

Failure to use an ATX12V power supply, or not connecting the 12 V (2x2) processor core voltage power supply connector to Desktop Board D910GLDW may result in damage to the desktop board and/or power supply.

The Desktop Board D910GLDW supports a single Intel Pentium 4 processor in the LGA775 package. Processors are not included with the desktop board and must be purchased separately. The processor connects to the Intel desktop board through the LGA775 socket.

The supported processors list for the Desktop Board D910GLDW is located on the web at:

http://support.intel.com/support/motherboards/desktop/

Related Links:

Go to the following links or pages for more information about:

- Supported Intel® processors for the Desktop Board D910GLDW:
  http://support.intel.com/support/motherboards/desktop/
- Instructions on installing or upgrading the processor, page 28 in Chapter 2.
- The location of the power connector, page 42 in Chapter 2.

Main Memory

NOTE

To be fully compliant with all applicable Intel® SDRAM memory specifications, the board should be populated with DIMMs that support the Serial Presence Detect (SPD) data structure. If your memory modules do not support SPD, you will see a notification to this effect on the screen at power up. The BIOS will attempt to configure the memory controller for normal operation.

The desktop board supports:

- Two 184-pin Double Data Rate (DDR) SDRAM Dual Inline Memory Module (DIMMs) connectors with gold-plated contacts
- DDR400 and DDR333 DIMMs
- Unbuffered, non-registered single or double-sided DIMMs
- Serial Presence Detect (SPD) memory only
- Non-ECC RAM
- 2.5 V memory
- Dual and single channel memory configurations
- Memory configuration listed below:
  - Up to 1.0 GB utilizing 256 Mb technology
  - Up to 2.0 GB utilizing 512 Mb technology

NOTE

System resources (such as PCI and PCI Express) require physical memory address locations that reduce available memory addresses above 3 GB. This may result in less than 4 GB of memory being available to the operating system and applications.

Related Links:

Go to the following links or pages for more information about:

- The latest list of tested memory, http://support.intel.com/support/motherboards/desktop/
- SDRAM specifications, http://www.intel.com/technology/memory/pcsdram/spec/
- Installing memory, page 32 in Chapter 2

Intel® 910GL Express Chipset

The Intel 910GL Express Chipset consists of the following devices:

- Intel 82910GL Graphics and Memory Controller Hub (GMCH) with Digital Media Interface
- Intel 82801FB I/O Controller Hub (ICH6)

Related Link:

Go to the following link for more information about the Intel 910GL Express Chipset:

http://developer.intel.com/design/nav/pcserver.htm

Graphics Subsystem

The Desktop Board D910GLDW includes the following:

- Intel 910GL Express Chipset
- Intel Graphics Media Accelerator 900

Audio Subsystem

The Desktop Board D910GLDW includes a flexible 6-channel audio subsystem based on an Intel High Definition Audio codec:

The audio subsystem features:

- Impedance sensing capability for jack re-tasking
- S/N (signal-to-noise) ratio: > 90 dB
- Power management support for ACPI 2.0 (driver dependent)
- Intel 82801FB I/O Controller Hub (ICH6)
- Intel High Definition Audio codec
- Microphone input that supports:
  - Microphone array
  - Acoustic Echo (AEC)
  - Beam Forming (BF)
  - Noise Supression (NX) technology

The subsystem includes the following connectors:

- Front panel audio connector, including pins for:
  - Line out
  - Mic in
- Back panel audio connectors that are configurable through the drivers of the audio devices:
  - Line in, or rear left/right out
  - Line out, or front left/right out
  - Mic in, or center/LFE out

Related Links:

Go to the following link or pages for more information about:

- Audio drivers and utilities http://support.intel.com/support/motherboards/desktop/
- Installing the front panel audio solution, page 40 in Chapter 2
- The location of audio connectors, page Figure 18 on page 41

Input/Output (I/O) Controller

The super I/O controller features the following:

- One serial port
- One parallel port with Extended Capabilities Port (ECP) and Enhanced Parallel Port (EPP) support
- Serial IRQ interface compatible with serialized IRQ support for PCI systems
- PS/2-style mouse and keyboard interfaces
- Interface for one 1.2 MB or 1.44 MB diskette drive
- Intelligent power management, including a programmable wake up event interface
- PCI power management support

LAN Subsystem (Optional)

The optional LAN, with the Intel 82801FB (ICH6), provides a Fast PCI LAN subsystem. The LAN subsystem provides the following functions:

- Basic 10/100 Ethernet LAN (Intel 82562EZ)
- Support for RJ-45 connector with status indicator LEDs
- Programmable transit threshold
- Configurable EEPROM that contains the MAC address

LAN Subsystem Software

For LAN software and drivers, refer to the D910GLDW link on Intel's World Wide Web site at:

http://support.intel.com/support/motherboards/desktop

RJ-45 LAN Connector LEDs

Two LEDs are built into the RJ-45 LAN connector. Table 4 describes the LED states when the board is powered up and the 10/100 Ethernet LAN subsystem is operating.

Table 4. RJ-45 10/100 Ethernet LAN Connector LEDs

LED Color	LED State	Indicates
Green	Off	10 Mbit/sec data rate is selected.
	On	100 Mbit/sec data rate is selected.
Yellow	Off	LAN link is not established.
	On (steady state)	LAN link is established.
	On (brighter and pulsing)	The computer is communicating with another computer on the LAN.

Hi-Speed USB 2.0 Support

NOTE

Computer systems that have an unshielded cable attached to a USB port might not meet FCC Class B requirements, even if no device or a low-speed USB device is attached to the cable. Use a shielded cable that meets the requirements for a full-speed USB device.

The desktop board supports up to eight USB 2.0 ports via ICH6; four ports routed to the back panel and four routed to two internal USB 2.0 headers. USB 2.0 ports are backward compatible with USB 1.1 devices. USB 1.1 devices will function normally at USB 1.1 speeds.

USB 2.0 support requires both an operating system and drivers that fully support USB 2.0 transfer rates. Disabling Hi-Speed USB in BIOS reverts all USB 2.0 ports to USB 1.1 operation. This may be required to accommodate operating systems that do not support USB 2.0.

Enhanced IDE Interface

The ICH6's IDE interface handles the exchange of information between the processor and peripheral devices like hard disks, CD-ROM drives, and Iomega Zip* drives inside the computer. The interface supports:

- Up to two IDE devices (such as hard drives)
- ATAPI-style devices (such as CD-ROM drives)
- Older PIO Mode devices
- Ultra DMA-33 and ATA-66/100 protocols
- Laser Servo (LS-120) drives

Serial ATA

The desktop board supports four Serial ATA channels via ICH6, connecting one device per channel.

Expandability

The desktop board supports the following:

- One PCI Express x1 add-in card
- Two PCI add-in cards

BIOS

The BIOS provides the Power-On Self-Test (POST), the BIOS Setup program, the PCI/PCI Express and IDE auto-configuration utilities, and the video BIOS. The BIOS is stored in the Firmware Hub.

The BIOS can be updated by following the instructions on page 55 in Chapter 3.

Serial ATA and IDE Auto Configuration

If you install a Serial ATA or IDE device (such as a hard drive) in your computer, the auto-configuration utility in the BIOS automatically detects and configures the device for your computer. You do not need to run the BIOS Setup program after installing a Serial ATA or IDE device. You can override the auto-configuration options by specifying manual configuration in the BIOS Setup program.

PCI and PCI Express Auto Configuration

If you install a PCI/PCI Express add-in card in your computer, the PCI/PCI Express auto-configuration utility in the BIOS automatically detects and configures the resources (IRQs, DMA channels, and I/O space) for that add-in card. You do not need to run the BIOS Setup program after you install a PCI/PCI Express add-in card.

Security Passwords

The BIOS includes security features that restrict whether the BIOS Setup program can be accessed and who can boot the computer. A supervisor password and a user password can be set for the BIOS Setup and for booting the computer, with the following restrictions:

- The supervisor password gives unrestricted access to view and change all Setup options. If only the supervisor password is set, pressing <Enter> at the password prompt of Setup gives the user restricted access to Setup.
- If both the supervisor and user passwords are set, you must enter either the supervisor password or the user password to access Setup. Setup options are then available for viewing and changing depending on whether the supervisor or user password was entered.
- Setting a user password restricts who can boot the computer. The password prompt is displayed before the computer is booted. If only the supervisor password is set, the computer boots without asking for a password. If both passwords are set, you can enter either password to boot the computer.

Chassis Intrusion

The board supports a chassis security feature that detects if the chassis cover has been removed. The security feature uses a mechanical switch on the chassis that can be connected to the chassis intrusion header on the desktop board. See Figure 17 on page 39 for the location of the chassis intrusion header.

Power Management Features

Power management is implemented at several levels, including:

- Advanced Configuration and Power Interface (ACPI)
- Hardware support:
  - Power connectors
  - Fan connectors
  - Suspend to RAM (Instantly Available PC technology)
  - Resume on Ring
  - Wake from USB
  - Wake from PS/2 keyboard/mouse
  - PME# wakeup support

ACPI

ACPI gives the operating system direct control over the power management and Plug and Play functions of a computer. The use of ACPI with the desktop board requires an operating system that provides full ACPI support.

Power Connectors

The desktop board has two power connectors. See Figure 20 on page 43 and Figure 21 on page 44 for the location of the power connectors.

Fan Connectors

The desktop board has a 4-pin processor fan header and two 3-pin chassis fan headers. See Figure 19 on page 42 for the location of the fan headers.

Fan Speed Control (Intel® Precision Cooling Technology)

Intel Precision Cooling Technology automatically adjusts the processor fan speed based on the processor thermal diode temperature and adjusts the chassis fan speeds depending on the system temperature. System fan noise may be reduced by operating controlled chassis and processor fans at the minimum necessary speeds.

The processor and chassis fan speed control features can be disabled independently through the desktop board BIOS. Disabling the processor fan speed control will result in the fan operating at full speed if it is not a self controlled fan. It is recommended that processor fan speed control remain enabled (default BIOS setting) when using the processor fan heat-sink included with Intel® boxed processors. Disabling the chassis fan speed control results in chassis fans always operating at full speed. The chassis fan speed control feature should be disabled if a self-controlled chassis fan is attached to any controlled chassis fan header.

The overall system noise reduction will vary based on system configuration and environment.

Suspend to RAM (Instantly Available PC Technology)

CAUTION

For Instantly Available PC technology, the 5 V standby line for the power supply must be capable of delivering adequate +5 V standby current. Failure to provide adequate standby current when using this feature can damage the power supply and/or effect ACPI S3 sleep state functionality.

CAUTION

Power supplies used with this desktop board must be able to provide enough standby current to support the standard Instantly Available (ACPI S3 sleep state) configuration. If the standby current necessary to support multiple wake events from the PCI and/or USB buses exceeds power supply capacity, the desktop board may lose register settings stored in memory.

Instantly Available PC technology enables the board to enter the ACPI S3 (Suspend-to-RAM) sleep state. While in the S3 sleep state, the computer will appear to be off. When signaled by a wake-up device or event, the system quickly returns to its last known awake state.

The desktop board's standby power indicator, shown in Figure 2, is lit when there is standby power to the system. This includes the memory modules and PCI bus connectors, even when the computer appears to be off.

If the system has a dual-colored power LED on the front panel, the sleep state is indicated by the LED turning amber.

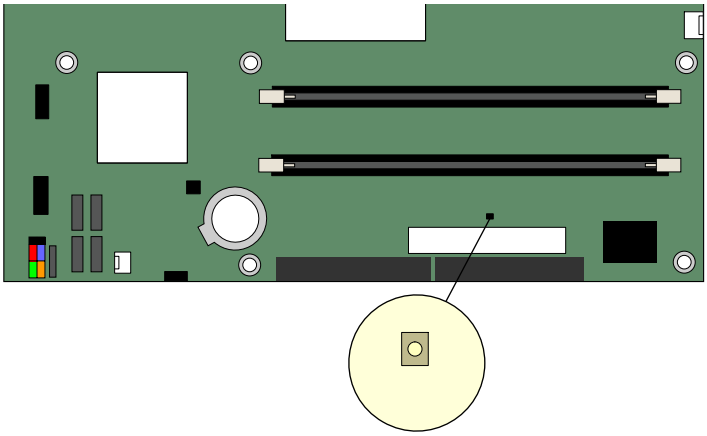


Figure 2. Location of Standby Power Indicator

Related Links:

For more information on standby current requirements for the desktop board, refer to the Technical Product Specification by going to the following link, finding the product, and selecting Product Documentation from the left-hand menu:

http://support.intel.com/support/motherboards/desktop/

Resume on Ring

The operation of Resume on Ring can be summarized as follows:

- Resumes operation from either ACPI S1 or ACPI S3 state
- Requires only one call to access the computer
- Detects incoming call similarly for external and internal modems
- Requires modem interrupt be unmasked for correct operation

Wake from USB

NOTE

Wake from USB requires the use of a USB peripheral that supports wake from USB.

USB bus activity wakes the computer from an ACPI S1 or S3 state.

Wake from PS/2 Keyboard/Mouse

PS/2 keyboard/mouse activity wakes the computer from an ACPI S1 or S3 state.

PME# Wakeup Support

When the PME# signal on the PCI bus is asserted, the computer wakes from an ACPI S1, S3, or S5 state.

Speaker

A speaker is mounted on the desktop board. The speaker provides audible error code (beep code) information during the Power-On Self-Test (POST).

Battery

A battery on the desktop board keeps the values in CMOS RAM and the clock current when the computer is turned off. Go to page 49 for instructions on how to replace the battery.

Real-Time Clock

The desktop board has a time-of-day clock and 100-year calendar. The battery on the desktop board keeps the clock current when the computer is turned off.

