

## Before you begin...



### Caution

- 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.
- 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.

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## Introduction

The following is a step-by-step integration guide that provides basic information needed to correctly build a PC based on an Intel® Desktop Board.

The basic integration sequence is as follows:

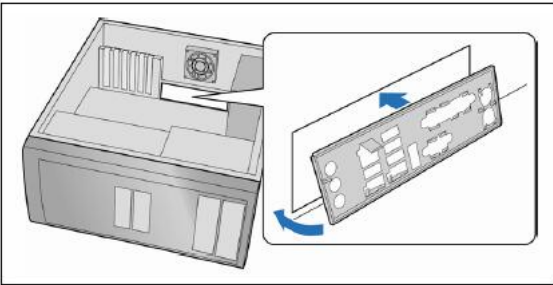
1. [Install the I/O shield](#)
2. [Install the desktop board](#)
3. [Install the processor](#)
4. [Install the processor fan heatsink or thermal module](#)
5. [Install memory modules](#)
6. [Install chassis fans](#)
7. [Attach front panel connectors](#)
8. [Install back panel I/O \(optional\)](#)
9. [Install front panel I/O \(optional\)](#)
10. [Install floppy drive](#)
11. [Install serial ATA devices \(drives\)](#)
12. [Install IDE devices \(drives / DVD / CDROM\)](#)
13. [Connect CD-ROM audio](#)
14. [Install add-in PCI Express\\* graphics \(optional\)](#)
15. [Connect devices to back panel connectors](#)
16. [Connect power cables](#)
17. [Finishing up](#)

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## Install the I/O shield

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.

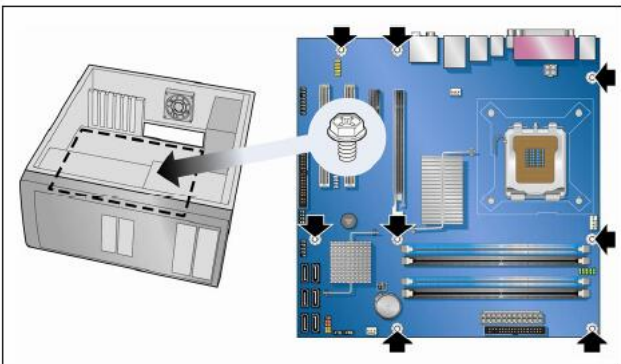
Install the I/O shield before installing the board in the chassis. Place the shield inside the chassis as shown in the figure below. Press the shield into place so that it fits tightly and securely.



## Install 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. If you have a BTX-based board and chassis, be sure to first install the SRM that comes with the BTX chassis, if not already pre-installed. Refer to the quick reference guide that came with the board for the location of the screw mounting holes.

The recommended torque range for standard low carbon steel # 6-32 screws is 6 - 10 in-lbs.



## Install the processor

Select your board from this list to view supported processors for your desktop board.

