Intel® Desktop Board D865GBF
Integration Guide

Building your own computer? Look here for guidance in component selection, assembly, configuration and troubleshooting.

This integration guide is arranged in chronological order and covers integration procedures for the Intel® Desktop Board D865GBF.

Component Selection

Chassis
Chassis for platforms based on the Intel® Pentium® 4 and Celeron® processors in the 478-pin package must have an ATX12V power supply and improved ventilation. We encourage integrators using these boards to choose a chassis that complies with the ATX 2.01 (or later) specification.

Systems that contain Intel® Pentium® 4 processors operating at 3 GHz or higher require a heatsink and chassis that provide airflow adequate to ensure appropriate internal ambient temperature and cooling of the components in the system.

The fan heatsink must provide appropriate airflow for the processor and nearby board components. The boxed Intel® Pentium® 4 processors at 3 GHz or higher ship with a heatsink that supplies appropriate airflow for the processor and nearby board components.

Failure to use a fan heatsink and a chassis with appropriate airflow may result in reduced performance or, in some instances, damage to the motherboard. Refer to the System Cooling Requirements document (http://developer.intel.com/design/motherbd/cooling.htm) for a list of chassis that have been tested with Intel® Desktop Boards.

ATX12V power supply
ATX12V compliant power supplies differ from previous ATX power supplies. The ATX12V power supply provides an additional 12V current for the processor via a 2x2 4-pin connector that is required for proper operation.

Figure 1: The 2x2 4-pin connector required for proper operation.

Processor
The fan heatsink must provide appropriate airflow for the processor and nearby board components. The boxed Intel® Pentium® 4 processors at 3 GHz or higher ship with a heatsink that supplies appropriate airflow for the processor and nearby board components.

Failure to use a fan heatsink and a chassis with appropriate airflow may result in reduced performance or, in some instances, damage to the motherboard.

Please see the Supported processor list (http://developer.intel.com/design/motherbd/bf/bf_proc.htm) for more information.

System memory
Please see the list of memory modules tested with the Intel Desktop Board D865GBF
(http://developer.intel.com/design/motherbd/bf/bf_mem.htm) for more information.

Graphics adapters
Intel Desktop Board D865GBF is only compatible with 1.5V or 0.8V, 8X and 4X AGP cards.
Do not attempt to install a legacy 3.3V AGP card. The AGP connector is not mechanically or
electrically compatible with legacy 3.3V AGP cards. Use of a 3.3V AGP card will result in damage
to the board.

Hard drive
The ATA-66/100 (40-contact, 80-contact) cable included with Intel desktop boards can connect
two drives. The cable supports the ATA-66/100 transfer protocols and is backward compatible
with drives using slower IDE transfer protocols.

The included 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. Some Serial ATA drives may require a power adapter cable. Contact the
manufacturer of the SATA drive to determine the best method for powering the SATA drive.

I/O peripherals (peripheral interfaces)
Intel Desktop Boards include the following: a diskette drive interface, two PS/2 ports, one serial
port, one parallel port, USB 2.0, two IDE (ATA 100/66/33) connections and two Serial ATA
connections. Refer to the documentation that came with your board for specifications.

Supported operating systems
Windows* XP Professional and Home Editions
Windows 2000
Windows Me
Windows 98 Second Edition

Assembly

Before You Begin - Warning and Cautions
WARNING
Disconnect the desktop board's power supply from its AC power source before you connect or
disconnect cables, or install or remove any board components. Failure to do this can result in
personal injury or equipment damage. Some circuitry on the desktop board can continue to
operate even though the front panel power switch is off.

CAUTION
Electrostatic discharge (ESD) can damage desktop board components. Install the board at an
ESD-controlled workstation. If such a workstation is not available, wear an antistatic wrist strap or
touch the surface of the antistatic package before handling the board.

CAUTION
Many of the midboard and front panel connectors provide operating voltage (+5 V DC and +12 V
DC, for example) to devices inside the computer chassis, such as fans and internal peripherals.
These connectors do not have overcurrent protection. Do not use these connectors for powering
devices external to the computer chassis. A fault in the load presented by the external devices
could cause damage to the computer, the interconnecting cables, and the external devices
themselves.

Introduction
The following is a step-by-step integration guide that provides basic information needed to
correctly build an Pentium® 4 processor system based on an Intel Desktop Board D865GBF.