2 Installing and Replacing Desktop Board Components

This chapter tells you how to:

- Install the I/O shield
- Install and remove the desktop board
- Install and remove a processor and memory
- Install and remove a PCI Express* x16 card
- Connect the IDE and Serial ATA cables
- Connect internal headers
- Set up flexible 6-channel audio with jack re-tasking
- Connect fans and power cables
- Connect PCI bus add-in cards
- Set the BIOS configuration jumper
- Clear passwords
- Locate back panel connectors
- Replace the battery

Before You Begin

WARNINGS

The procedures in this chapter assume familiarity with the general terminology associated with personal computers and with the safety practices and regulatory compliance required for using and modifying electronic equipment.

Disconnect the computer from its power source and from any telecommunications links, networks, or modems before performing any of the procedures described in this chapter. Failure to disconnect power, telecommunications links, networks, or modems before you open the computer or perform any procedures can result in personal injury or equipment damage. Some circuitry on the board can continue to operate even though the front panel power button is off.

Follow these guidelines before you begin:

- Always follow the steps in each procedure in the correct order.
- Set up a log to record information about your computer, such as model, serial numbers, installed options, and configuration information.
- Electrostatic discharge (ESD) can damage components. Perform the procedures described in this chapter only at an ESD workstation using an antistatic wrist strap and a conductive foam pad. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Installation Precautions

When you install and test the Intel desktop board, observe all warnings and cautions in the installation instructions.

To avoid injury, be careful of:

- Sharp pins on connectors
- Sharp pins on printed circuit assemblies
- Rough edges and sharp corners on the chassis
- Hot components (like processors, voltage regulators, and heat sinks)
- Damage to wires that could cause a short circuit

Observe all warnings and cautions that instruct you to refer computer servicing to qualified technical personnel.

Installation Instructions

CAUTION

Follow these guidelines to meet safety and regulatory requirements when installing this board.

Read and adhere to all of these instructions and the instructions supplied with the chassis and associated modules. If the instructions for the chassis are inconsistent with these instructions or the instructions for associated modules, contact the supplier's technical support to find out how you can ensure that your computer meets safety and regulatory requirements. If you do not follow these instructions and the instructions provided by chassis and module suppliers, you increase safety risk and the possibility of noncompliance with regional laws and regulations.

Ensure Electromagnetic Compatibility (EMC) Compliance

Before computer integration, make sure that the power supply and other modules or peripherals, as applicable, have passed Class B EMC testing and are marked accordingly.

Pay close attention to the following when reading the installation instructions for the host chassis, power supply, and other modules:

- Product certifications or lack of certifications
- External I/O cable shielding and filtering
- Mounting, grounding, and bonding requirements
- Keying connectors when mating the wrong connectors could be hazardous

If the power supply and other modules or peripherals, as applicable, are not Class B EMC compliant before integration, then EMC testing is required on a representative sample of the newly completed computer.

Chassis and Component Certifications

Ensure that the chassis and certain components; such as the power supply, peripheral drives, wiring, and cables; are components certified for the country or market where used. Agency certification marks on the product are proof of certification. Typical product certifications include:

- **In Europe**
  The CE marking signifies compliance with all applicable European requirements. If the chassis and other components are not properly CE marked, a supplier's Declaration of Conformity statement to the European EMC directive and Low Voltage directive (as applicable), should be obtained. Additionally, other directives, such as the Radio and Telecommunications Terminal Equipment (R&TTE) directive may also apply depending on product features.
- **In the United States**
  A certification mark by a Nationally Recognized Testing Laboratory (NRTL) such as UL, CSA, or ETL signifies compliance with safety requirements. Wiring and cables must also be UL listed or recognized and suitable for the intended use. The FCC Class B logo for home or office use signifies compliance with electromagnetic interference (EMI) requirements.
- **In Canada**
  A nationally recognized certification mark such as CSA or cUL signifies compliance with safety requirements. The Industry Canada statement at the front of this product guide demonstrates compliance with Canadian EMC regulations. Industry Canada recognizes and accepts FCC certification as denoting compliance with national electromagnetic interference (emissions) requirements.

Prevent Power Supply Overload

Do not overload the power supply output. To avoid overloading the power supply, make sure that the calculated total current loads of all the modules within the computer is less than the output current rating of each of the power supplies output circuits.

Place Battery Marking

CAUTION

Risk of explosion if the battery is replaced with an incorrect type. Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.

There is insufficient space on this Desktop Board to provide instructions for replacing and disposing of the Lithium ion coin cell battery. For system safety certification, the following statement or equivalent statement is required to be permanently and legibly marked on the chassis near the battery.

Related Links

For information about replacing the battery, go to page 49 in Chapter 2.

Use Only for Intended Applications

All Intel desktop boards are evaluated as Information Technology Equipment (I.T.E.) for use in personal computers for installation in homes, offices, schools, computer rooms, and similar locations. The suitability of this product for other applications or environments, such as medical, industrial, alarm systems, test equipment, etc. may require further evaluation.

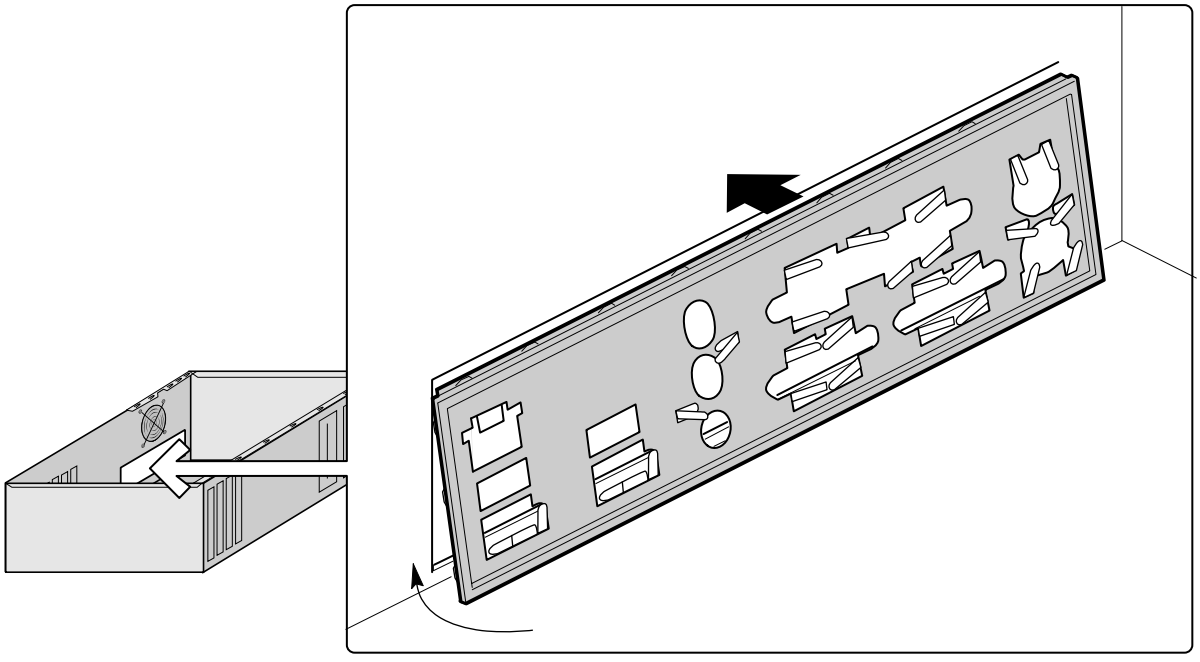
Related Links

For information about regulatory compliance, go to Appendix B on page 61.

Installing the I/O Shield

The desktop board comes with an I/O shield. When installed in the chassis, the shield blocks radio frequency transmissions, protects internal components from dust and foreign objects, and promotes correct airflow within the chassis.

Install the I/O shield before installing the desktop board in the chassis. Place the shield inside the chassis as shown in Figure 3. Press the shield into place so that it fits tightly and securely. If the shield doesn't fit, obtain a properly-sized shield from the chassis supplier.



OM16533

Figure 3. Installing the I/O Shield

Installing and Removing the Desktop Board

WARNING

Only qualified technical personnel should do this procedure. Disconnect the computer from its power source before performing the procedures described here. Failure to disconnect the power before you open the computer can result in personal injury or equipment damage.

NOTE

Refer to Appendix B for regulatory requirements.

Refer to your chassis manual for instructions on installing and removing the desktop board. Figure 4 shows the location of the mounting holes for the desktop board.

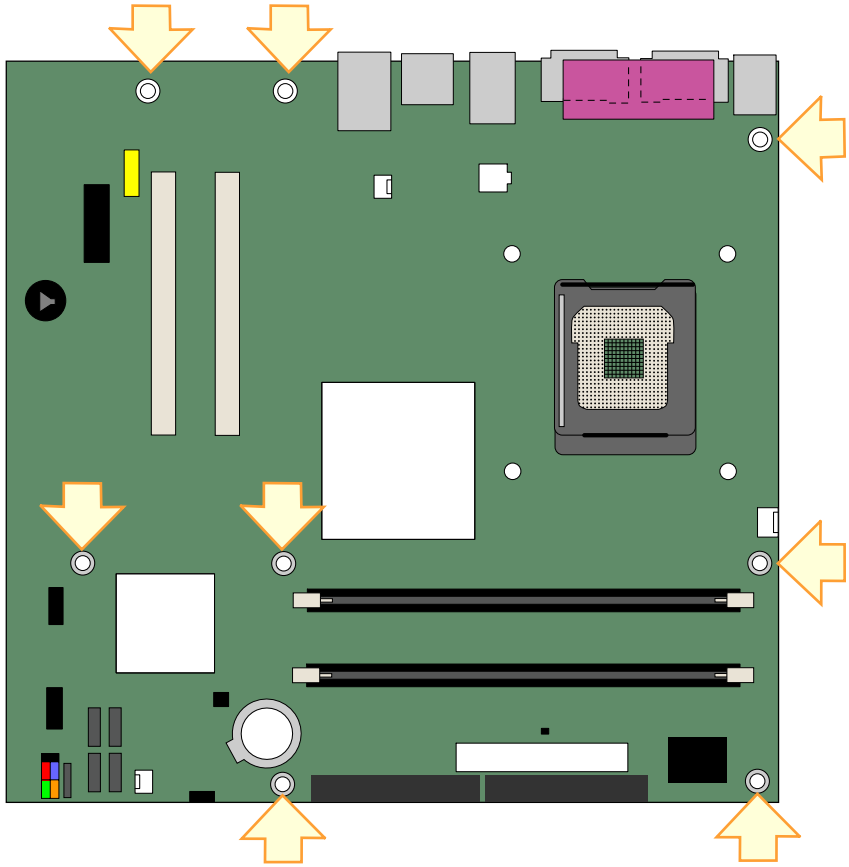


Figure 4. Mounting Screw Hole Locations

Installing and Removing a Processor

Instructions on how to install the processor to the desktop board are given below.

Installing a Processor

CAUTION

Before installing or removing the processor, make sure AC power has been removed by unplugging the power cord from the computer; the standby power LED should not be lit (see Figure 2 on page 21). Failure to do so could damage the processor and the board.

To install a processor, follow these instructions:

1. Observe the precautions in "Before You Begin" on page 23.
2. Open the socket lever by pushing the lever down and away from the socket (see Figure 5, A and B).

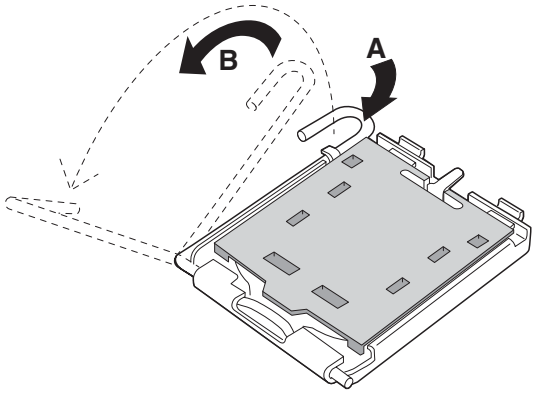


Figure 5. Lift Socket Lever

3. Lift the load plate. Do not touch the socket contacts (see Figure 6, C and D).

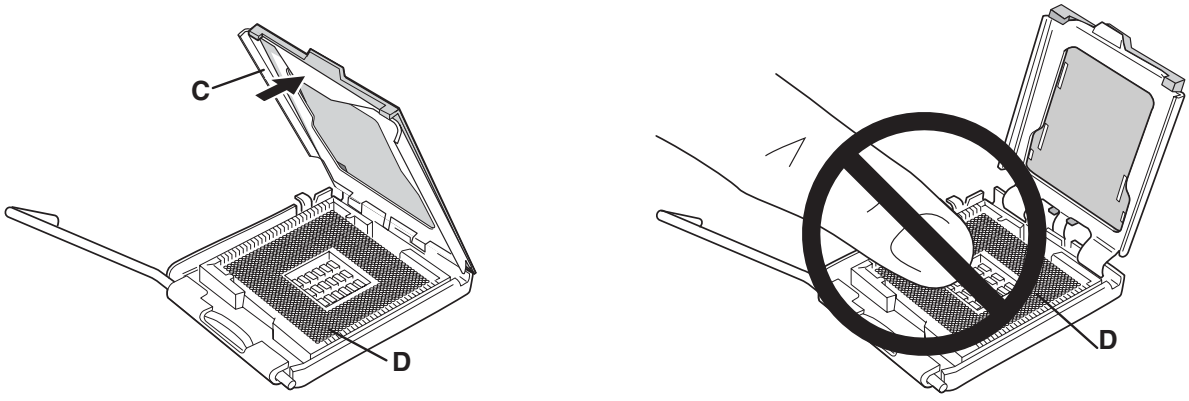


Figure 6. Lift the Load Plate and Don't Touch the Socket Contacts

4. Remove the plastic protective socket cover from the load plate. Do not discard the protective socket cover. Always replace the socket cover if the processor is removed from the socket (see Figure 7, E).