### Chipset Desktop Board

H87,

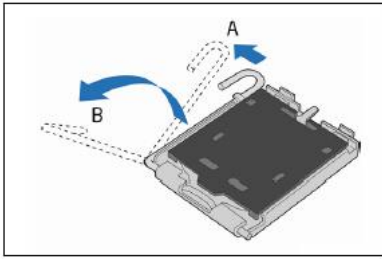
Q87, Z87	DH87MC, DH87RL, DQ87PG, DZ87KLT-75K
B85	DB85FL
X79	DX79SI, DX79SR, DX79TO
H77, Q77, Z77	DH77DF, DH77EB, DH77KC, DQ77MK, DQ77KB, DQ77CP, DZ77BH-55K, DZ77GA-70K, DZ77RE-75K, DZ77SL-50K
B75, Z75	DB75EN, DZ75ML-45K
Z68	DZ68ZV, DZ68DB, DZ68BC
Q67, P67, H67	DQ67SW, DQ67OW, DQ67EP, DP67DE, DP67BG, DP67BA, DH67VR, DH67GD, DH67CL, DH67CF, DH67BL
B65	DB65AL
H61	DH61AG, DH61AGL, DH61BE, DH61BF, DH61CR, DH61DL, DH61HO, DH61KVCH, DH61SA, DH61SKCH, DH61WW, DH61ZE,
X58	DX58SO2, DX58SO, DX58OG
H57, Q57	DH57JG, DH57DD, DQ57TM, DQ57TML
H55, P55	DH55HC, DH55PJ, DH55TC, DP55KG, DP55SB, DP55WG, DP55WB
X48	DX48BT2
Q45, P45, G45	DQ45CB, DQ45EK, DP45SG, DG45ID, DG45FC
P43, G43, Q43, B43	DP43TF, DP43BF, DP43BFL, DG43NB, DQ43AP, DB43LD, DG43GT, DG43RK
G41	DG41TY, DG41RQ, DG41MJ, DG41KR, DG41CN, DG41BI, DG41TX, DG41WV, DG41AN
X38	DX38BT
P35, G35, Q35	DP35DP, DG35EC, DQ35JO, DQ35MP
G33	DG33BU, DG33FB, DG33TL
G31	DG31PR, DG31GL
5400XS	D5400XS
975	D975XBX, D975XBX2
965	DG965MQ, DG965MS, DG965OT, DG965PZ, DG965RY, DG965SS, DG965WH, DP965LT, DQ965CO, DQ965GF, DQ965WC
963	DQ963FX
955	D955XBK, D955XCS
946	D946GZIS, D946GZTS, D946GZAB
945	D945GBO, D945GCCR, D945GCL, D945GCPE, D945GCZ, D945GNT, D945GPM, D945GRW, D945GTP, D945PAW, D945PDK, D945PLNM, D945PLRN, D945PSN, D945PSY
925	D925XBC, D925XCV, D925XEBC2, D925XECV2, D925XHY
915	D915GAG, D915GAV, D915GEV, D915GLVG, D915GMH, D915GUX, D915GVWB, D915PBL, D915PCM, D915PCY, D915PDT, D915PGN, D915PLWD, D915PSY
910	D910GLDW
3rd Party	D101GGC, D102GGC2



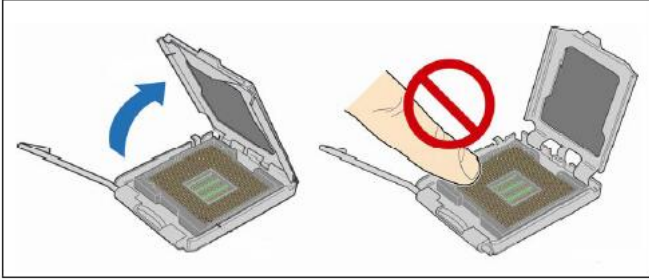
Before installing or removing the processor, make sure the AC power has been removed by unplugging the power cord from the computer, the standby power LED should not be lit (see Figure 3 on page 23). Failure to do so could damage the processor and the board.

To install a processor, follow these instructions:

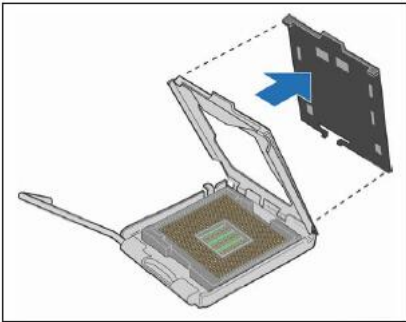
1. Open the socket lever by pushing the lever down (A) and away (B) from the socket.



2. Lift the load plate. Do not touch the socket contacts.



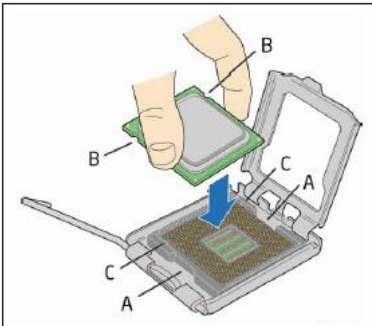
3. Remove the plastic protective socket cover from the load plate. Do not discard the protective socket cover. Always replace the socket cover if the processor is removed from the socket.



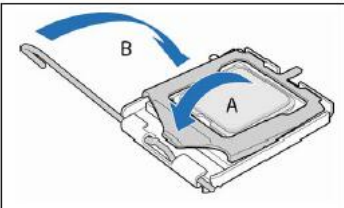
4. Remove the processor from the protective processor cover. Hold the processor only at the edges, being careful not to touch the bottom of the processor. Do not discard the protective processor cover. Always replace the processor cover if the processor is removed from the socket.



5. Hold the processor with your thumb and index fingers oriented as shown in the figure below. Make sure fingers align to the socket cutouts (A). Align notches (B) with the socket (C). Lower the processor straight down without tilting or sliding the processor in the socket.



