

iQ96503

Intel® Q965 LGA775 Core2 Duo® / Pentium® D /
Pentium® 4 / Celeron® D Micro ATX Main Board

User's Manual



Ver. 1.00

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Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.



The symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.

Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor.

Conventions Used in This Guide

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.



DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.



CAUTION: Information to prevent damage to the components when trying to complete a task.



IMPORTANT: Instructions that you **MUST** follow to complete a task.



NOTE: Tips and additional information to help you complete a task.

Revision History

Revision	Revision History	Date
V 1.0	First release for PCB 1.00	October 02, 2007

Specifications Summary

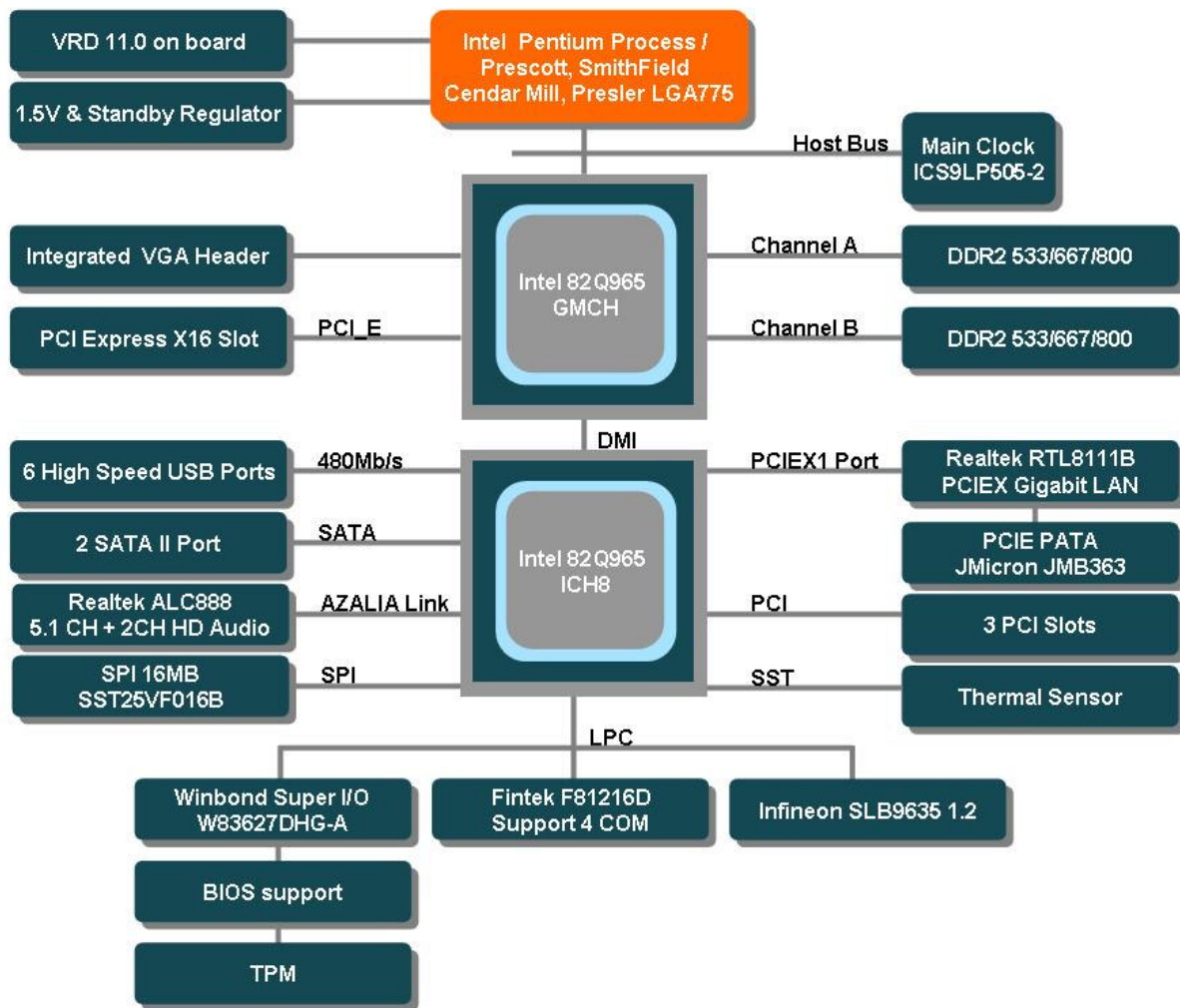
Features	1	Supports Intel LGA775 Core 2 Duo / Pentium D / Pentium 4 / Celeron D CPU
	2	Intel 82Q965 Express Chipset
	3	4 x DIMMs up to 8GB Dual Channel DDR2 800/667/533 SDRAM
	4	Intel Graphics Media Accelerator 3000
	5	Dual Audio Streams
	6	Realtek ALC888 5.1+2 CH Amplified Audio
	7	Intel 82566DM PCI-E Gigabit LAN
	8	One PCI-E x16, Three PCI
	9	4 x COM, 6 x USB 2.0, 2 x SATA
	10	TPM Module Onboard
System		
CPU	Intel μ FC-LGA 775 socket Supports Core 2 Duo / Pentium D / Pentium 4 / Celeron D with 65nm process technology	
Front Side Bus (FSB)	1066/800/533 MHz	
BIOS	Award 16 Mb Flash ROM BIOS	
System Chipset	Intel 82Q965 GMCH/ ICH8	
I/O Chipset	Winbond W83627DHG-A	
Memory	4 x 240-pin DIMM sockets support up to 8GB Dual Channel DDR2 800/667/533 SDRAM	
H/W Status Monitor	Monitoring temperatures, voltages, and cooling fan status. Auto throttling control when CPU overheats	
Expansion Slots	One PCI Express x16, Three PCI slots (PCI Rev.2.3 compliant)	
S3	S3 Support	
Smart Fan Control	Speed Cruise Mode	
I/O		
MIO	1 x Ultra DMA 33/66/100/133, 2 x SATA, 1 x LPT, 4 x RS-232, 1 x K/B, 1 x Mouse	
USB	6 x USB 2.0 ports	