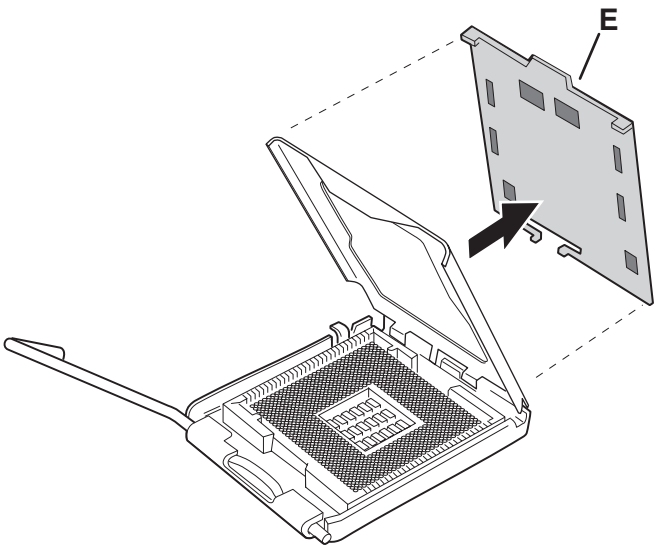


Figure 7. Remove the Protective Socket Cover

5. Remove the processor from the protective processor cover. Hold the processor only at the edges, being careful not to touch the bottom of the processor. Do not discard the protective processor cover. Always replace the processor back to the package if the processor is removed from the socket (see Figure 8).

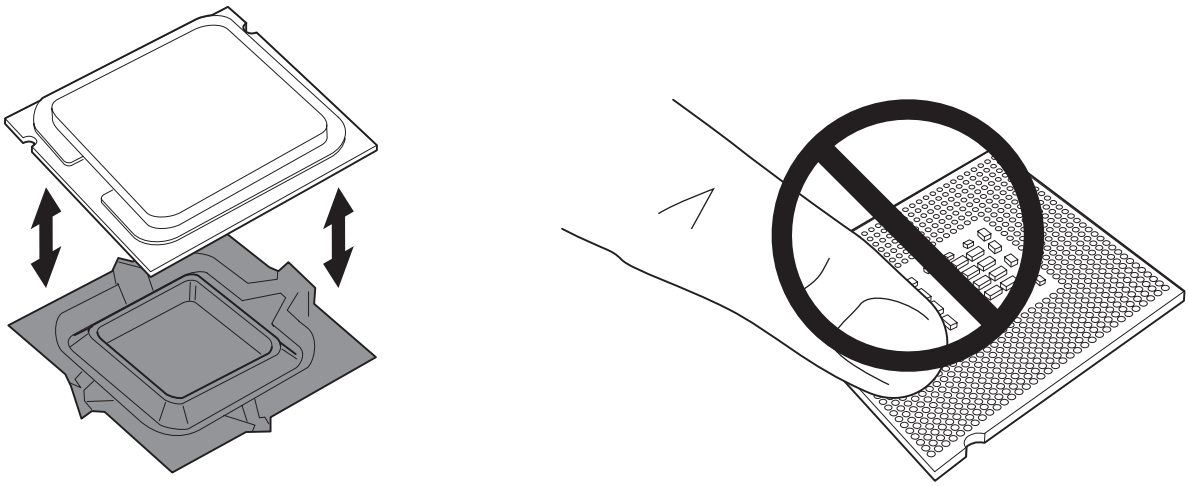


Figure 8. Remove the Processor from the Protective Processor Cover/Do Not Touch

6. Hold the processor with your thumb and index fingers oriented as shown in Figure 9. Make sure fingers align to the socket cutouts (see Figure 9, F). Align notches (see Figure 9, G) with the socket see (Figure 9, H). Lower the processor straight down without tilting or sliding the processor in the socket.

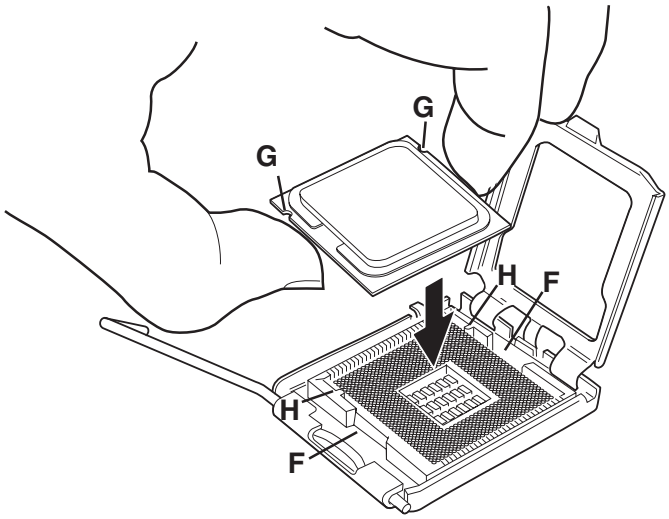


Figure 9. Install Processor

7. Pressing down on the load plate (Figure 10, I) close and engage the socket lever (Figure 10, J).

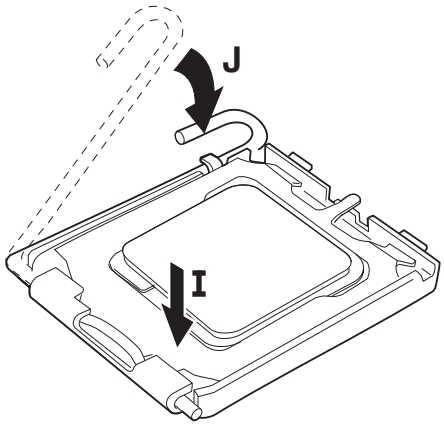


Figure 10. Close the Load Plate

Installing the Processor Fan Heat Sink

The desktop board has an integrated processor fan heat sink retention mechanism (RM). For instructions on how to attach the processor fan heat sink to the integrated processor fan heat sink RM, refer to the boxed processor manual or the Intel World Wide Web site at:

http://support.intel.com/support/processors/pentium4/intnotes478.htm

Connecting the Processor Fan Heat Sink Cable

Connect the processor fan heat sink cable to the 4-pin processor fan connector (see Figure 11).

NOTE

If a 3-pin fan connector is used in a 4-pin fan header, the fan will not be controlled and will run at full speed.

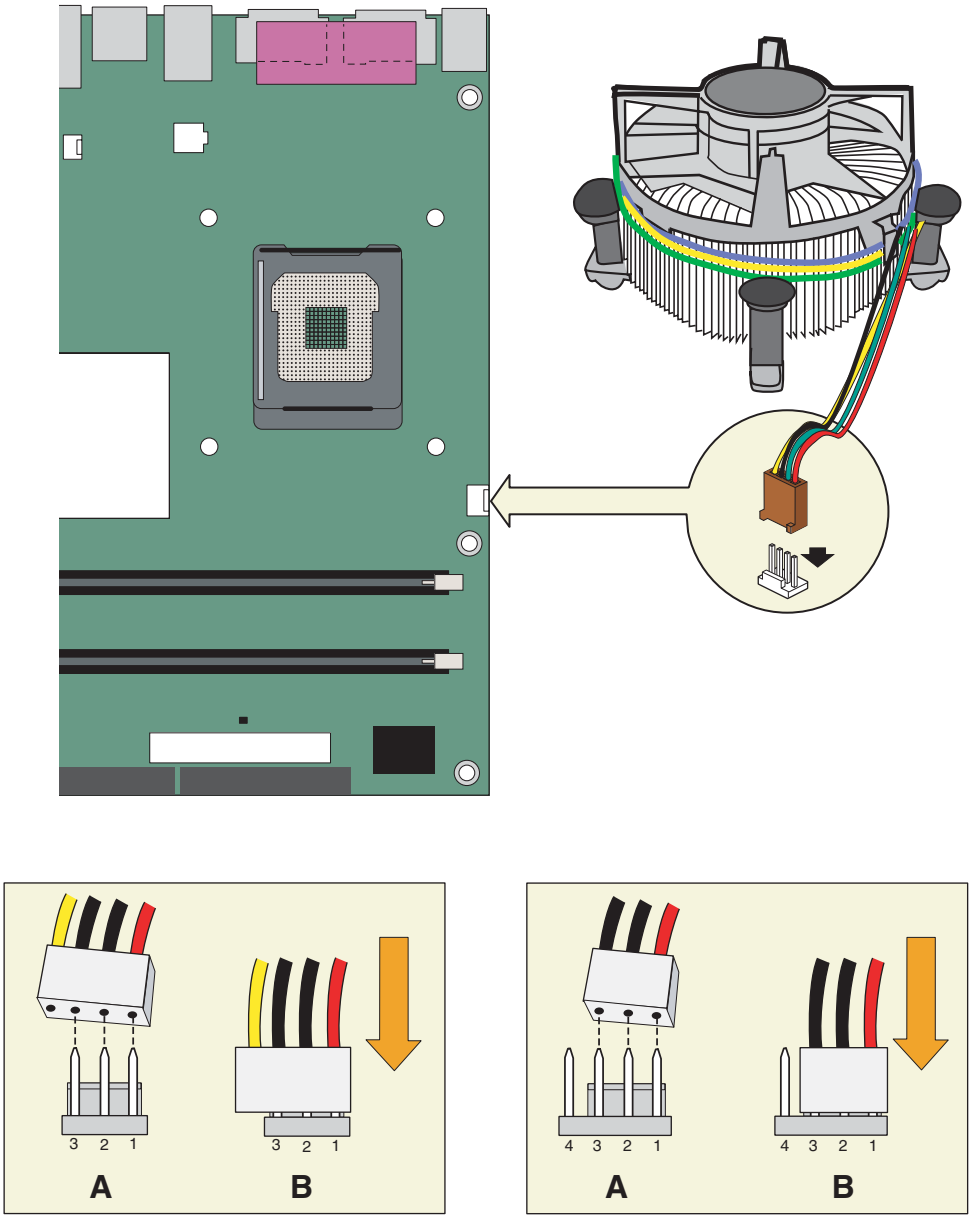


Figure 11. Connecting the Processor Fan Heat Sink Cable to the Processor Fan Connector

Removing the Processor

For instruction on how to remove the processor fan heat sink and processor, refer to the processor installation manual or the Intel World Wide Web site at:

http://support.intel.com/support/processors/pentium4/intnotes478.htm

Installing and Removing Memory

NOTE

To be fully compliant with all applicable Intel SDRAM memory specifications, the boards require DIMMs that support the Serial Presence Detect (SPD) data structure. You can access the PC Serial Presence Detect Specification at:

http://www.intel.com/technology/memory/pcsdram/spec/

The desktop board has two 184-pin DDR DIMM sockets providing Channel A and Channel B. For dual-channel performance, install a matched pair of DIMMs equal in speed and size (see Figure 12).

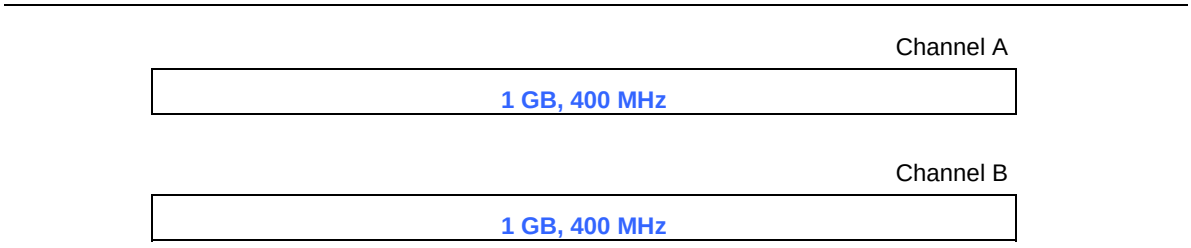


Figure 12. Memory Configuration Example

Installing DIMMs

CAUTION

Install memory in the DIMM sockets prior to installing the PCI Express video card to avoid interference with the memory retention mechanism.

To make sure you have the correct DIMM, place the DIMM on the illustration in Figure 13.

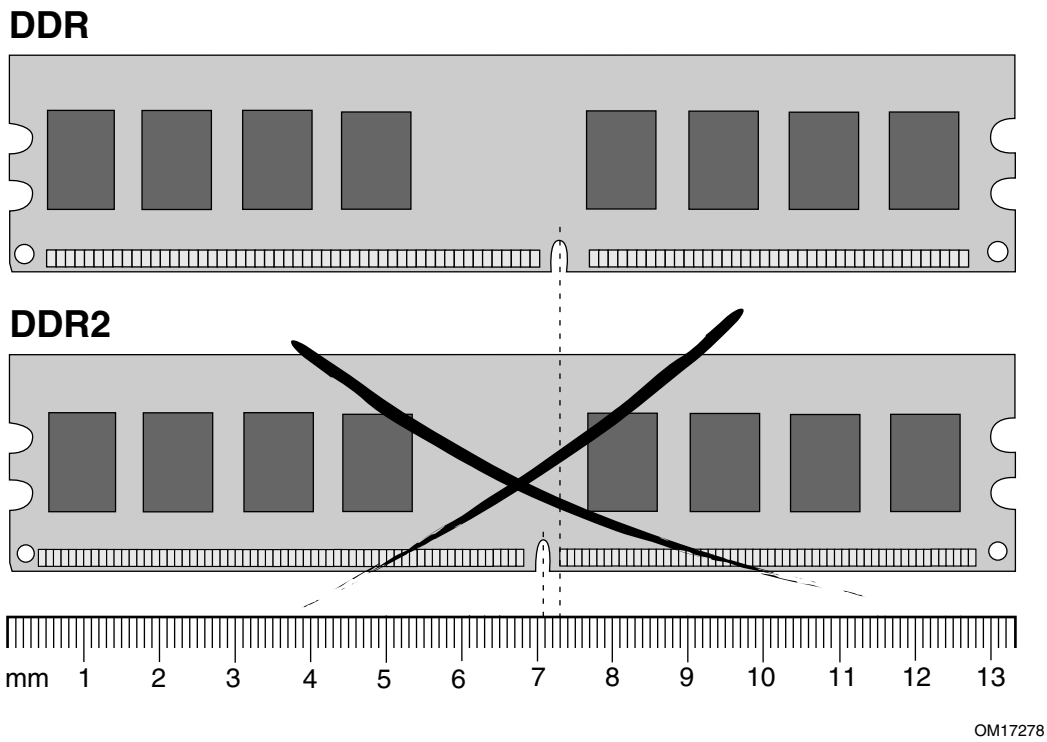


Figure 13. Matching the Correct DIMM

1. Observe the precautions in "Before You Begin" on page 23.
2. Turn off all peripheral devices connected to the computer. Turn off the computer and disconnect the AC power cord.
3. Remove the computer's cover and locate the DIMM sockets (see Figure 14).