I/O shield installation
The board comes with an I/O shield that is used to block radio frequency transmissions, necessary to pass emissions (EMI) certification testing, protect internal components from dust and foreign objects, and promote correct airflow within the chassis.

Install the I/O shield before installing the board in the chassis. Place the shield inside the chassis as shown in the figure below. 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.
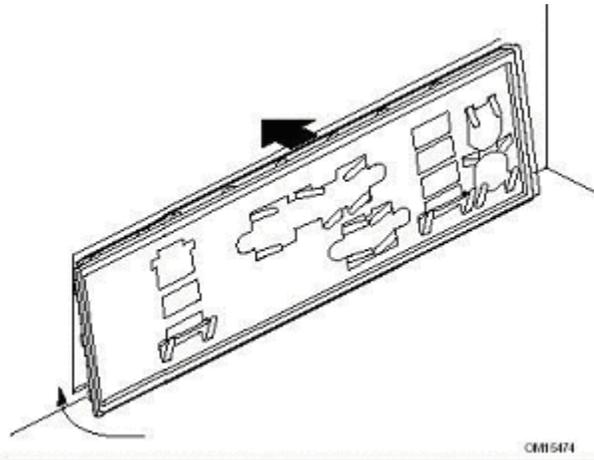

CM15474

Figure 1: Installing the I/O shield.

Installing the Desktop Board
Refer to your chassis manual for specific instructions on installing and removing the desktop board. Secure the board to the chassis using the screws provided with the chassis. Refer to the Quick Reference Guide that came with the board for the location of the screw mounting holes.

Processor installation
Refer to the Pentium® 4 Processor support site (http://support.intel.com/support/processors/pentium4/intnotes478.htm) for detailed processor installation information.

Note: The processor fan heatsink power cable should be installed into the fan power header labeled CPU Fan on the board.

The Intel Desktop Board D865GBF supports the Pentium 4 and Celeron® processors in the 478-pin package. Please see the Supported Processors list (http://developer.intel.com/design/motherbd/bf/bf_proc.htm) for more information.

Memory installation
Install memory in the DIMM slots prior to installing the AGP video card to avoid interference with the memory retention mechanism.

> The Intel Desktop Board D865GBF board has four DIMM sockets arranged as DIMM 0 and DIMM 1 in both Channel A and Channel B.

> **Dual Channel Configuration**
> Install a matched pair of DIMMs (equal in speed: 266MHz PC2100, 333MHz PC2700, or 400MHz PC3200; density: 64 MB, 128 MB, 256 MB, 512 MB, or 1 GB; and technology: 128 Mb, 256 Mb, or 512 Mb) in DIMM 0 in both Channels A and B. If additional memory

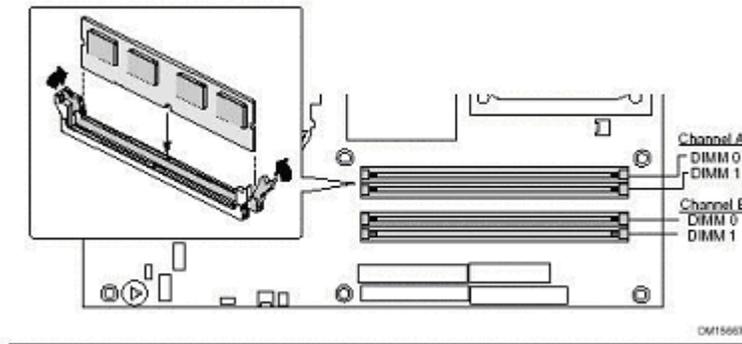is to be used, then install another matched pair of DIMMs in DIMM 1 in both Channels A and B.

Figure 2: Installing DIMMs

Notes:

- o *All other memory configurations, (i.e., a single DIMM installed in DIMM 0 of Channel A), will result in single channel memory operation.*

AGP graphics

Care must be taken when installing an AGP card into an AGP slot. When installing any AGP card in the desktop board, ensure that it is fully seated in the AGP connector before you power on the system. If the card is not fully seated in the AGP connector, an electrical short may result across the AGP slot pins. Depending on the over-current protection of the power supply, certain board components and/or traces may be damaged

For the Intel Desktop Board D865GBF, the AGP connector supports 0.8V and 1.5V 8X and 4X AGP cards. The connector is keyed so that only 0.8V and 1.5V AGP cards may be installed. It should be noted that there are currently AGP cards available that are keyed for 0.8V and 1.5V connectors, but they can be configured to run at 3.3V. It is important to only use the latest AGP cards that support 0.8V and 1.5V 8X and 4X AGP.