Specifications Summary

I/O	
Internal I/O	1 x USB connectors support additional 2 USB ports, 1 x 24-pin ATX Power connector, 1 x 4-pin ATX 12V Power connector, 1 x IDE connector for two devices, 3 x COM connectors, 1 x Chassis intrusion connector, 1 x CD audio in connector, 2 x SATA connectors, 1 x Front panel audio connector 1 x S/PDIF Out Header, 1 x System panel connector, 1 x CPU Fan connector, 2 x Chassis Fan connector, 1 x Power Fan connector
Back Panel	1 x PS/2 Keyboard, 1 x PS/2 Mouse, 1 x Parallel port, 1 x COM connector, 1 x VGA port, 1 x RJ45 port, 4 x USB 2.0/1.1, 5.1-Channel Audio I/O (6 jacks)
Display	
Chipset	Intel 82Q965 GMCH integrated Graphics Media Accelerator 3000
Display Memory	Intel DVMT 4.0 supports 256 MB video memory
Resolution	2048 x 1536 @ 32 bpp (75 Hz)
VGA/LCD Interface	PCI-E X16 VGA interface
HMDI	Through ADD2 HMDI card (Customized BIOS required)
LVDS	Through ADD2 LVDS card (Customized BIOS required)
DVI	Through ADD2 DVI card (Customized BIOS required)
TV-Out	Through ADD2 TV-out card (Customized BIOS required)
Audio	
Chipset	Intel ICH8
AC97 Codec	Realtek ALC888 5.1+2 CH Audio
Audio Interface	Mic in, Line in, CD Audio in, Line out, 6CH (6 Jacks)
Audio Amplifier	TPA3123D2 Stereo 5 Watt per channel
Ethernet	
LAN1	Realtek RTL8111B Gigabit LAN
Mechanical & Environmental	
Power Requirement	+5V @ 10.37A, +12 @ 3.07A, +3.3V @ 2.83A (with Intel Core 2 Duo E6300 1.86GHz & 1GB * 4 DDR2 SDRAM)
Power Type	ATX
Operating Temperature	0 ~ 60°C (32 ~ 140°F)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Size (L x W)	9.6" x 9.6" (243.84 mm x 243.84 mm)
Weight	0.88 lbs (0.4 Kg)

* Specifications are subject to change without notice.

Block Diagram



This chapter describes the motherboard features and the new technologies it supports.