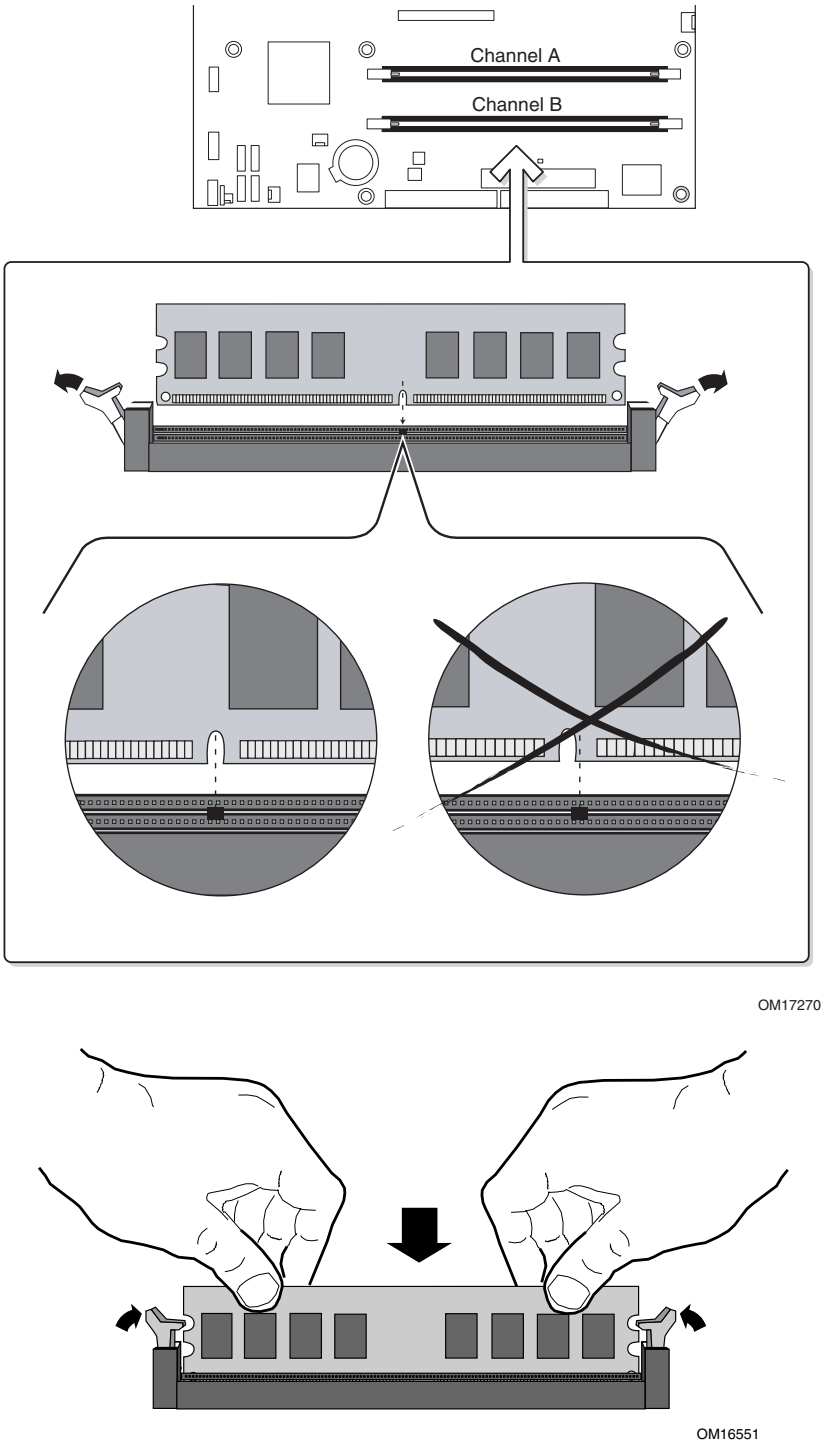


Figure 14. Installing a DIMM

4. Remove the PCI Express video card if it interferes with the DIMM retaining clips from being easily opened and closed.
5. Make sure the clips at either end of the DIMM socket(s) are pushed outward to the open position.
6. Holding the DIMM by the edges, remove it from its anti-static package.
7. Position the DIMM above the socket. Align the small notch at the bottom edge of the DIMM with the keys in the socket (see inset in Figure 14).
8. Insert the bottom edge of the DIMM into the socket.
9. When the DIMM is inserted, push down on the top edge of the DIMM until the retaining clips snap into place. Make sure the clips are firmly in place.
10. Reinstall the PCI Express card if it was removed prior to installing the DIMMs.
11. Replace the computer's cover and reconnect the AC power cord.

Removing DIMMs

To remove a DIMM, follow these steps:

1. Observe the precautions in "Before You Begin" on page 23.
2. Turn off all peripheral devices connected to the computer. Turn off the computer.
3. Remove the AC power cord from the computer.
4. Remove the computer's cover.
5. Remove the PCI Express card if it interferes with the DIMM clips from being easily opened and closed.
6. Gently spread the retaining clips at each end of the DIMM socket. The DIMM pops out of the socket.
7. Hold the DIMM by the edges, lift it away from the socket, and store it in an anti-static package.
8. Reinstall the PCI Express card if you removed it before taking out the DIMM.
9. Reinstall and reconnect any parts you removed or disconnected to reach the DIMM sockets.
10. Replace the computer's cover and reconnect the AC power cord.

Connecting the IDE Cable

The IDE cable can connect two drives to the desktop board. The cable supports the ATA-66/100 transfer protocol. Figure 15 shows the correct installation of the cable.

NOTE

ATA-66/100 compatible cables are backward compatible with drives using slower IDE transfer protocols. If an ATA-66/100 disk drive and a disk drive using any other IDE transfer protocol are attached to the same cable, the maximum transfer rate between the drives may be reduced to that of the slowest drive.

NOTE

Do not connect an ATA device as a slave on the same IDE cable as an ATAPI master device. For example, do not connect an ATA hard drive as a slave to an ATAPI CD-ROM drive.

For correct function of the cable:

- Observe the precautions in "Before You Begin" on page 23.
- Attach the cable end with the single connector to the Intel desktop board (Figure 15, A).
- Attach the cable end with the two closely spaced connectors to the drives (Figure 15, B).

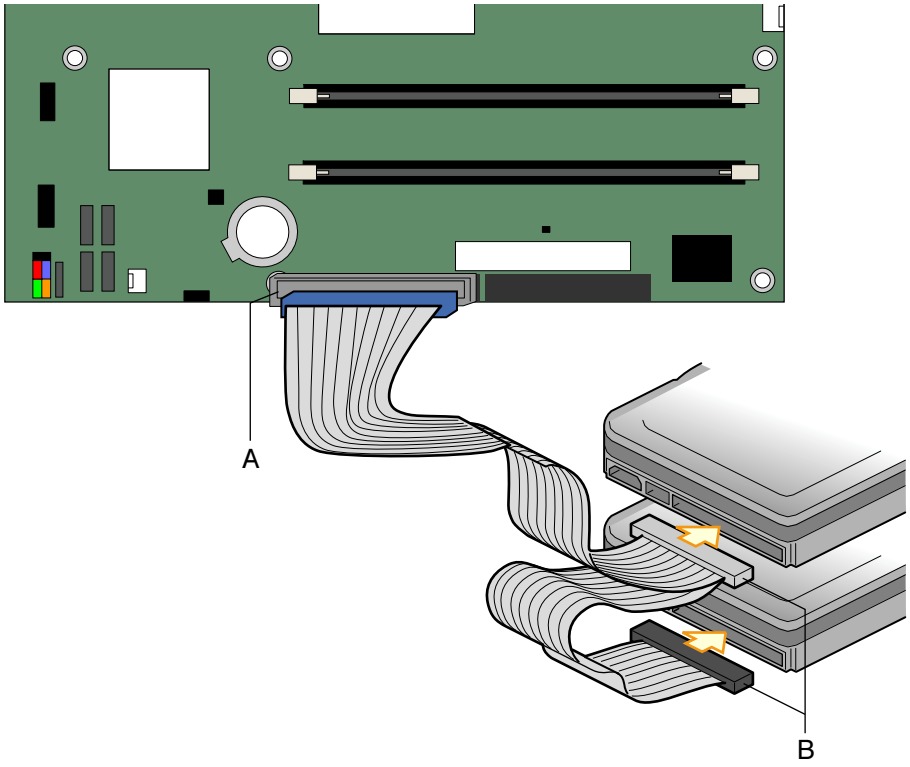


Figure 15. Connecting the IDE Cable

Connecting the Serial ATA (SATA) Cable

The SATA cable (4-conductor) supports the Serial ATA protocol and connects a single drive to the desktop board. Either end of the cable can be connected to the SATA drive or the connector on the board.

For correct cable function:

1. Observe the precaution in "Before You Begin" on page 23.
2. Attach either cable end to the connector (Figure 16, A) on the board.
3. Attach the other cable end to the drive (Figure 16, B).

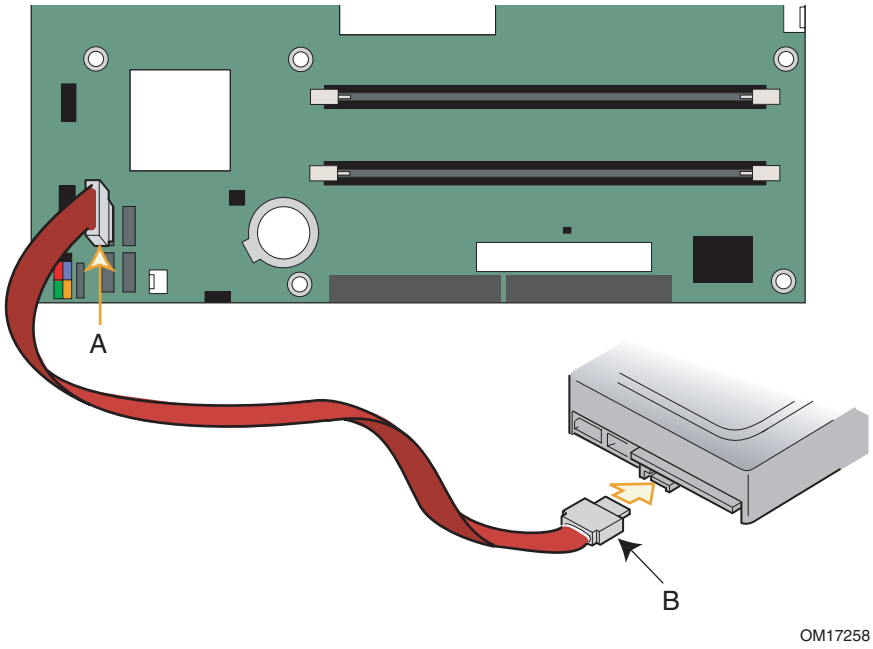
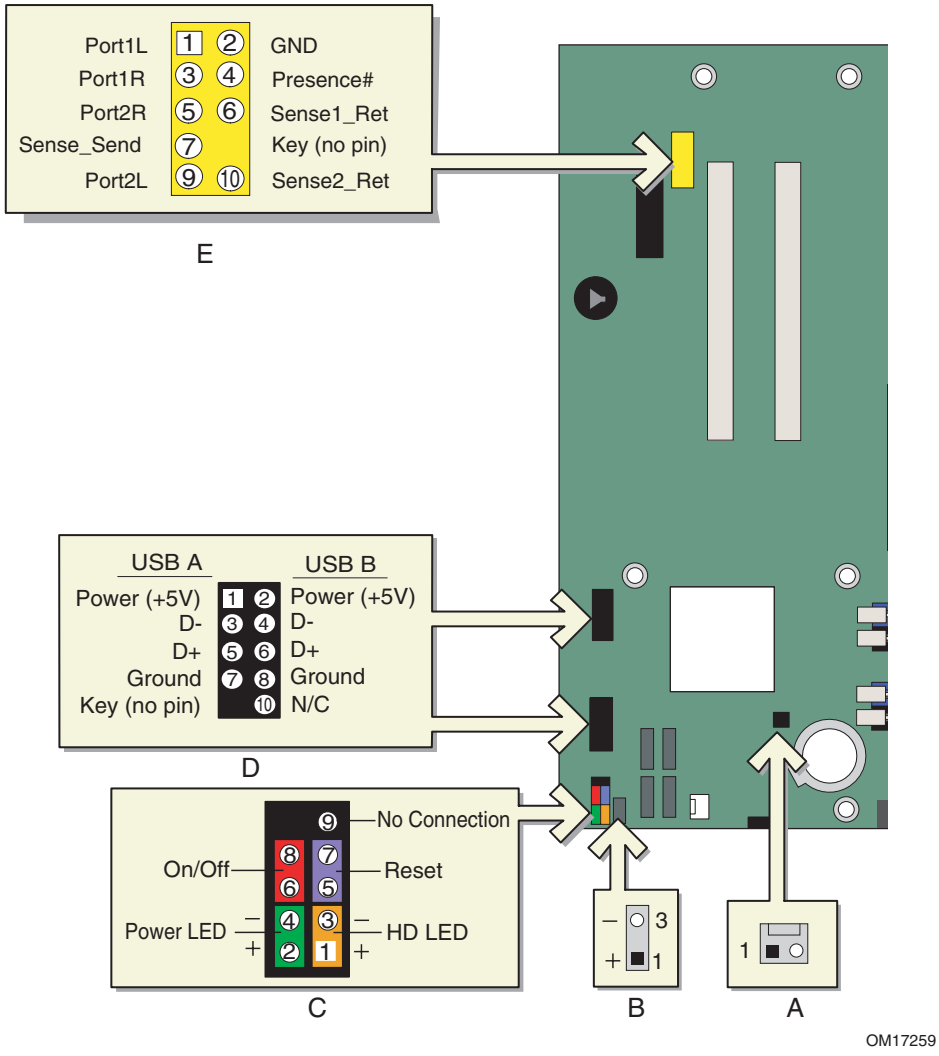


Figure 16. Connecting the Serial ATA Cable

Connecting Internal Headers

Before connecting cables to the internal headers, observe the precautions in "Before You Begin" on page 23. Figure 17 shows the location of the internal headers.