Attaching hard drives

ATA Drives

Intel Desktop Boards support Ultra ATA/66 and Ultra ATA/100 transfer rates. If you are using an Ultra ATA/66 or Ultra ATA/100 hard drive, you must use the 40-pin, 80-conductor IDE cable. Both the board and the cable are backward compatible with previous IDE transfer protocols. Install the IDE cable in the following orientation:

1. Attach the cable end with the single connector (A) to the board.

2. Attach the cable end with the two closely spaced connectors (B) to the drives.
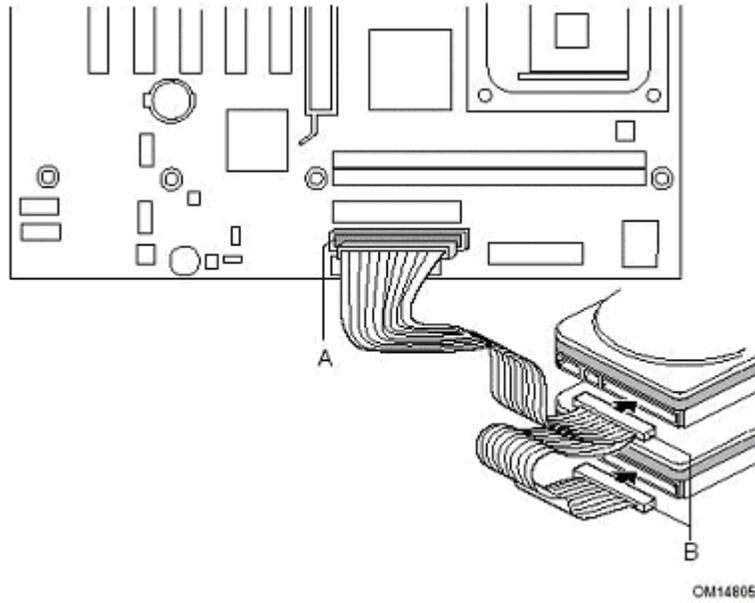
Figure 4: Attaching an IDE drive

Serial ATA Drive (Optional)

For the Intel® Desktop Board D865GBF supporting Serial ATA, one SATA cable is included. The 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. Some Serial ATA drives may require a power adapter cable. Contact the manufacturer of the SATA drive to determine the best method for powering the SATA drive.

For correct SATA cable function:

1. Attach a cable end to the connector (A) on the board.

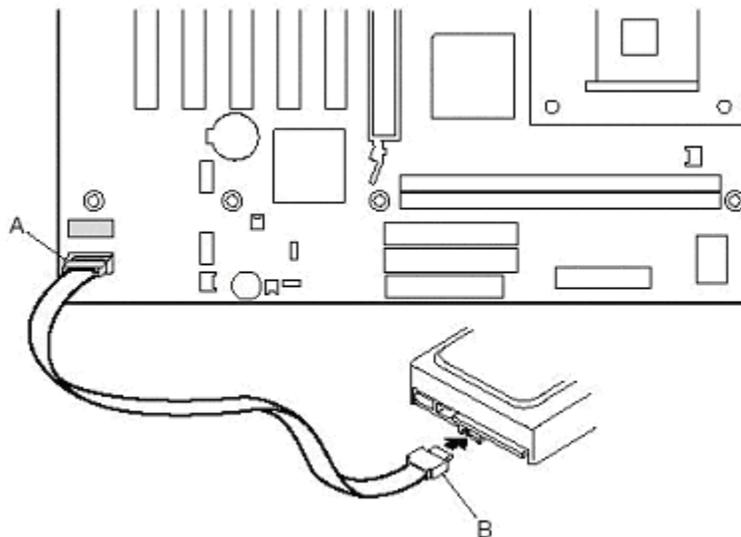2. Attach the other cable end (B) to the drive.

Figure 5: Attaching the Serial ATA cable.

Intel does not support the use of IDE to serial-ATA converters, however limited testing indicates that such converters may work with the Serial ATA feature of Intel® Desktop Boards. The IDE drive may need to be configured as a SINGLE drive (usually by setting a jumper). The drive may not be recognized by the system if it is set as Master, Slave, or Cable Select (CS).