6. Pressing down on the load plate (A) close and engage the socket lever (B).

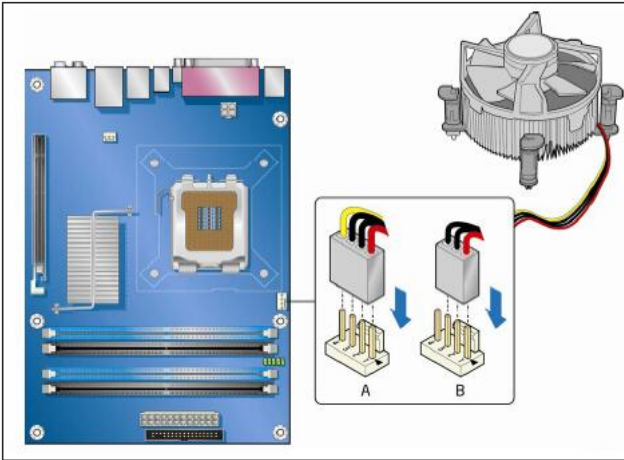


### Install the processor fan heatsink or thermal module

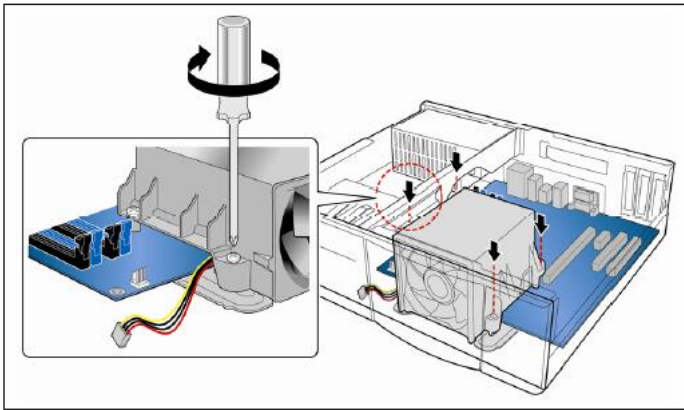
For complete instructions on how to attach the processor fan heat sink (for ATX-based boards) or thermal module (for BTX-based boards), refer to the boxed processor manual.

Connect the processor fan heat sink cable to the 4-pin processor fan header. A fan with a 4-pin connector is recommended, however, a fan with a 3-pin connector can be used. Since the 3-pin fan cannot use the onboard fan control, the fan will always operate at full speed.

For ATX-based boards:



For BTX-based boards:



### Install memory modules

Select from the links below to view system memory information for your desktop board.

#### Chipset Desktop Board

H87,  
Q87,  
Z87 [DH87MC, DH87RL, DQ87PG, DZ87KLT-75K](#)

B85 [DB85FL](#)

X79 [DX79SI, DX79SR, DX79TO](#)

H77,  
Q77,  
Z77 [DH77EB, DH77DF, DH77KC, DQ77MK, DQ77KB, DQ77CP, DZ77BH-55K, DZ77GA-70K, DZ77RE-75K, DZ77SL-50K](#)

B75,  
Z75 [DB75EN, DZ75ML-45K](#)

Z68 [DZ68ZV, DZ68DB, DZ68BC](#)

Q67,  
P67,  
H67 [DQ67SW, DQ67OW, DQ67EP, DP67DE, DP67BG, DP67BA, DH67VR, DH67GD, DH67CL, DH67CF, DH67BL](#)

B65 [DB65AL](#)

H61 [DH61ZE, DH61WW, DH61SA, DH61KVCH, DH61SKCH, DH61DL, DH61CR, DH61BE, DH61AG, DH61AGL, DH61BF, DH61HO](#)

X58 [DX58SO2, DX58SO, DX58OG](#)

H57,  
Q57 [DH57JG, DH57DD, DQ57TM, DQ57TML](#)

H55,  
P55 [DH55HC, DH55PJ, DH55TC, DP55KG, DP55SB, DP55WG, DP55WB](#)

NM10 [D510MO, D410PT, D425KT, D525MW, DN2800MT, D2700MUD, D2700DC, D2550MUD2, D2550DC2, D2500HN, D2500CC](#)