Item	Description
A	Chassis intrusion
B	Power LED
C	Front panel
D	USB 2.0
E	Front panel audio

Figure 17. Internal Headers

Connecting the USB 2.0 Headers

Before connecting the USB 2.0 headers, observe the precautions in "Before You Begin" on page 23. See Figure 17, D on page 39 for the location of the black USB 2.0 headers.

Table 5 shows the pin assignments for the USB 2.0 headers.

Table 5. USB 2.0 Header Signal Names

USB Port A		USB Port B	
Pin	**Signal name**	**Pin**	**Signal name**
1	Power	2	Power
3	D-	4	D-
5	D+	6	D+
7	Ground	8	Ground
9	Key	10	No connect

Note: USB ports may be assigned as needed.

Connecting the Front Panel Header

Before connecting the front panel header, observe the precautions in "Before You Begin" on page 23. See Figure 17, C on page 39 for the location of the multi-colored front panel header.

Table 6 shows the pin assignments for the front panel header.

Table 6. Front Panel Header Signal Names

Pin	Signal	In/Out	Description	Pin	Signal	In/Out	Description
Hard Drive Activity LED (Orange)				**Power LED (Green)**			
1	HD_PWR	Out	Hard disk LED pull-up (330 Ω) to +5 V	2	HDR_BLNK_GRN	Out	Front panel green LED
3	HDA#	Out	Hard disk active LED	4	HDR_BLNK_YEL	Out	Front panel yellow LED
Reset Switch (Purple)				**On/Off Switch (Red)**			
5	Ground		Ground	6	SWITCH_ON#	In	Power switch
7	FP_RESET#	In	Reset switch	8	Ground		Ground
9	N/C		Not connected	10	No pin		No pin

Connecting the Front Panel Audio Header

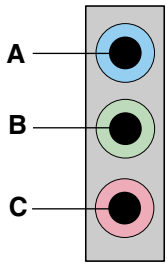
Figure 17, E on page 39 shows the location of the yellow front panel audio header. Table 7 shows the pin assignments for the front panel audio header.

Table 7. Front Panel Audio Header Signal Names

Pin	Signal Name	Pin	Signal Name
1	Port1L	2	GND
3	Port1R	4	Presence#
5	Port2R	6	Sense1 Ret
7	Sense Send	8	Key (no pin)
9	Port2L	10	Sense2 Ret

Connecting to the Flexible 6-Channel Audio System

Installing the audio driver from the Intel Express Installer CD-ROM enables the flexible, analog audio system. The back panel audio connectors support up to six speakers and are retaskable using the audio driver interface. Typical connector assignments are shown in the table in Figure 18.



Item	Description
A	Line In [retaskable as Rear Left/Right Out]
B	Line Out [Front Left/Right Out]
C	Mic In [retaskable as Center/LFE (Subwoofer) Out]

Figure 18. Back Panel Audio Connectors for Flexible 6-Channel Audio System

Connect speakers as follows:

- If using two speakers, connect the pair to connector (B).
- If using four speakers, do the following:
  - Connect the front left/right speakers to connector (B).
  - Connect the rear left/right speakers to connector (A).
  - Using the audio driver interface, retask connector (A) to be Rear Left/Right Out.
- If using six speakers, do the following:
  - Connect the front left/right speakers to connector (B).
  - Connect the rear left/right speakers to connector (A).
  - Connect the center/subwoofer speakers to connector (C).
  - Using the audio driver interface, retask connector (A) to be Rear Left/Right Out and retask connector (C) to be Center/LFE Out.

Connecting Fan and Power Cables

Connecting Fan Cables

Figure 19 shows the location of the fan headers. Connect the processor's fan heat sink cable to the 4-pin processor fan header on the board. Connect chassis fan cables to the 3-pin fan headers.

NOTE

If a 3-pin fan connector is used in a 4-pin fan header, the fan will not be controlled and will run at full speed.

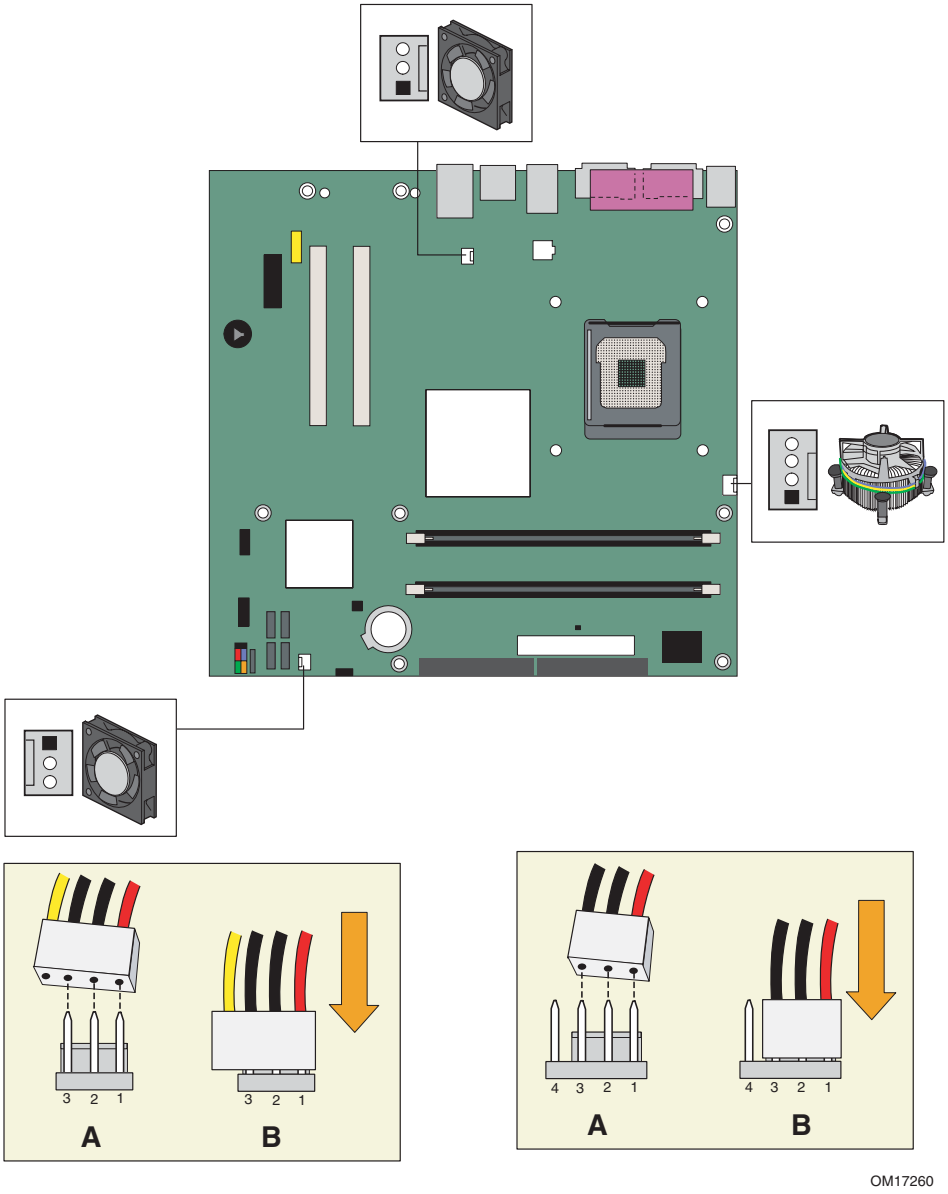


Figure 19. Location of Fan Headers

Connecting Power Cables

CAUTION

Failure to use an ATX12V power supply, or not connecting the 12 V (2x2) processor core voltage power supply connector to the desktop board may result in damage to the desktop board and/or power supply.

Connecting 2x10 Power Supply Cables

The 2x12 main power connector on the desktop board is backwards compatible with ATX12V power supplies with 2x10 power connections. Use of the 1x4 power connection is recommended with ATX12V power supplies with 2x10 connections when using PCI Express video cards that can consume up to 75 W. Figure 19 shows the location of the power connectors.

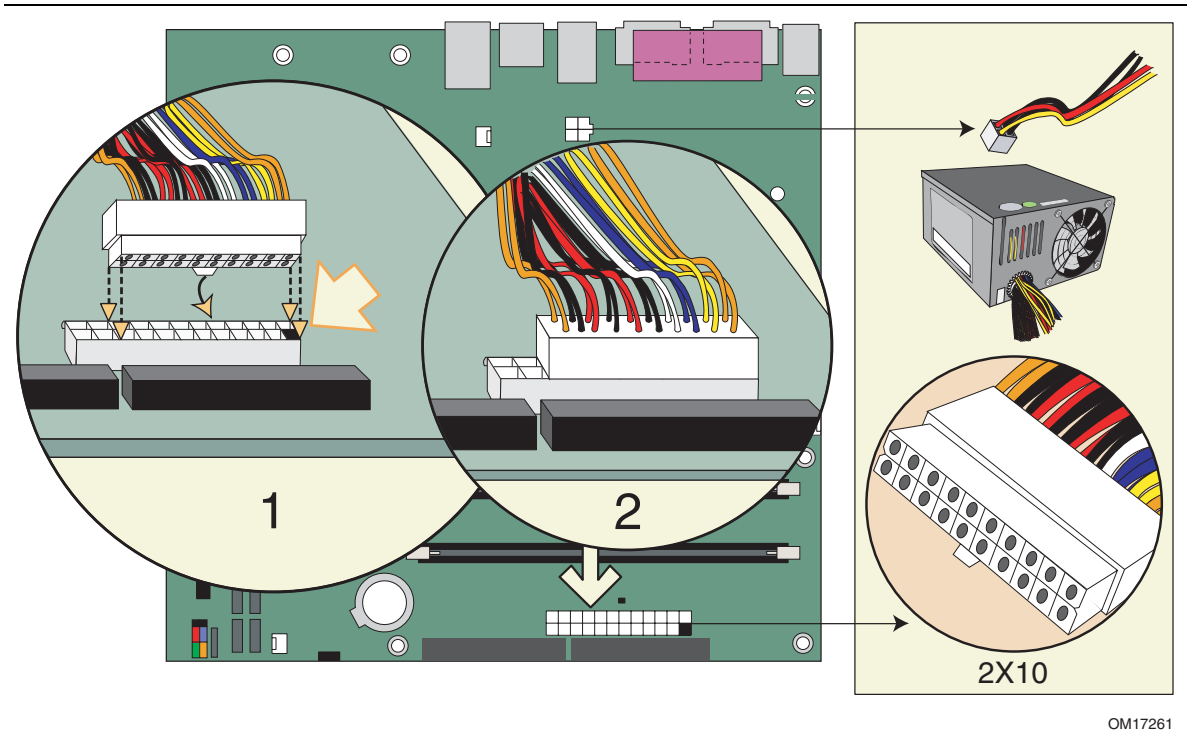


Figure 20. Connecting 2x10 Power Supply Cables

1. Observe the precautions in "Before You Begin" on page 23.
2. Connect the 1x4 power supply cable to the 1x4 connector.
3. Connect the 12 V processor core voltage power supply cable to the 2x2 connector.
4. Connect the main power supply cable to the 2x10 connector.

Connecting 2x12 Power Supply Cables

If you have a 2x12 power supply, follow the instruction below. Figure 21 shows the location of the power connectors.