1 Product introduction

Production Introduction

1.1 Before you Proceed

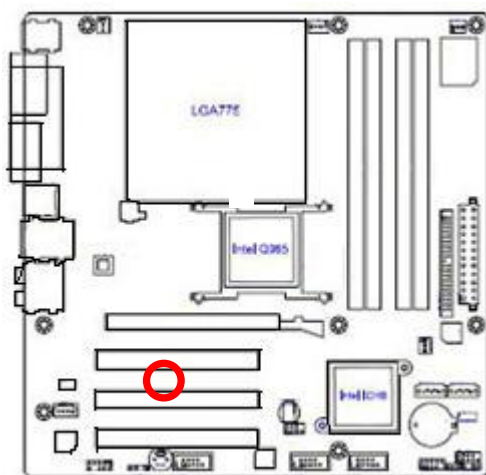
Take note of the following precautions before you install motherboard components or change any motherboard settings.



- Unplug the power cord from the wall socket before touching any component.
- Use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity
- Hold components by the edges to avoid touching the ICs on them.
- Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.
- Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

Onboard LED

The motherboard comes with a standby power LED that lights up to indicate that the system is ON, in sleep mode, or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component. The illustration below shows the location of the onboard LED.



1.2 Motherboard Overview

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it. Refer to the chassis documentation before installing the motherboard.



Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so can cause you physical injury and damage motherboard components.

1.2.1 Placement Direction

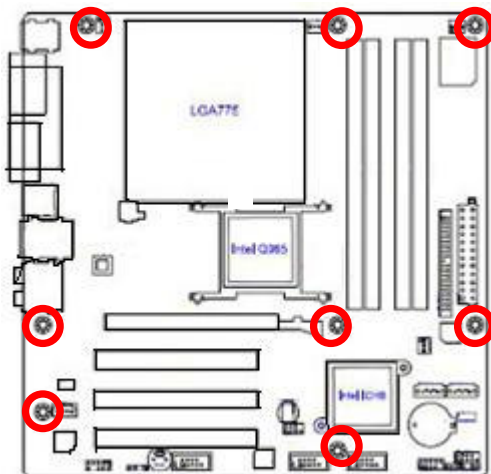
When installing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

1.2.2 Screw Holes

Place eight (8) screws into the holes indicated by circles to secure the motherboard to the chassis.