For additional information on Serial ATA, refer to Information on Using Serial ATA Hard Drives (http://support.intel.com/support/chipsets/serial_dir.htm).

CD-ROM audio connector
Some older operating systems require that an additional audio cable be connected from the CD-ROM drive to the motherboard in order listen to CD's directly from the CD-ROM drive. In this situation, connect the CD-ROM audio cable to the connector labeled "CD IN".

BIOS Settings

Upgrade to the latest BIOS version
Check to see if there is a more current system BIOS by entering the BIOS setup [F2] during boot. The BIOS is identified by a string such as BT84520A.86A.0020.P08. Compare the currently installed BIOS string on your computer to the latest BIOS update available from Intel. If a newer BIOS exists, download and install it to ensure maximum functionality and compatibility.

For the latest BIOS update available, please see the Intel Desktop Board D865GBF Software and Drivers page (http://downloadfinder2.intel.com/scripts-df/Product_Filter.asp?ProductID=948).

Select ACPI standby state
Intel desktop boards support two ACPI standby states: S1 and S3. The S3 state is known as Suspend to RAM (STR) and provides the greatest amount of power savings. While in the S3 state, the PC is silent with the monitor and fans off. In the S1 state, a bit more power is consumed and the fans remain active. Some devices are not ACPI compliant and therefore may not work well with the S3 state. The PC will resume normal operations from either state within 5 - 30 seconds.

To select your ACPI standby state in the BIOS:

1. Enter BIOS Setup by pressing [F2] during boot.

2. Go to the **Power** menu.

3. Next to ACPI Suspend State, choose either **S1 State** or **S3 State**.

4. Exit and save changes [F10].

Other BIOS features
To learn about or to enable/disable other BIOS features specific to your desktop board, refer to Product Guide on the Intel Express Installer CD-ROM.

Systems Setup by Operating System: Windows* XP

Windows* XP Professional and Home Edition
After installing the operating system and the latest Service Packs, it is highly recommended to install the drivers in the order they are presented here.

Loading Un-Signed Drivers
Windows XP looks for a driver "signature" before loading any third party drivers. A digital signature verifies that Microsoft has validated the driver for use with Windows XP. Device drivers that have not yet been certified by Microsoft will pop up a message stating so. If the 'Digital Signature Not Found' dialog appears, click 'Yes' to continue installing the driver.

Intel® Chipset Software Installation Utility (INF Update Utility)
There are resources in Intel chipsets that are not automatically recognized by Windows XP. It is critical that the INF utility is installed in order to enable chipset features and optimize performance with Intel® Pentium® 4 processor-based systems.

Note: It is also critical that the INF utility is installed first before any other drivers.

The INF can be installed from the Intel® Express Installer CD or you may download and use the latest Intel INF installation utility (http://downloadfinder2.intel.com/scripts-df/Product_Filter.asp?ProductID=948).

Integrated LAN (Optional)
The drivers for the on-board LAN adapter can be installed from the driver CD or you may download and install the latest LAN adapter driver from Intel's website (http://downloadfinder2.intel.com/scripts-df/Product_Filter.asp?ProductID=948).

Integrated Audio
The drivers for the on-board audio can be installed from the driver CD or you may download and install the latest audio driver from Intel's website (http://downloadfinder2.intel.com/scripts-df/Product_Filter.asp?ProductID=948).

Integrated Graphics
The drivers for the on-board graphics can be installed from the driver CD or you may download and install the latest graphics driver from Intel's website (http://downloadfinder2.intel.com/scripts-df/Product_Filter.asp?ProductID=948).

Enabling Hi-Speed USB 2.0
Windows* XP Service Pack 1 must be installed to support Hi-Speed USB 2.0. Windows XP Service Pack 1 is available from Microsoft's support web site at: http://support.microsoft.com. Hi-Speed USB 2.0 must be manually enabled on Windows XP systems that have been upgraded to Service Pack 1.

To manually enable Hi-Speed USB 2.0 once Service Pack 1 has been installed, complete the following steps:

1. Open the Device Manager for Windows XP

2. In the **Other devices** list, double-click the **Universal Serial Bus (USB) Controller**

3. Select the **Driver** tab at the top of the **Universal Serial Bus (USB) Controller** Properties window

4. Click on the button labeled **Update Driver**

5. Click on the **Next** button

6. Click on the **Finish** button

7. Click on the **Close** button

Hi-Speed USB 2.0 should now be enabled. Close the Device Manager and continue to install the necessary drivers using the Intel® Express Installer CD.