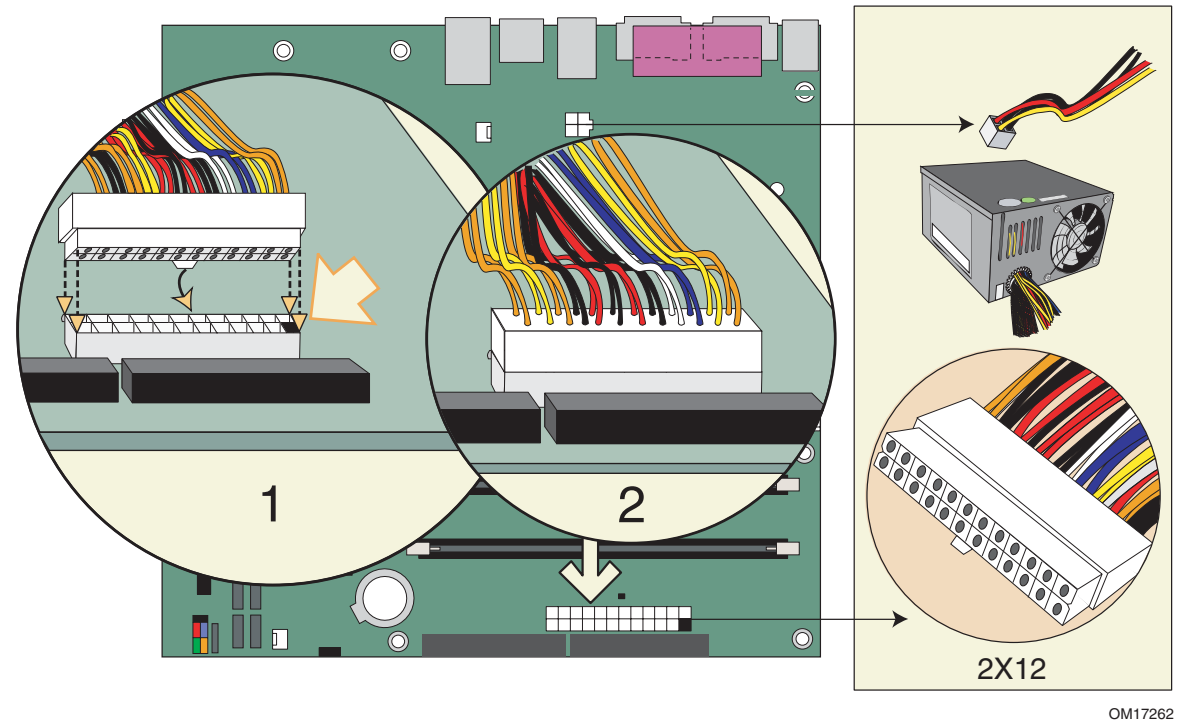
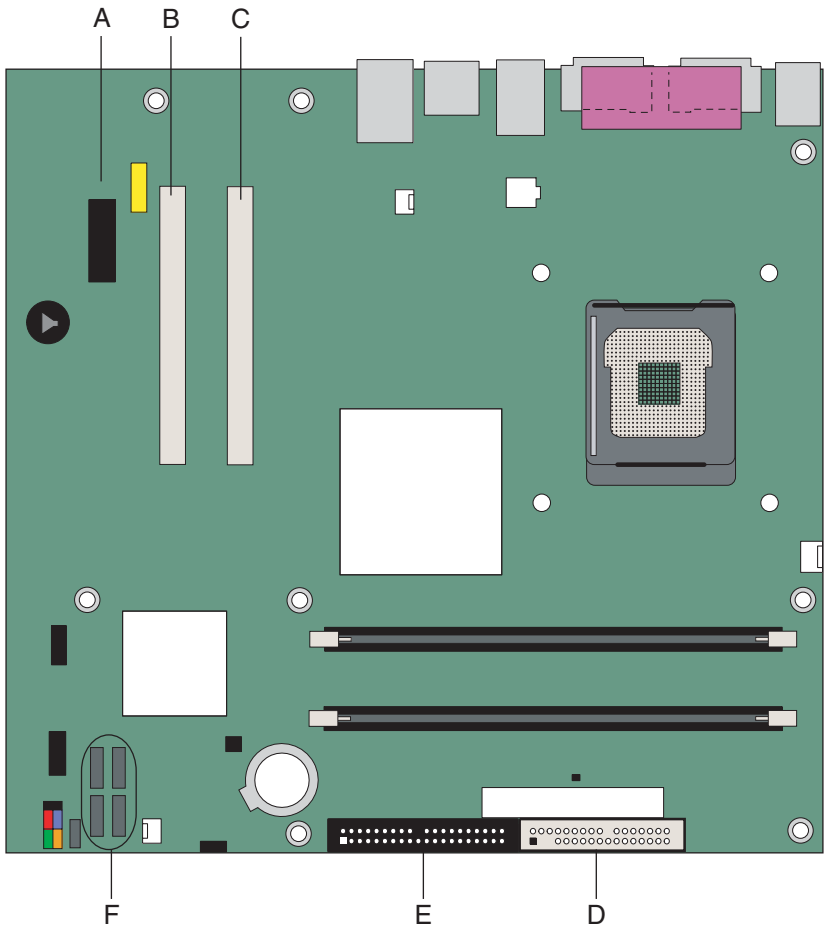


Figure 21. Connecting 2x12 Power Supply Cables

1. Observe the precautions in "Before You Begin" on page 23.
2. Connect the 12 V processor core voltage power supply cable to the 2x2 connector.
3. Connect the main power supply cable to the 2x12 connector.

PCI Bus Add-In Card Connectors

Figure 22 shows the location of the PCI bus add-in card connectors, PCI Express x1 add-in card connector, and peripheral interface connectors for the desktop board.



Item	Description
A	PCI Express x1 connectors
B	PCI bus add-in card connector 2 (SMBUS routed)
C	PCI bus add-in card connector 1
D	Diskette drive connector
E	IDE connector
F	Serial ATA connectors

Figure 22. Location of the PCI Bus Add-in Card and Peripheral Interface Connectors

Setting the BIOS Configuration Jumper Block

CAUTION

Always turn off the power and unplug the power cord from the computer before changing the jumper. Moving the jumper with the power on may result in unreliable computer operation.

Figure 23 shows the location of the desktop board's BIOS configuration jumper.

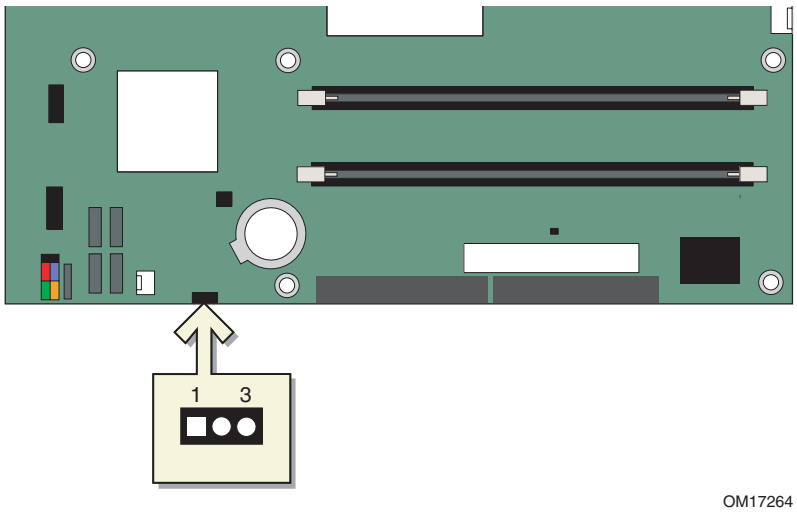


Figure 23. Location of the BIOS Configuration Jumper Block

The three-pin BIOS jumper block enables all board configurations to be done in BIOS Setup. Table 8 shows the jumper settings for the Setup program modes.

Table 8. Jumper Settings for the BIOS Setup Program Modes

Jumper Setting	Mode	Description
1 3	Normal (default) (1-2)	The BIOS uses the current configuration and passwords for booting.
1 3	Configure (2-3)	After the Power-On Self-Test (POST) runs, the BIOS displays the Maintenance Menu. Use this menu to clear passwords.
1 3	Recovery (None)	The BIOS recovers data from a recovery diskette in the event of a failed BIOS update.

Clearing Passwords

This procedure assumes that the board is installed in the computer and the configuration jumper block is set to normal mode.

1. Observe the precautions in "Before You Begin" on page 23.
2. Turn off all peripheral devices connected to the computer. Turn off the computer. Disconnect the computer's power cord from the AC power source (wall outlet or power adapter).
3. Remove the computer cover.
4. Find the configuration jumper block (see Figure 23).
5. Place the jumper on pins 2-3 as shown below.

6. Replace the cover, plug in the computer, turn on the computer, and allow it to boot.
7. The computer starts the Setup program. Setup displays the Maintenance menu.
8. Use the arrow keys to select Clear Passwords. Press <Enter> and Setup displays a pop-up screen requesting that you confirm clearing the password. Select Yes and press <Enter>. Setup displays the maintenance menu again.
9. Press <F10> to save the current values and exit Setup.
10. Turn off the computer. Disconnect the computer's power cord from the AC power source.
11. Remove the computer cover.
12. To restore normal operation, place the jumper on pins 1-2 as shown below.

13. Replace the cover, plug in the computer, and turn on the computer.

Back Panel Connectors

NOTE

The line out connector, located on the back panel, is designed to power either headphones or amplified speakers only. Poor audio quality may occur if passive (non-amplified) speakers are connected to this output.

Figure 24 shows the location of the back panel connectors.

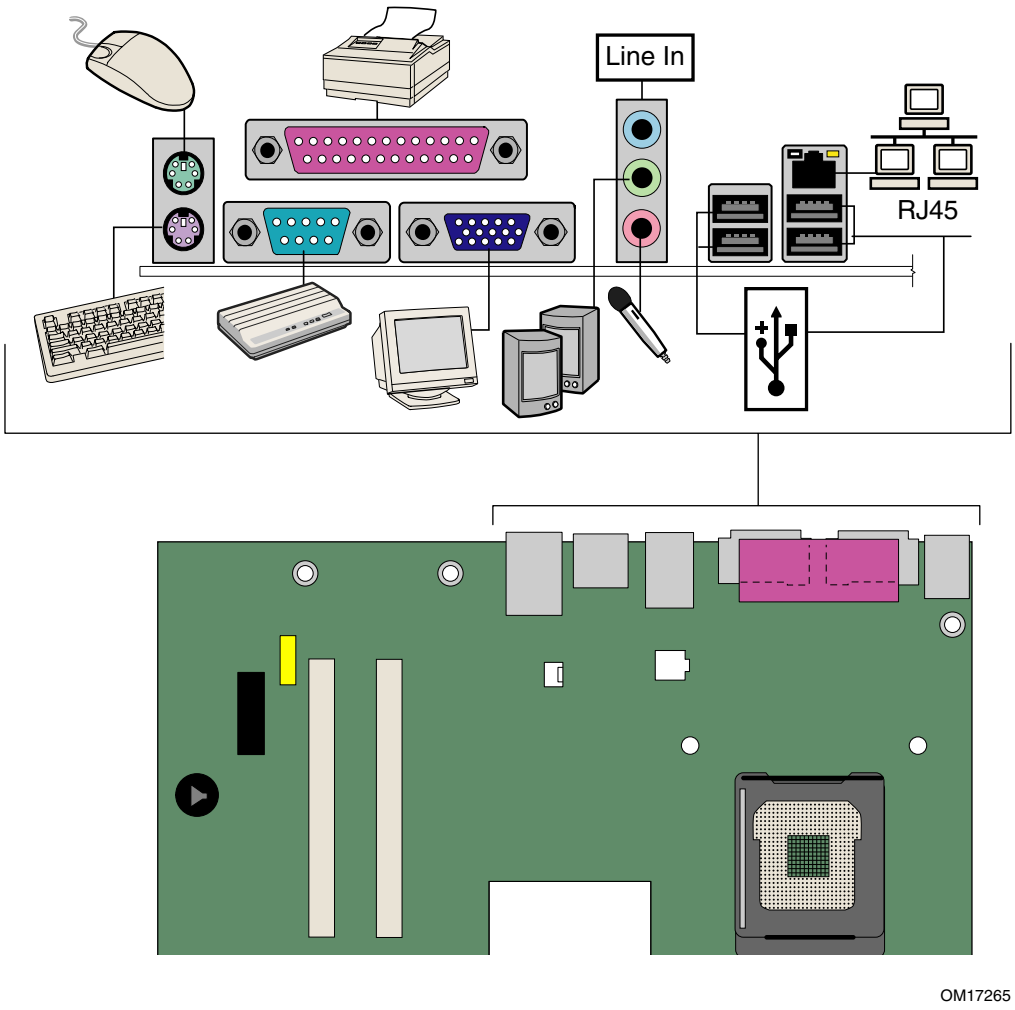


Figure 24. Back Panel Connectors

Replacing the Battery

A coin-cell battery (CR2032) powers the real-time clock and CMOS memory. When the computer is not plugged into a wall socket, the battery has an estimated life of three years. When the computer is plugged in, the standby current from the power supply extends the life of the battery. The clock is accurate to ± 13 minutes/year at 25 ºC with 3.3 VSB applied.

When the voltage drops below a certain level, the BIOS Setup program settings stored in CMOS RAM (for example, the date and time) might not be accurate. Replace the battery with an equivalent one. Figure 25 on page 53 shows the location of the battery.

CAUTION

Risk of explosion if the battery is replaced with an incorrect type. Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.

PRÉCAUTION

Risque d'explosion si la pile usagée est remplacée par une pile de type incorrect. Les piles usagées doivent être recyclées dans la mesure du possible. La mise au rebut des piles usagées doit respecter les réglementations locales en vigueur en matière de protection de l'environnement.

FORHOLDSREGEL

Eksplosionsfare, hvis batteriet erstattes med et batteri af en forkert type. Batterier bør om muligt genbruges. Bortskaffelse af brugte batterier bør foregå i overensstemmelse med gældende miljølovgivning.

OBS!

Det kan oppstå eksplosjonsfare hvis batteriet skiftes ut med feil type. Brukte batterier bør kastes i henhold til gjeldende miljølovgivning.

VIKTIGT!