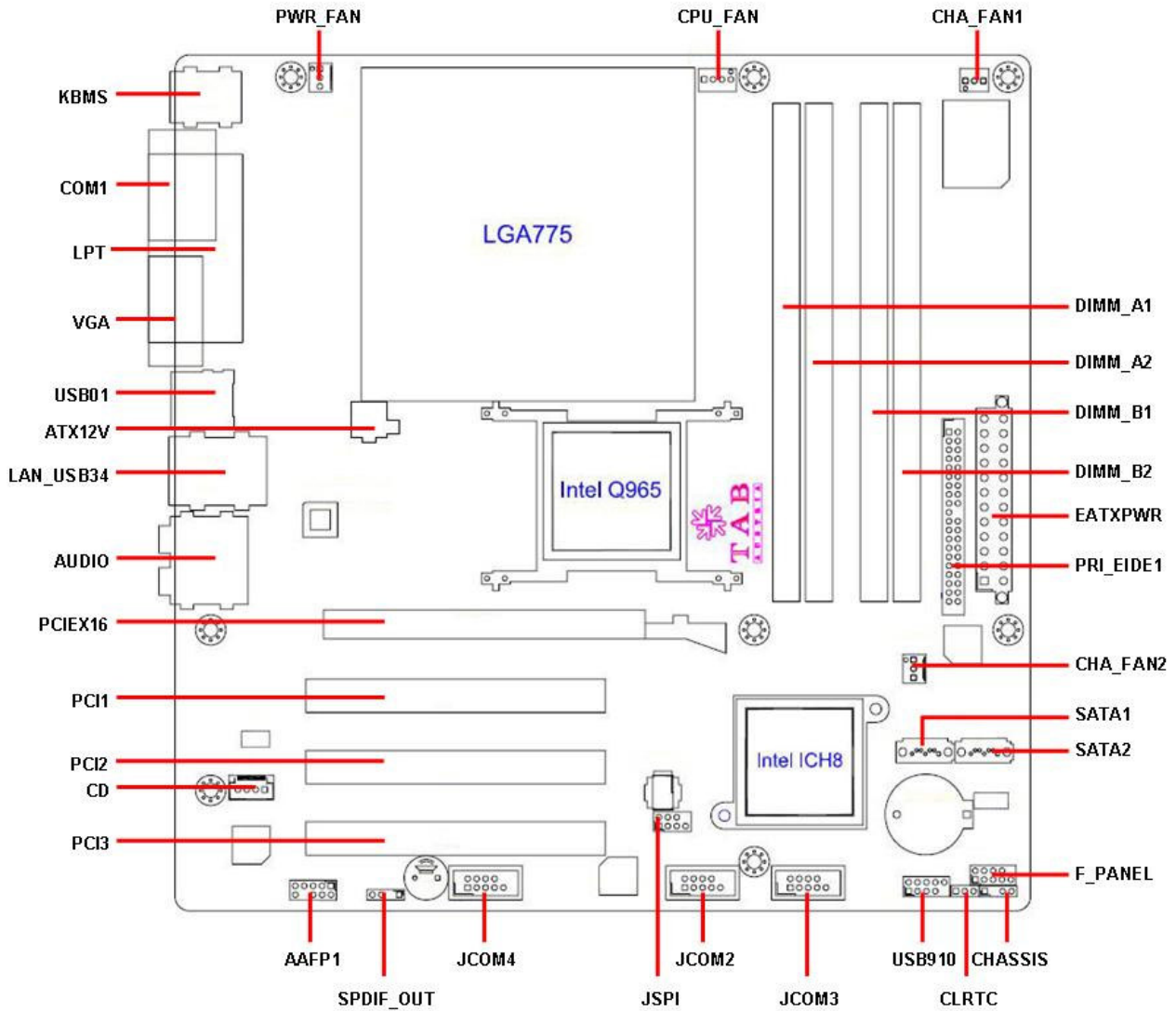


Do not over tighten the screws! Doing so can damage the motherboard.



Place this side towards the rear of the chassis.

1.3 Motherboard Layout



1.3.1 Layout Content List

Slots			
Label	Function	Note	Page
DIMM_A1	240-pin DDR2 DIMM slot 1		N/A
DIMM_A2	240-pin DDR2 DIMM slot 2		N/A
DIMM_B1	240-pin DDR2 DIMM slot 3		N/A
DIMM_B2	240-pin DDR2 DIMM slot 4		N/A
PCI1,2,3	PCI slot 1,2,3		N/A
PCIEX16	PCI express x16 slot		N/A

Jumpers			
Label	Function	Note	Page
CLRTC	Clear CMOS	3 x 1 header, pitch 2.54mm	29

Rear Panel Connector			
Label	Function	Note	Page
KBMS	PS/2 keyboard and mouse	6-pin Mini-Din x 2	30,32
LPT	Parallel port	D-sub 25-pin, female	30
LAN_USB34	RJ-45 Ethernet connector x 1 USB connector x 2		30,31
AUDIO	Rear speaker out port, Center/Subwoofer port, Line-in port, Line-out port, Microphone port, Side speaker out port	8-Channel Audio I/O (6 jacks)	30,31
USB01	USB connector x 2		32
VGA	VGA port	D-sub 15-pin, female	32
COM1	Serial port connector	D-sub 9-pin, male	32

Internal Connector			
Label	Function	Note	Page
ATX12V	ATX power connector	2 x 2 header	33
EATXPWR	ATX power connector	12 x 2 header	33
AAFP1	Front panel audio connector	5 x 2 header, pitch 2.54mm	34
CD	Optical drive audio connector	4 x 1 header, pitch 2.54mm	34
CHA_FAN1	Chassis fan connector	3 x 1 wafer, pitch 2.54mm	35
CHA_FAN2	Chassis fan connector	3 x 1 wafer, pitch 2.54mm	35
CPU_FAN	CPU fan connector	4 x 1 wafer, pitch 2.54mm	35
PWR_FAN	Power fan connector	3 x 1 wafer, pitch 2.54mm	36
CHASSIS	Chassis Intrusion Connector	4 x 1 header, pitch 2.54mm	36
F_PANEL	System panel connector	5 x 2 header, pitch 2.54mm	37
JCOM2	Serial port connector 2	5 x 2 header, pitch 2.54mm	38
JCOM3	Serial port connector 3	5 x 2 header, pitch 2.54mm	38
JCOM4	Serial port connector 4	5 x 2 header, pitch 2.54mm	39
JSPI	SPI connector	4 x 2 header, pitch 2.54mm	39
PRI_EIDE1	Primary IDE connector	20 x 2 header	40
SATA1	Serial ATA connectors [red]	7-pin header	41
SATA2	Serial ATA connectors [red]	7-pin header	41
SPDIF_OUT	Digital audio connector	4 x 1 header, pitch 2.54mm	41
USB910	USB 2.0 connector	5 x 2 header, pitch 2.54mm	42

1.4 Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA775 socket designed for the Intel® LGA775 Core 2 Duo / Pentium D / Pentium 4 / Celeron D CPU processors.