Microsoft* DirectX* 8
Installation of Microsoft DirectX version 8 or later is strongly recommended in order to take advantage of the additional SSE2 instructions of the Intel Pentium 4 processor. However, Windows XP Professional and Home Edition include DirectX v8.1 by default so a software update is not required to take advantage of these new instructions. For the latest version of DirectX, go to the Microsoft DirectX website (http://www.microsoft.com/windows/directx/default.aspx).

To view the current version of DirectX loaded on any given platform, use the Find option under the Start menu and locate DXdiag.exe. The DirectX Diagnostic tool can help you troubleshoot your DirectX installation as well as display the version of DirectX that is installed on your system.

Power Management Settings
The Power Options applet in the Control Panel dictates sleep operation. Here are some common settings:

Power Schemes tab:

- Power Scheme: "Home/Office Desk

- Turn off monitor: This setting can be any desired time. If this setting is a time greater than the "System Standby" option, Standby will occur first, making this setting unused.

- Turn off hard disks: This setting can be any desired time. If this setting is a time greater than the "System Standby" option, Standby will occur first, making this setting unused.

- System Standby: The amount of idle time before the system enters the sleep (S1 or S3) state.

Advanced tab:

- "Power Buttons" option: Change the "When I press the power button on my computer" option to "Standby". This will enable the system to go to standby (S3) state instead of shutdown when the power button is pressed.

Serial ATA
Web distribution rights granted to Intel for the Microsoft* SATA QFE updates require the driver and updates be made available only through password-protected web sites. Logon and Password information to download this driver and updates are available on the flyer enclosed with the boxed Intel desktop board.

Third Party Drivers
You'll need to load the drivers for any third party hardware components you plan to install in your PC. Refer to the documentation that comes with such hardware for complete instructions on installation.

Systems Setup by Operating System: Windows* 2000

Windows* 2000
After installing the operating system and the latest Service Packs, it is highly recommended to install the drivers in the order they are presented here.

Loading Un-Signed Drivers
Windows* 2000 looks for a driver "signature" before loading any third party drivers. A digital signature verifies that Microsoft has validated the driver for use with Windows 2000. Device drivers that have not yet been certified by Microsoft will pop up a message stating so. If the 'Digital Signature Not Found' dialog appears, click 'Yes' to continue installing the driver.

Intel® Chipset Software Installation Utility (INF Update Utility)
There are resources in Intel chipsets that are not automatically recognized by Windows 2000. It is critical that the INF utility is installed in order to enable chipset features and optimize performance with Pentium® 4 processor-based systems.

Note: It is also critical that the INF utility is installed first before any other drivers.

The INF can be installed from the Intel® Express Installer CD or you may download and use the latest Intel INF installation utility (http://downloadfinder2.intel.com/scripts-df/Product_Filter.asp?ProductID=948).

Integrated LAN (Optional)
The drivers for the on-board LAN adapter can be installed from the driver CD or you may download and install the latest LAN adapter driver from Intel's website (http://downloadfinder2.intel.com/scripts-df/Product_Filter.asp?ProductID=948).

Integrated Audio
The drivers for the on-board audio can be installed from the driver CD or you may download and install the latest audio driver from Intel's website (http://downloadfinder2.intel.com/scripts-df/Product_Filter.asp?ProductID=948).

Integrated Graphics
The drivers for the on-board graphics can be installed from the driver CD or you may download and install the latest graphics driver from Intel's website (http://downloadfinder2.intel.com/scripts-df/Product_Filter.asp?ProductID=948).

Enabling Hi-Speed USB 2.0
Hi-Speed USB 2.0 drivers for Windows 2000 are available on the Express Installer CD and may also be downloaded from the Web.

For the latest Hi-Speed USB 2.0 support information and instructions for downloading this password-protected driver, visit our support website (http://support.intel.com/support/go/desktop/usb20.htm).

The web distribution rights for certain Microsoft drivers and patches granted to Intel require that the driver be made available only thru password-protected web sites. To gain access to the password-protected driver/patch, please refer to the information on the flyer included in the box.