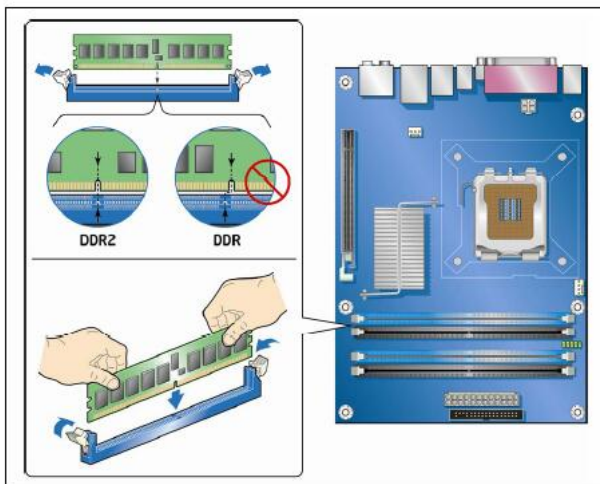
X48 [DX48BT2](#)

Q45, P45, G45	DQ45CB, DQ45EK, DP45SG, DG45ID, DG45FC
P43, G43, Q43, B43	DP43TF, DP43BF, DP43BFL, DG43NB, DQ43AP, DB43LD, DG43GT, DG43RK
G41	DG41TY, DG41RQ, DG41MJ, DG41KR, DG41CN, DG41BI, DG41TX, DG41WV, DG41AN
X38	DX38BT
P35, G35, Q35	DP35DP, DG35EC, DQ35JO, DQ35MP
G33	DG33BU, DG33FB, DG33TL
G31	DG31PR, DG31GL
5400XS	D5400XS
975	D975XBX, D975XBX2
965	DG965MQ, DG965MS, DG965OT, DG965PZ, DG965RY, DG965SS, DG965WH, DP965LT, DQ965CO, DQ965GF, DQ965WC
963	DQ963FX
955	D955XBK, D955XCS
946	D946GZIS, D946GZTS, D946GZAB
945	D945GBO, D945GCCR, D945GCL, D945GCLF, D945GCLF2, D945GCPE, D945GCZ, D945GNT, D945GPM, D945GRW, D945GTP, D945PAW, D945PLNM, D945PLRN
925	D925XBC, D925XCV, D925XEBC2, D925XECV2, D925XHY
915	D915GAG, D915GAV, D915GEV, D915GLVG, D915GMH, D915GUX, D915GVWB, D915PBL, D915PCM, D915PCY, D915PDT, D915PGN, D915PLWD, D915PSY
910	D910GLDW
3rd Party	D101GGC, D102GGC2, D201GLY, D201GLY2

Install memory in the DIMM slots prior to installing any PCI Express\* video card to avoid interference with the PCI Express slot retention mechanism. Intel® Desktop Boards based on the Intel® 945 Chipsets and later support dual channel memory. Refer to [Single / Dual Channel Memory](#) for complete information on configuring dual channel memory mode.

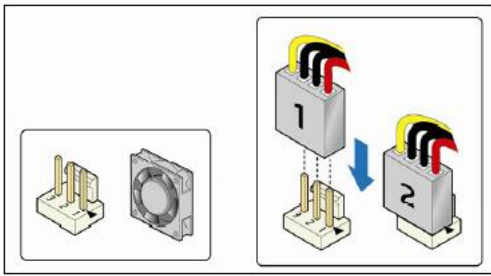
To install a DIMM, follow these steps:

1. Turn off all peripheral devices connected to the computer. Turn off the computer and disconnect the AC power cord.
2. Remove the computer's cover and locate the DIMM sockets.
3. Make sure the clips at either end of the DIMM socket(s) are pushed outward to the open position.
4. Holding the DIMM by the edges, remove it from its antistatic package.
5. Position the DIMM above the socket. Align the small notch at the bottom edge of the DIMM with the keys in the socket.
6. Insert the bottom edge of the DIMM into the socket.
7. 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.
8. Replace the computer's cover and reconnect the AC power cord.



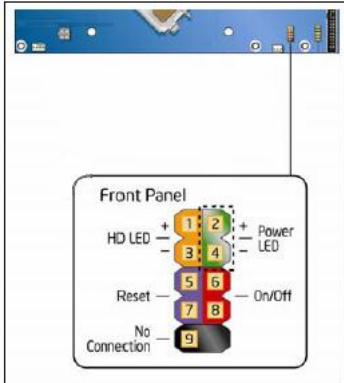
#### Install chassis fans

Intel® Desktop Boards support up to three chassis fans. Connect the fans to the board fan headers, as shown below. Refer to the documentation that came with your desktop board for the location of the chassis fan headers.