Risk för explosion om batteriet ersätts med felaktig batterityp. Batterier ska kasseras enligt de lokala miljövårdsbestämmelserna.

VARO

Räjähdysvaara, jos pariston tyyppi on väärä. Paristot on kierrätettävä, jos se on mahdollista. Käytetyt paristot on hävitettävä paikallisten ympäristömääräysten mukaisesti.

VORSICHT

Bei falschem Einsetzen einer neuen Batterie besteht Explosionsgefahr. Die Batterie darf nur durch denselben oder einen entsprechenden, vom Hersteller empfohlenen Batterietyp ersetzt werden. Entsorgen Sie verbrauchte Batterien den Anweisungen des Herstellers entsprechend.

AVVERTIMENTO

Esiste il pericolo di un esplosione se la pila non viene sostituita in modo corretto. Utilizzare solo pile uguali o di tipo equivalente a quelle consigliate dal produttore. Per disfarsi delle pile usate, seguire le istruzioni del produttore.

PRECAUCIÓN

Existe peligro de explosión si la pila no se cambia de forma adecuada. Utilice solamente pilas iguales o del mismo tipo que las recomendadas por el fabricante del equipo. Para deshacerse de las pilas usadas, siga igualmente las instrucciones del fabricante.

WAARSCHUWING

Er bestaat ontploffingsgevaar als de batterij wordt vervangen door een onjuist type batterij. Batterijen moeten zoveel mogelijk worden gerecycled. Houd u bij het weggooien van gebruikte batterijen aan de plaatselijke milieuwetgeving.

ATENÇÃO

Haverá risco de explosão se a bateria for substituída por um tipo de bateria incorreto. As baterias devem ser recicladas nos locais apropriados. A eliminação de baterias usadas deve ser feita de acordo com as regulamentações ambientais da região.

AŚCIAROŽZNAŚĆ

Існуе рызыка выбуху, калі заменены акумулятар неправільнага тыпу. Акумулятары павінны, па магчымасці, перепрацоўвацца. Пазбаўляцца ад старых акумулятараў патрэбна згодна з мясцовым заканадаўствам па экалогіі.

UPOZORNÌNÍ

V případě výměny baterie za nesprávný druh může dojít k výbuchu. Je-li to možné, baterie by měly být recyklovány. Baterie je třeba zlikvidovat v souladu s místními předpisy o životním prostředí.

Προσοχή

Υπάρχει κίνδυνος για έκρηξη σε περίπτωση που η μπαταρία αντικατασταθεί από μία λανθασμένου τύπου. Οι μπαταρίες θα πρέπει να ανακυκλώνονται όταν κάτι τέτοιο είναι δυνατό. Η απόρριψη των χρησιμοποιημένων μπαταριών πρέπει να γίνεται σύμφωνα με τους κατά τόπο περιβαλλοντικούς κανονισμούς.

VIGYÁZAT

Ha a telepet nem a megfelelő típusú telepre cseréli, az felrobbanhat. A telepeket lehetőség szerint újra kell hasznosítani. A használt telepeket a helyi környezetvédelmi előírásoknak megfelelően kell kiselejtezni.

注意

異なる種類の電池を使用すると、爆発の危険があります。リサイクル
が可能な地域であれば、電池をリサイクルしてください。使用後の電
池を破棄する際には、地域の環境規制に従ってください。

AWAS

Risiko letupan wujud jika bateri digantikan dengan jenis yang tidak betul. Bateri sepatutnya dikitar semula jika boleh. Pelupusan bateri terpakai mestilah mematuhi peraturan alam sekitar tempatan.

OSTRZEŻENIE

Istnieje niebezpieczeństwo wybuchu w przypadku zastosowania niewłaściwego typu baterii. Zużyte baterie należy w miarę możliwości utylizować zgodnie z odpowiednimi przepisami ochrony środowiska.

PRECAUŢIE

Risc de explozie, dacă bateria este înlocuită cu un tip de baterie necorespunzător. Bateriile trebuie reciclate, dacă este posibil. Depozitarea bateriilor uzate trebuie să respecte reglementările locale privind protecţia mediului.

ВНИМАНИЕ

При использовании батареи несоответствующего типа существует риск ее взрыва. Батареи должны быть утилизированы по возможности. Утилизация батарей должна проводится по правилам, соответствующим местным требованиям.

UPOZORNENIE

Ak batériu vymeníte za nesprávny typ, hrozí nebezpečenstvo jej výbuchu.
Batérie by sa mali podľa možnosti vždy recyklovať. Likvidácia použitých batérií sa musí vykonávať v súlade s miestnymi predpismi na ochranu životného prostredia.

POZOR

Zamenjava baterije z baterijo drugačnega tipa lahko povzroči eksplozijo.
Če je mogoče, baterije reciklirajte. Rabljene baterije zavrzite v skladu z lokalnimi okoljevarstvenimi predpisi.

การระวัง

ระวังการระเบิดที่เกิดจากเปลี่ยนแบตเตอรี่ผิดประเภท หากเป็นไปได้ ควรนำแบตเตอรี่ไปรีไซเคิล การทิ้งแบตเตอรี่ใช้แล้วต้องเป็นไปตามกฎข้อบังคับด้านสิ่งแวดล้อมของท้องถิ่น.

UYARI

Yanlış türde pil takıldığında patlama riski vardır. Piller mümkün olduğunda geri dönüştürülmelidir. Kullanılmış piller, yerel çevre yasalarına uygun olarak atılmalıdır.

ОСТОРОГА

Використовуйте батареї правильного типу, інакше існуватиме ризик вибуху.
Якщо можливо, використані батареї слід утилізувати. Утилізація використаних батарей має бути виконана згідно місцевих норм, що регулюють охорону довкілля.

UPOZORNĚNÍ

V případě výměny baterie za nesprávný druh může dojít k výbuchu. Je-li to možné, baterie by měly být recyklovány. Baterie je třeba zlikvidovat v souladu s místními předpisy o životním prostředí.

ETTEVAATUST

Kui patarei asendatakse uue ebasobivat tüüpi patareiga, võib tekkida plahvatusoht. Tühjad patareid tuleb võimaluse korral viia vastavasse kogumispunkti. Tühjade patareide äraviskamisel tuleb järgida kohalikke keskkonnakaitse alaseid reegleid.

FIGYELMEZTETÉS

Ha az elemet nem a megfelelő típusúra cseréli, felrobbanhat. Az elemeket lehetőség szerint újra kell hasznosítani. A használt elemeket a helyi környezetvédelmi előírásoknak megfelelően kell kiselejtezni.

UZMANĪBU

Pastāv eksplozijas risks, ja baterijas tiek nomainītas ar nepareiza veida baterijām. Ja iespējams, baterijas vajadzētu nodot attiecīgos pieņemšanas punktos. Bateriju izmešanai atkritumos jānotiek saskaņā ar vietējiem vides aizsardzības noteikumiem.

DĖMESIO

Naudojant netinkamo tipo baterijas įrenginys gali sprogti. Kai tik įmanoma, baterijas reikia naudoti pakartotinai. Panaudotas baterijas išmesti būtina pagal vietinius aplinkos apsaugos nuostatus.

ATTENZJONI

Riskju ta' splużjoni jekk il-batterija tinbidel b'tip ta' batterija mhux korrett. Il-batteriji għandhom jiġu riċiklati fejn hu possibbli. Ir-rimi ta' batteriji użati għandu jsir skond ir-regolamenti ambjentali lokali.

OSTRZEŻENIE

Ryzyko wybuchu w przypadku wymiany na baterie niewłaściwego typu. W miarę możliwości baterie należy poddać recyklingowi. Zużytych baterii należy pozbywać się zgodnie z lokalnie obowiązującymi przepisami w zakresie ochrony środowiska.

UPOZORNENIE

Ak batériu vymeníte za nesprávny typ, hrozí nebezpečenstvo výbuchu. Batérie by sa mali podľa možnosti vždy recyklovať. Likvidácia použitých batérií sa musí vykonať v súlade s miestnymi predpismi na ochranu životného prostredia.

คำเตือน

ระวังการระเบิดที่เกิดจากเปลี่ยนแบตเตอรี่ผิดประเภท หากเป็นไปได้ ควรนำแบตเตอรี่ไปรีไซเคิล การทิ้งแบตเตอรี่ใช้แล้วต้องเป็นไปตามกฎข้อบังคับด้านสิ่งแวดล้อมของท้องถิ่น.

DİKKAT

Yalnış türde pil kullanıldığında patlama tehlikesi var. Piller mümkün olduğunca geri dönüşüme kazandırılmalıdır. Kullanılmış piller yerel çevre koruma düzenlemelerine uygun olarak bertaraf edilmelidir.

To replace the battery, follow these steps:

1. Observe the precautions in "Before You Begin" (see page 23).
2. Turn off all peripheral devices connected to the computer. Disconnect the computer's power cord from the AC power source (wall outlet or power adapter).
3. Remove the computer cover.
4. Locate the battery on the board (see Figure 25).
5. With a medium flat-bladed screwdriver, gently pry the battery free from its connector. Note the orientation of the "+" and "-" on the battery.
6. Install the new battery in the connector, orienting the "+" and "-" correctly.
7. Replace the computer cover.

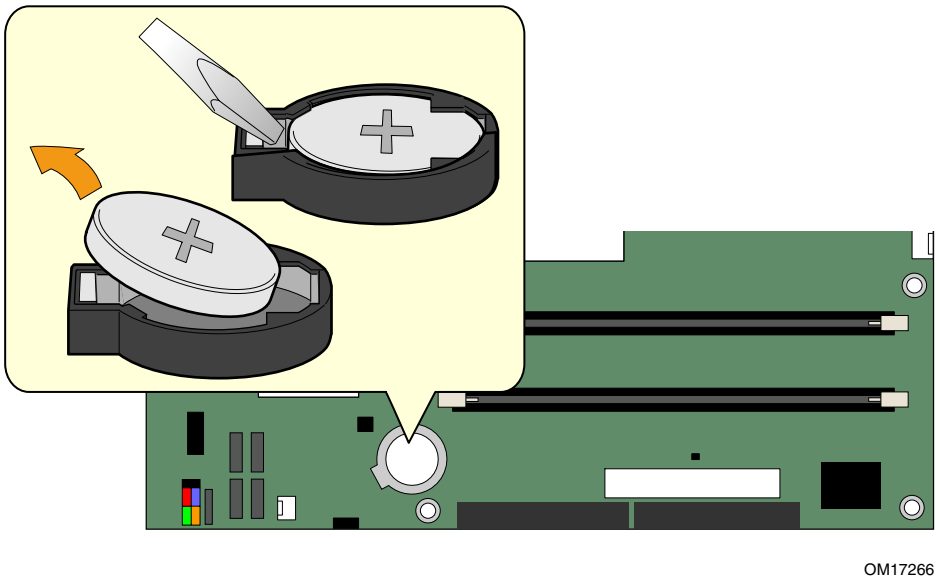


Figure 25. Removing the Battery

3 BIOS

The BIOS Setup program can be used to view and change the BIOS settings for the computer. The BIOS Setup program is accessed by pressing the <F2> key after the Power-On Self-Test (POST) memory test begins and before the operating system boot begins.

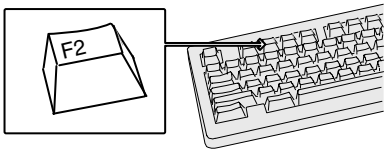


Figure 26. F2 Key

This chapter tells you how to update the BIOS by either using the Intel Express BIOS Update utility or the Iflash Memory Update utility, and how to recover the BIOS if an update fails.

Updating the BIOS with the Intel® Express BIOS Update Utility

With the Intel Express BIOS Update utility you can update the system BIOS while in the Windows environment. The BIOS file is included in an automated update utility that combines the functionality of the Intel® Flash Memory Update Utility and the ease-of use of Windows-based installation wizards.

To update the BIOS with the Intel Express BIOS Update utility:

1. Go to the Intel World Wide Web site:
   http://support.intel.com/support/motherboards/desktop/
2. Navigate to the D910GLDW page, click "[view] Latest BIOS updates," and select the Express BIOS Update utility file.
3. Download the file to your hard drive. (You can also save this file to a diskette. This is useful if you are updating the BIOS for multiple identical systems.)
4. Close all other applications. This step is required. Your system will be rebooted at the last Express BIOS Update window.
5. Double-click the executable file from the location on your hard drive where it was saved. This runs the update program.
6. Follow the instructions provided in the dialog boxes to complete the BIOS update.

Updating the BIOS with the Iflash Memory Update Utility

With the Iflash BIOS update utility you can update the system BIOS from a floppy disk or other bootable media. The utility available from the Web provides a simple method for creating a bootable flash memory update floppy that will automatically update your BIOS.

Obtaining the BIOS Update File

You can update to a new version of the BIOS by using the BIOS update file. The BIOS update file is a compressed self-extracting archive that contains all the files you need to update the BIOS. The BIOS update file contains:

- New BIOS files
- BIOS recovery files
- Intel Flash Memory Update Utility

You can obtain the BIOS update file through your computer supplier or by navigating to the Desktop Board D910GLDW page on the Intel World Wide Web site at:

http://support.intel.com/support/motherboards/desktop

Navigate to the D910GLDW page, click "[view] Latest BIOS updates," and select the Iflash BIOS Update utility file.

NOTE

Review the instructions distributed with the update utility before attempting a BIOS update.

The Iflash Memory Update utility allows you to:

- Update the BIOS in flash memory
- Update the language section of the BIOS

Updating the BIOS

CAUTION

The AUTOEXEC.BAT file provided with the update files updates the BIOS. Do not interrupt the process or the system may not function.