Microsoft* DirectX* 8
Microsoft DirectX 8 includes updated drivers for the most popular sound and video adapters currently available. It is critical that this version of DirectX is installed in order to enable optimum platform performance with Intel Pentium 4 processor-based systems. DirectX 8 is included on the Express Installer CD that ships with pre-production samples, or can be found on the Microsoft DirectX website (http://www.microsoft.com/windows/directx/default.aspx).

Follow these simple instructions to ensure proper installation:

1. Access the DirectX 8 from the Express Installer CD and open the Redist folder followed by opening the DirectX8 folder

2. Next, open the DXsetup.exe application file and click yes to accept the legal agreement

3. Last, click install and following the installation click ok to restart the system

To view the current version of DirectX loaded on any given platform, use the Find option under the Start menu and locate DXdiag.exe. The DirectX Diagnostic tool can help you troubleshoot your DirectX installation as well as display the version of DirectX that is installed on your system.

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The Power Options applet in the Control Panel dictates sleep operation. Here are some common settings:

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- System Standby: The amount of idle time before the system enters the sleep (S1 or S3) state.

Advanced tab:

- "Power Buttons" option: Change the "When I press the power button on my computer" option to "Standby". This will enable the system to go to standby (S3) state instead of shutdown when the power button is pressed.

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Third Party Drivers
You'll need to load the drivers for any third party hardware components you plan to install in your PC. Refer to the documentation that comes with such hardware for complete instructions on installation.

Systems Setup by Operating System: Windows* 98 SE/Me

Windows* 98 Second Edition and Windows Millennium Edition
After installing the operating system and the latest Service Packs, it is highly recommended to install the drivers in the order they are presented here.

Legacy Hard Drive Support

Windows* 98SE and Windows Me operating systems do not support enhanced mode IDE/Serial ATA resources for more than four devices. Before installing 98SE or Me, the BIOS Drive configuration must be changed from Enhanced to Legacy mode:

1. Enter the BIOS Setup program by pressing the [F2] key after the Power-On-Self-Test (POST) memory test begins.

2. Select the Advanced menu and then the Drive Configuration menu.

3. Set ATA/IDE Configuration to Legacy.

4. Save and exit [F10].

Intel® Chipset Software Installation Utility (INF Update Utility)
There are resources in Intel chipsets that are not automatically recognized by Windows 98 SE or ME. It is critical that the INF utility is installed in order to enable chipset features and optimize performance with Pentium® 4 processor-based systems.

Note: It is also critical that the INF utility is installed first before any other drivers.

The INF can be installed from the Intel® Express Installer CD or you may download and use the latest Intel INF installation utility (http://downloadfinder2.intel.com/scripts-df/Product_Filter.asp?ProductID=948).

Integrated LAN (Optional)
The drivers for the on-board LAN adapter can be installed from the driver CD or you may download and install the latest LAN adapter driver from Intel's website (http://downloadfinder2.intel.com/scripts-df/Product_Filter.asp?ProductID=948).

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The drivers for the on-board audio can be installed from the driver CD or you may download and install the latest audio driver from Intel's website (http://downloadfinder2.intel.com/scripts-df/Product_Filter.asp?ProductID=948).

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The drivers for the on-board graphics can be installed from the driver CD or you may download and install the latest graphics driver from Intel's website (http://downloadfinder2.intel.com/scripts-df/Product_Filter.asp?ProductID=948).

Enabling DMA transfers
Windows 98 SE and Me install the Microsoft Bus Mastering IDE drivers automatically during installation of the operating system. However, Bus Mastering DMA support is disabled by default. Every IDE device supporting DMA Mode transfers must be enabled individually. Perform the following steps to ensure that DMA support is enabled on each device that supports it:

1. Go to the Control Panel - System - Device Manager tab

2. Expand the "Disk drives" and "CDROM" categories.

3. For each DMA capable device, select the drive from the list. For example, select "GENERIC IDE DISK TYPE47" as in the illustration below.
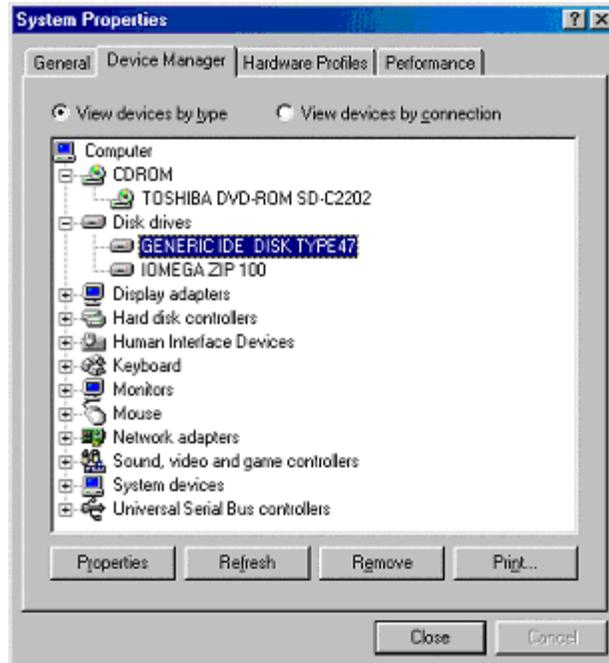
Figure 1: Device Manager

4. Click the "Properties" button.

5. Select the Settings tab.

6. Select the box next to "DMA". Windows 98 will display a message box. Click OK.

7. A check mark should appear in the box as in the picture below. Click "OK".

Figure 2: Checking for DMA

8. Close all windows and restart the system when prompted.

Hi-Speed USB 2.0
Enabling Hi-Speed USB 2.0 requires the installation of the USB2.0 driver. The drivers for USB2.0 can be installed from the Intel Express Installer CD or can be downloaded from Intel's website (http://downloadfinder2.intel.com/scripts-df/Product_Filter.asp?ProductID=948).

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Advanced tab:

- "Power Buttons" option: Change the "When I press the power button on my computer" option to "Standby". This will enable the system to go to standby (S3) state instead of shutdown when the power button is pressed.

Third Party Drivers
You'll need to load the drivers for any third party hardware components you plan to install in your PC. Refer to the documentation that comes with such hardware for complete instructions on installation.

Troubleshooting

Desktop board will not power up

- Double check the power cable connection from the power supply to your AC power source.

- Ensure you are using an ATX12V compliant power supply.

- Ensure that the 2x2 power supply cable with the 4-pin connector is plugged into the 12 V processor core voltage connector located near the processor socket on the desktop board.

- Check for external power switch on back of power supply. Ensure it is turned ON.

- Remove and re-insert the Intel® Pentium® 4 or Celeron® processor, memory, and any add-in cards to make sure they are fully seated. Remove any non-essential hardware components and boot the system.

- Disconnect all power and remove the CMOS battery. Wait 10 minutes, then re-install the battery, reconnect power, and boot the system.
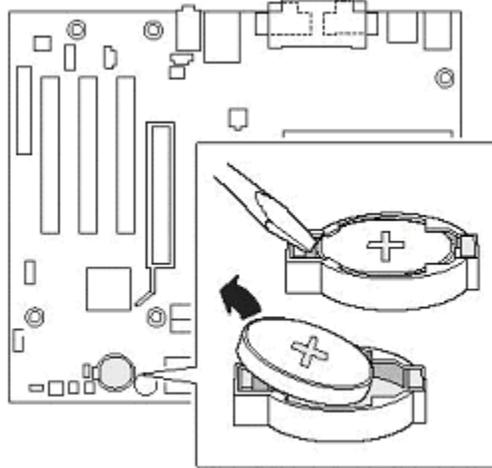

Figure 1: Removing The CMOS Battery

You get a beep code and no video during boot
A sequence of short beeps after turning the power on may indicate that there was a problem during DDR SDRAM memory device detection. Check to ensure system memory is properly installed, and ensure the DDR SDRAM DIMMs you are using meet the specifications. See the list of memory modules tested with the Intel Desktop Board D865GBF for more information (http://developer.intel.com/design/motherbd/bf/bf_mem.htm).

Processor heat sink fan will not turn
Connect the processor's fan heatsink cable to the processor fan connector labeled CPU FAN.

Ensure that the 2x2 power supply cable with the 4-pin connector is plugged into the 12 V processor core voltage connector located near the processor socket on the desktop board.

Floppy drive or CD-ROM not detected during boot
If you make any hardware changes related to drives, such as adding/removing hard drives, floppy drives or CD-ROMs, the specified boot order may change.

Additionally, after you upgrade to a new BIOS or if you set the BIOS to factory defaults, your floppy drive or CD-ROM may not be detected in the desired boot order.