### Attach front panel connectors

Attach the front panel connector. Refer to [Front Panel 9-Pin Header](#) for pin-out details.

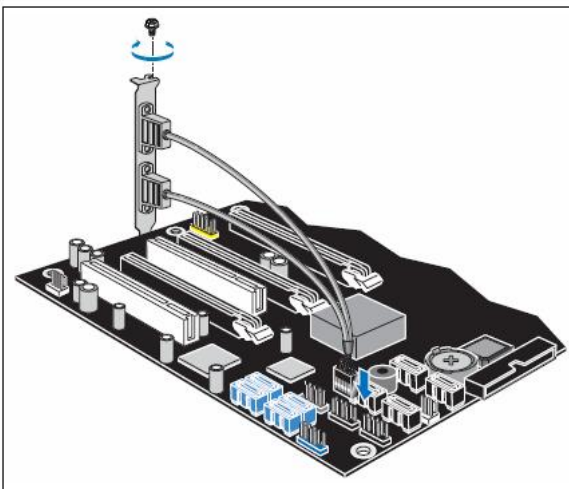


Pin	Description	In/Out	Pin	Description	In/Out
<b>Hard Drive Activity LED</b>			<b>Power LED</b>		
1	Hard disk LED pull-up to +5 V	Out	2	Front panel green LED	Out
3	Hard disk active LED	Out	4	Front panel yellow LED	Out
<b>Reset Switch</b>			<b>On/Off Switch</b>		
5	Ground		6	Power switch	In
7	Reset switch	In	8	Ground	
<b>Power</b>			<b>Not Connected</b>		
9	Power	Out	10	No pin	

### Install back panel I/O (optional)

Some Intel® Desktop Boards include either a back panel USB bracket or a back panel USB/IEEE1394 bracket. You may also purchase these types of brackets. Follow these steps to install:

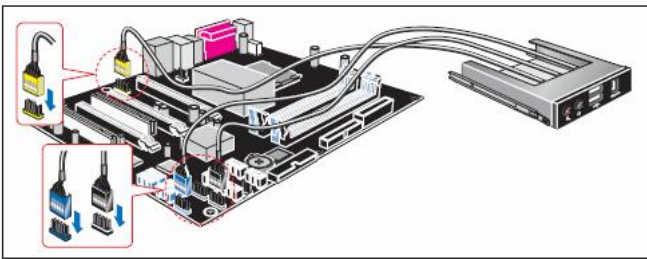
1. Attach the bracket to the chassis back panel.
2. Connect the USB cable to an onboard USB header.
3. For brackets with IEEE 1394, connect the IEEE 1394 cable to an onboard IEEE 1394 header.



### Install front panel I/O (optional)

Some Intel® Desktop Boards include a front panel USB/IEEE 1394/Audio 3.5" module. You may also purchase these types of modules. To Install:

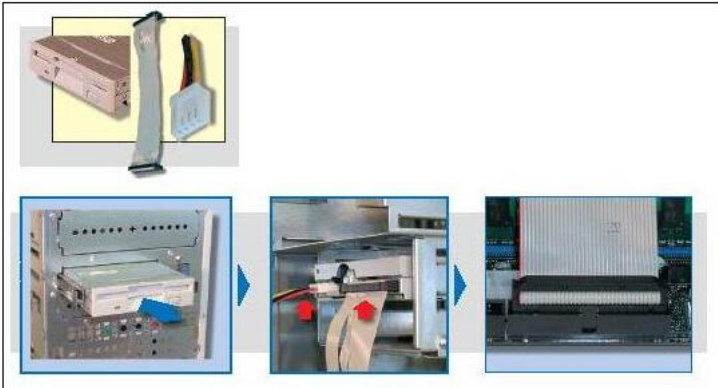
1. Insert the 3.5" module into a drive bay on the chassis.
2. Connect the USB cable to an onboard USB header.
3. Connect the IEEE 1394 cable(s) to the onboard IEEE 1394 header(s).
4. Connect the audio cable to the onboard front panel audio header.



### Install floppy drive

To Install:

1. Install the drive in an empty chassis bay.
2. Attach the data and power cables to the drive.
3. Attach the data cable to the desktop board's floppy connector.