1. Boot the computer with the BIOS update diskette in drive A. During system boot, the AUTOEXEC.BAT file provided with the update files will automatically run the BIOS update process.
2. When the update process is complete, the monitor will display a message telling you to remove the diskette and to reboot the system.
3. As the computer boots, check the BIOS identifier (version number) to make sure the update was successful. If a logo appears, press <Esc> to view the POST messages.

Recovering the BIOS

It is unlikely that anything will interrupt the BIOS update; however, if an interruption occurs, the BIOS could be damaged. The following steps explain how to recover the BIOS if an update fails. The following procedure uses recovery mode for the Setup program. See page 46 for more information on Setup modes.

NOTE

Because of the small amount of code available in the boot block area, there is no video support. You will not see anything on the screen during this procedure. Monitor the procedure by listening to the speaker and looking at the diskette drive LED.

1. Turn off the computer, disconnect the computer's power cord, and disconnect all external peripherals.
2. Remove the computer cover and locate the configuration jumper block (see Figure 23).
3. Remove the jumper from all pins as shown below to set recovery mode for Setup.

4. Insert the bootable BIOS update diskette into diskette drive A.
5. Replace the computer cover, connect the power cord, turn on the computer, and allow it to boot. The recovery process will take a few minutes.
6. Listen to the speaker:
   - Upon applying power, drive A will begin to show activity. In about a minute, two beeps are heard and drive A activity ceases (temporarily) indicating the successful recovery of the BIOS core. Drive A activity will begin again followed by two more beeps indicating the successful recovery of the boot block. This sequence of events indicates a successful BIOS recovery.
   - A series of continuous beeps indicates a failed BIOS recovery.
7. If recovery fails, return to step 1 and repeat the recovery process.
8. If recovery is successful, turn off the computer, and disconnect its power cord.
9. Remove the computer cover and continue with the following steps.
10. On the jumper block, reinstall the jumper back on pins 1-2 as shown below to set normal mode for Setup.

11. Leave the update diskette in drive A, replace the computer cover, and connect the computer's power cord.
12. Turn on the computer and continue with the BIOS update.

A Error Messages and Indicators

Desktop Board D910GLDW reports POST errors in two ways:

- By sounding a beep code
- By displaying an error message on the monitor

BIOS Beep Code

The BIOS issues a beep code during POST if a memory error occurred. If a repeating beep code is heard and the desktop board does not boot, see Table 9 for troubleshooting tips.

Table 9. BIOS Beep Code

Beeps	Description	Troubleshooting Tips
1 or 3	Memory error	Indicates a problem during detection of the DDR SDRAM memory device or an external ROM module that does not properly checksum to zero. Ensure that the DIMMS are properly installed and that they are the type specified on page 9.

BIOS Error Messages

When a recoverable error occurs during the POST, the BIOS displays an error message describing the problem. Table 10 gives an explanation of the BIOS error messages.

Table 10. BIOS Error Messages

Error Message	Explanation
GA20 Error	An error occurred with Gate-A20 when switching to protected mode during the memory test.
Pri Master HDD Error Pri Slave HDD Error Sec Master HDD Error Sec Slave HDD Error	Could not read sector from corresponding drive.
Pri Master Drive - ATAPI Incompatible Pri Slave Drive - ATAPI Incompatible Sec Master Drive - ATAPI Incompatible Sec Slave Drive - ATAPI Incompatible	Corresponding drive is not an ATAPI device. Run Setup to make sure device is selected correctly.
A: Drive Error B: Drive Error	No response from the diskette drive.
CMOS Battery Low	The battery may be losing power. Replace the battery soon.
CMOS Display Type Wrong	The display type is different than what has been stored in CMOS. Check Setup to make sure type is correct.
CMOS Checksum Bad	The CMOS checksum is incorrect. CMOS memory may have been corrupted. Run Setup to reset values.
CMOS Settings Wrong	CMOS values are not the same as the last boot. These values have either been corrupted or the battery has failed.

continued

Table 43. BIOS Error Messages (continued)

Error Message	Explanation
CMOS Date/Time Not Set	The time and/or date values stored in CMOS are invalid. Run Setup to set correct values.
DMA Error	Error during read/write test of DMA controller.
FDC Failure	Error occurred trying to access diskette drive controller.
HDC Failure	Error occurred trying to access hard disk controller.
Checking NVRAM.....	NVRAM is being checked to see if it is valid.
Update OK!	NVRAM was invalid and has been updated.
Updated Failed	NVRAM was invalid but was unable to be updated.
Keyboard Is Locked	The system keyboard lock is engaged. The system must be unlocked to continue to boot.
Keyboard Error	Error in the keyboard connection. Make sure keyboard is connected properly.
KB/Interface Error	Keyboard interface test failed.
Memory Size Decreased	Memory size has decreased since the last boot. If no memory was removed, then memory may be bad.
Memory Size Increased	Memory size has increased since the last boot. If no memory was added, there may be a problem with the system.
Memory Size Changed	Memory size has changed since the last boot. If no memory was added or removed, then memory may be bad.
No Boot Device Available	System did not find a device to boot.
Off Board Parity Error	A parity error occurred on an offboard card. This error is followed by an address.
On Board Parity Error	A parity error occurred in onboard memory. This error is followed by an address.
Parity Error	A parity error occurred in onboard memory at an unknown address.
NVRAM / CMOS / PASSWORD cleared by Jumper	NVRAM, CMOS, and passwords have been cleared. The system should be powered down and the jumper removed.
<CTRL_N> Pressed	CMOS is ignored and NVRAM is cleared. User must enter Setup.

B Regulatory Compliance

This appendix contains the following regulatory compliance information for the Desktop Board D910GLDW:

- Safety regulations
- European Union Declaration of Conformity statement
- Product Ecology statements
- Electromagnetic Compatibility (EMC) regulations
- Product certification markings

Safety Regulations

The Desktop Board D910GLDW complies with the safety regulations stated in Table 11 when correctly installed in a compatible host system.

Table 11. Safety Regulations

Regulation	Title
UL 60950-1:2003/ CSA C22.2 No. 60950-1-03	Information Technology Equipment – Safety - Part 1: General Requirements (USA and Canada)
EN 60950-1:2002	Information Technology Equipment – Safety - Part 1: General Requirements (European Union)
IEC 60950-1:2001, First Edition	Information Technology Equipment – Safety - Part 1: General Requirements (International)

European Union Declaration of Conformity Statement

We, Intel Corporation, declare under our sole responsibility that the product Intel® Desktop Board D910GLDW is in conformity with all applicable essential requirements necessary for CE marking, following the provisions of the European Council Directive 89/336/EEC (EMC Directive) and Council Directive 73/23/EEC (Safety/Low Voltage Directive).

The product is properly CE marked demonstrating this conformity and is for distribution within all member states of the EU with no restrictions.

CE

This product follows the provisions of the European Directives 89/336/EEC and 73/23/EEC.

Čeština Tento výrobek odpovídá požadavkům evropských směrnic 89/336/EEC a 73/23/EEC.

Dansk Dette produkt er i overensstemmelse med det europæiske direktiv 89/336/EEC & 73/23/EEC.

Dutch Dit product is in navolging van de bepalingen van Europees Directief 89/336/EEC & 73/23/EEC.

Eesti Antud toode vastab Euroopa direktiivides 89/336/EEC ja 73/23/EEC kehtestatud nõuetele.

Suomi Tämä tuote noudattaa EU-direktiivin 89/336/EEC & 73/23/EEC määräyksiä.

Français Ce produit est conforme aux exigences de la Directive Européenne 89/336/EEC & 73/23/EEC.

Deutsch Dieses Produkt entspricht den Bestimmungen der Europäischen Richtlinie 89/336/EEC & 73/23/EEC.

Ελληνικά Το παρόν προϊόν ακολουθεί τις διατάξεις των Ευρωπαϊκών Οδηγιών 89/336/ΕΟΚ και 73/23/ΕΟΚ.

Magyar E termék megfelel a 89/336/EEC és 73/23/EEC Európai Irányelv előírásainak.

Icelandic Þessi vara stenst reglugerð Evrópska Efnahags Bandalagsins númer 89/336/ EEC & 73/23/EEC.

Italiano Questo prodotto è conforme alla Direttiva Europea 89/336/EEC & 73/23/EEC.

Latviešu Šis produkts atbilst Eiropas Direktīvu 89/336/EEC un 73/23/EEC noteikumiem.

Lietuvių Šis produktas atitinka Europos direktyvų 89/336/EEC ir 73/23/EEC nuostatas.

Malti Dan il-prodott hu konformi mal-provvedimenti tad-Direttivi Ewropej 89/336/EEC u 73/23/EEC.

Norsk Dette produktet er i henhold til bestemmelsene i det europeiske direktivet 89/336/ EEC & 73/23/EEC.

Polski Niniejszy produkt jest zgodny z postanowieniami Dyrektyw Unii Europejskiej 89/336/EWG i 73/23/EWG.

Portuguese Este produto cumpre com as normas da Diretiva Européia 89/336/EEC & 73/23/EEC.

Español Este producto cumple con las normas del Directivo Europeo 89/336/EEC & 73/23/EEC.

Slovensky..Tento produkt je v súlade s ustanoveniami európskych direktív 89/336/EEC a 73/23/EEC.

Slovenščina Izdelek je skladen z določbami evropskih direktiv 89/336/EGS in 73/23/EGS.

Svenska Denna produkt har tillverkats i enlighet med EG-direktiv 89/336/EEC & 73/23/EEC.

Türkçe Bu ürün, Avrupa Birliği'nin 89/336/EEC ve 73/23/EEC yönergeleriyle.

Product Ecology Statements

The following information is provided to address worldwide product ecology concerns and regulations.

Disposal Considerations

This product contains the following materials that may be regulated upon disposal: lead solder on the printed wiring board assembly.

Recycling Considerations

Intel encourages its customers to recycle its products and their components (e.g., batteries, circuit boards, plastic enclosures, etc.) whenever possible. In the U.S., a list of recyclers in your area can be found at:

http://www.eiae.org

In the absence of a viable recycling option, products and their components must be disposed of in accordance with all applicable local environmental regulations.

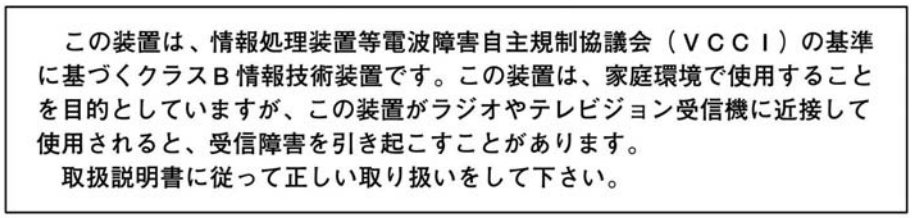
EMC Regulations

Desktop Board D910GLDW complies with the EMC regulations stated in Table 12 when correctly installed in a compatible host system.

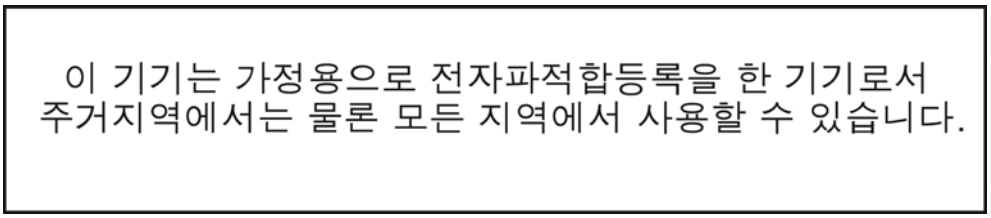
Table 12. EMC Regulations

Regulation	Title
FCC Class B	Title 47 of the Code of Federal Regulations, Parts 2 and 15, Subpart B, Radio Frequency Devices. (USA)
ICES-003 (Class B)	Interference-Causing Equipment Standard, Digital Apparatus. (Canada)
EN55022: 1998 (Class B)	Limits and methods of measurement of Radio Interference Characteristics of Information Technology Equipment. (European Union)
EN55024: 1998	Information Technology Equipment – Immunity Characteristics Limits and methods of measurement. (European Union)
AS/NZS 3548 (Class B)	Australian Communications Authority, Standard for Electromagnetic Compatibility. (Australia and New Zealand)
CISPR 22, 3rd Edition, (Class B)	Limits and methods of measurement of Radio Disturbance Characteristics of Information Technology Equipment. (International)
CISPR 24: 1997	Information Technology Equipment – Immunity Characteristics – Limits and Methods of Measurement. (International)
VCCI (Class B)	Voluntary Control for Interference by Information Technology Equipment (Japan)

Japanese Kanji statement translation: this is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.



Korean Class B statement translation: this is household equipment that is certified to comply with EMC requirements. You may use this equipment in residential environments and other non-residential environments.



Product Certification Markings (Board Level)

Desktop Board D910GLDW has the product certification markings shown in Table 13:

Table 13. Product Certification Markings

Description	Mark
UL joint US/Canada Recognized Component mark. Includes adjacent UL file number for Intel desktop boards: E210882 (component side).	
FCC Declaration of Conformity logo mark for Class B equipment; includes Intel name and D910GLDW model designation (component side).	
CE mark. Declares compliance to European Union (EU) EMC directive (89/336/EEC) and Low Voltage directive (73/23/EEC) (component side). The CE mark should also be on the shipping container.	
Australian Communications Authority (ACA) C-tick mark. Includes adjacent Intel supplier code number, N-232. The C-tick mark should also be on the shipping container.	
Japan VCCI (Voluntary Control Council for Interference) mark.	
S. Korea MIC (Ministry of Information and Communication) mark.	
Printed wiring board manufacturer's recognition mark: consists of a unique UL recognized manufacturer's logo, along with a flammability rating (solder side).	V-0 or 94V-0