To re-specify the boot order in BIOS:

1. Enter the BIOS Setup program by pressing the [F2] key after the Power-On-Self-Test (POST) memory test begins.

2. Select the Boot menu and then the Boot Device Priority menu.

3. Select 1st Boot Device, 2nd Boot Device, etc.

4. Save and exit [F10].

BIOS recovery
If you are sure that you have integrated the PC components correctly but the system is not booting properly, letting you enter BIOS Setup, or reflash the BIOS, then you may need to perform a BIOS recovery. To do this:

1. Place the latest BIOS revision on a bootable floppy disk

2. Make sure the system power is off

3. Ensure that you have known-good DDR SDRAM memory installed.

4. Put the BIOS disk in the floppy disk drive.

5. Remove the BIOS configuration jumper.

6. Turn on the PC.

7. Wait several minutes while the BIOS is reinstalled into the desktop board flash memory. There will not be any video during the BIOS recovery.

8. After you hear two beeps and the floppy disk drive light turns off, remove the BIOS disk.

9. Turn off the PC.

10. Replace the BIOS configuration jumper.

11. Turn the PC back on.

The following table illustrates the appropriate jumper settings:

Mode	Jumper Position	Function
Normal	Pins 1-2 shorted	Normal operation and changing standard BIOS options
Configure	Pins 2-3 shorted	Modify passwords, memory latencies, and IRQs
Recover	Open	The BIOS attempts to recover default BIOS configuration from a diskette. SPD system memory must be used to complete a BIOS recovery.

Caution: Turn the power off before moving the configuration jumper.

Desktop board resources not recognized by Windows*
Intel chipsets have several components that are newer and not necessarily enabled in the retail or OEM versions of Windows* 98 SE, Windows Me, Windows 2000 or Windows XP. You may need to install the INF chipset update utility and additional drivers in order for all the board features to work properly. See the System Setup by Operating System section of this guide for assistance.

Enabling Ultra ATA/66/100 hard drive support
To get Ultra ATA/66/100 disk transfer support, ensure that the following conditions are met:

- Use an Ultra ATA/66/100 capable hard drive.

- Follow the cable installation instructions in the Assembly section of this integration guide.

- Follow the instructions in the Windows 98 SE and ME Setup section of this integration guide to enable DMA transfers in the operating system.

- If your hard drive comes with an ultra DMA driver or utility, make sure that you load it and enable Ultra ATA/66 (DMA mode 4) transfers.

Enabling dual channel memory
The Intel Desktop Board D865GBF has four DIMM sockets arranged as DIMM 0 and DIMM 1 in both Channel A and Channel B.

To achieve dual channel operation, install a matched pair of DIMMs (equal in speed: 266MHz PC2100, 333MHz PC2700, or 400MHz PC3200; density: 64 MB, 128 MB, 256 MB, 512 MB, or 1 GB; and technology: 128 Mb, 256 Mb, or 512 Mb) in DIMM 0 in both Channels A and B. If additional memory is to be used, then install another matched pair of DIMMs in DIMM 1 in both Channels A and B.
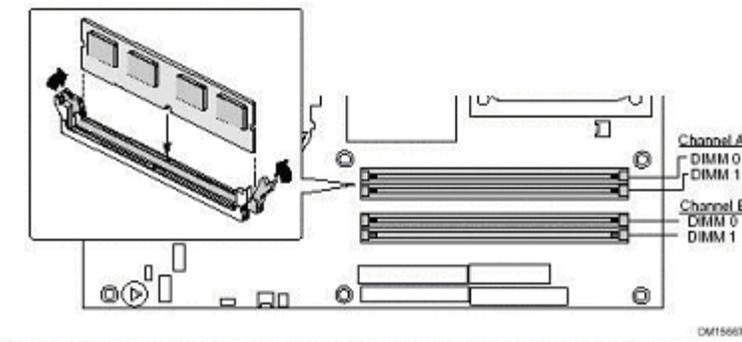

Figure 2: DIMM Installation

Notes:

- All other memory configurations, *(i.e., a single DIMM installed in DIMM 0 of Channel A),* will result in single channel memory operation.

Top technical issues
For additional troubleshooting information, please view our top technical issues section. (http://support.intel.com/support/motherboards/desktop/d865gbf/index.htm).