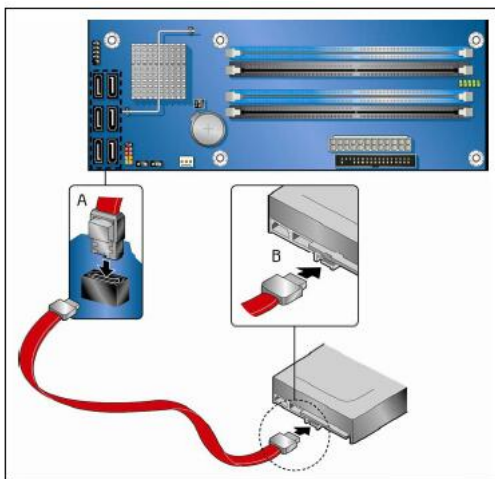
### Install serial ATA devices (drives)

For the Intel® Desktop Boards supporting serial ATA (SATA), two or four SATA cables are 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, follow these steps:

1. Attach a cable end to the connector on the board.
2. Attach the other cable end to the drive.

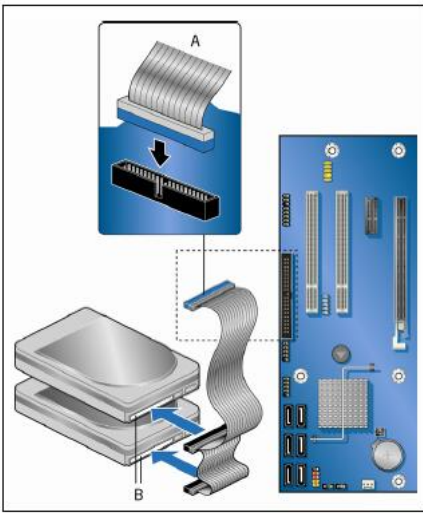
Intel does not support the use of IDE to serial ATA converters, however limited testing indicates that such converters may work with the serial ATA feature of Intel Desktop Boards.



### Install IDE devices (drives / DVD / CDROM)

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 to the board.
2. Attach the cable end with the two closely spaced connectors to the drives.



**Connect CD-ROM audio**

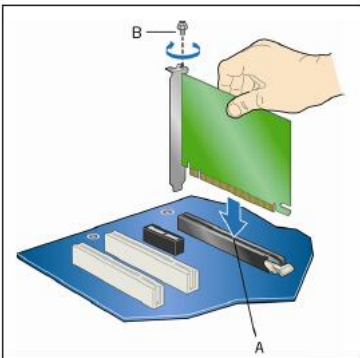
(Applicable to desktop boards that include on-board audio.)

Some older operating systems require that an additional audio cable be connected from the CD-ROM drive to the motherboard in order to 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."

**Note** Not all Intel® Desktop Boards include this connector. Refer to [On board CD-ROM Connector No Longer Required](#) for more information.

**Install add-in PCI Express\* graphics (optional)**

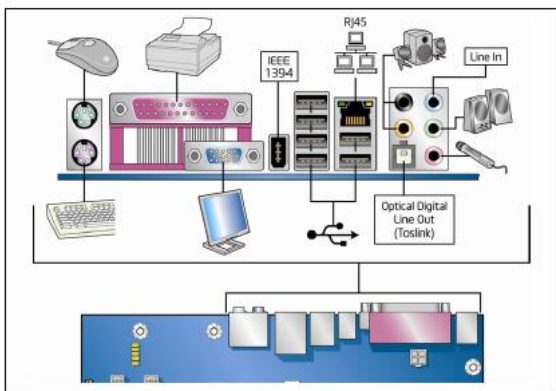
Care must be taken when installing a PCI Express\* card into a PCI Express x16 slot. When installing any PCI Express card in the desktop board, ensure that it is fully seated in the connector before you power on the system. If the card is not fully seated, an electrical short may result across the PCI Express slot pins. Depending on the over-current protection of the power supply, certain board components and/or traces may be damaged.



**Connect devices to back panel connectors**

Refer to this diagram for connecting cables properly.

**Note** The connectors shown in the graphic may not all be applicable to your system. Refer to the documentation that came with your desktop board.

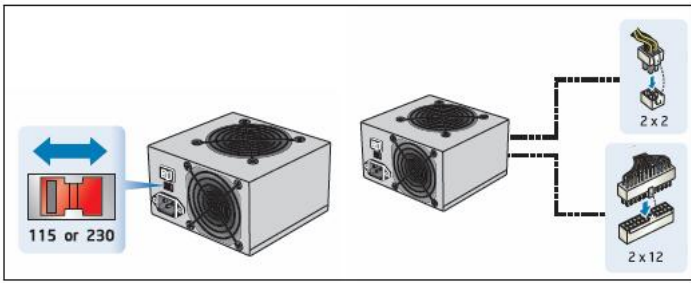


**Connect power cables**

Connect the power cables.

**Note** The types of connectors used on the Intel® Desktop Boards can vary. Refer to the documentation that came with your board for specific power connection instructions.





### Finishing up

To finish installation of your desktop board, follow these steps:

1. [BIOS settings](#) for advanced system configuration (optional).
2. Install the Operating System - [Microsoft Windows 7\\*](#), [Microsoft Windows Vista\\*](#), [Microsoft Windows XP\\*](#) or [Microsoft Windows 2000\\*](#).
3. Install the Intel® Desktop Board drivers and applications.



### This applies to:

- |                                |                                  |
|--------------------------------|----------------------------------|
| Intel® Desktop Board D2500CC   | Intel® Desktop Board DH77EB      |
| Intel® Desktop Board D2500HN   | Intel® Desktop Board DH77KC      |
| Intel® Desktop Board D2550DC2  | Intel® Desktop Board DH87MC      |
| Intel® Desktop Board D2700DC   | Intel® Desktop Board DH87RL      |
| Intel® Desktop Board D2700MUD  | Intel® Desktop Board DN2800MT    |
| Intel® Desktop Board D410PT    | Intel® Desktop Board DP55KG      |
| Intel® Desktop Board D425KT    | Intel® Desktop Board DP55SB      |
| Intel® Desktop Board D510MO    | Intel® Desktop Board DP55WB      |
| Intel® Desktop Board D525MW    | Intel® Desktop Board DP55WG      |
| Intel® Desktop Board D5400XS   | Intel® Desktop Board DP67BA      |
| Intel® Desktop Board D945GSEJT | Intel® Desktop Board DP67BG      |
| Intel® Desktop Board DB65AL    | Intel® Desktop Board DP67DE      |
| Intel® Desktop Board DB75EN    | Intel® Desktop Board DQ57TM      |
| Intel® Desktop Board DB85FL    | Intel® Desktop Board DQ57TML     |
| Intel® Desktop Board DH55HC    | Intel® Desktop Board DQ67EP      |
| Intel® Desktop Board DH55PJ    | Intel® Desktop Board DQ67OW      |
| Intel® Desktop Board DH55TC    | Intel® Desktop Board DQ67SW      |
| Intel® Desktop Board DH57DD    | Intel® Desktop Board DQ77CP      |
| Intel® Desktop Board DH57JG    | Intel® Desktop Board DQ77KB      |
| Intel® Desktop Board DH61AG    | Intel® Desktop Board DQ87PG      |
| Intel® Desktop Board DH61BE    | Intel® Desktop Board DX580G      |
| Intel® Desktop Board DH61CR    | Intel® Desktop Board DX58SO      |
| Intel® Desktop Board DH61DL    | Intel® Desktop Board DX58SO2     |
| Intel® Desktop Board DH61HO    | Intel® Desktop Board DX79SI      |
| Intel® Desktop Board DH61KVCH  | Intel® Desktop Board DX79SR      |
| Intel® Desktop Board DH61SA    | Intel® Desktop Board DX79TO      |
| Intel® Desktop Board DH61SKCH  | Intel® Desktop Board DZ68BC      |
| Intel® Desktop Board DH61WW    | Intel® Desktop Board DZ68DB      |
| Intel® Desktop Board DH61ZE    | Intel® Desktop Board DZ68ZV      |
| Intel® Desktop Board DH67BL    | Intel® Desktop Board DZ75ML-45K  |
| Intel® Desktop Board DH67CF    | Intel® Desktop Board DZ77BH-55K  |
| Intel® Desktop Board DH67CL    | Intel® Desktop Board DZ77GA-70K  |
| Intel® Desktop Board DH67GD    | Intel® Desktop Board DZ77RE-75K  |
| Intel® Desktop Board DH67VR    | Intel® Desktop Board DZ77SL-50K  |
| Intel® Desktop Board DH77DF    | Intel® Desktop Board DZ87KLT-75K |