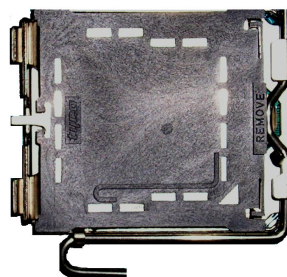
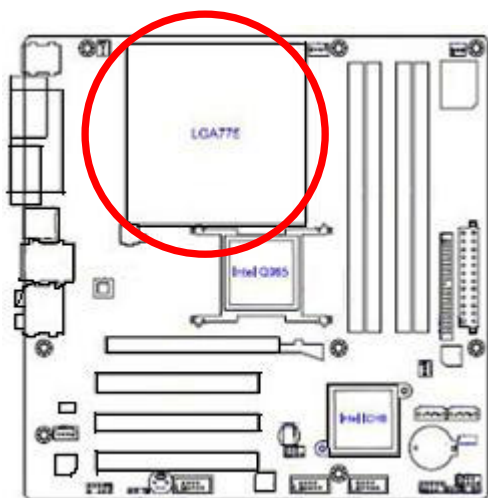
-
- Make sure the AC power is off before you install the CPU.
 - If installing a dual-core CPU, connect the chassis fan cable to the **CHA_FAN1 and CHA_FAN2** connector to ensure system stability.
-



-
- Your boxed Intel® Core 2 Duo / Pentium D / Pentium 4 / Celeron D CPU LGA775 processor package should come with installation instructions for the CPU, heatsink, and the retention mechanism. If the instructions in this section do not match the CPU documentation, follow the latter.
 - Upon purchase of the motherboard, make sure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. Your place of purchase or local distributor will shoulder the cost of repair only if the damage is shipment/transit-related.
 - Keep the cap after installing the motherboard. Your place of purchase or local distributor will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA775 socket.
 - The product warranty does not cover damage to the socket contacts resulting from incorrect CPU installation/removal, or misplacement/loss/ incorrect removal of the PnP cap.
-

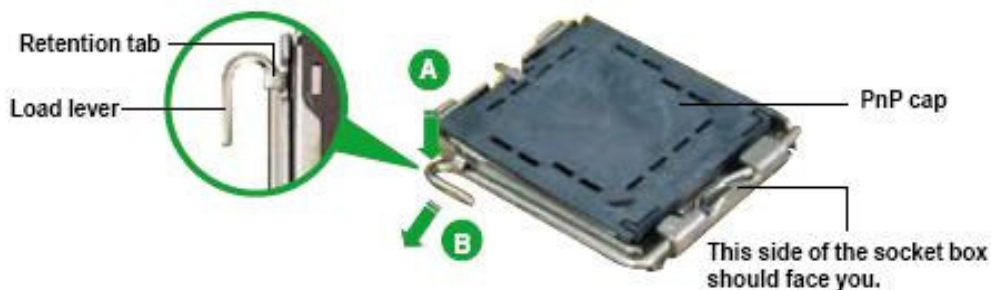
1.4.1 Installing the CPU

1. Locate the CPU socket on the motherboard.



Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

2. Press the load lever with your thumb (A), then move it to the left (B) until it is released from the retention tab.

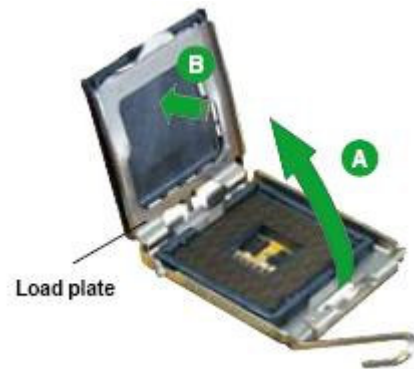


To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.

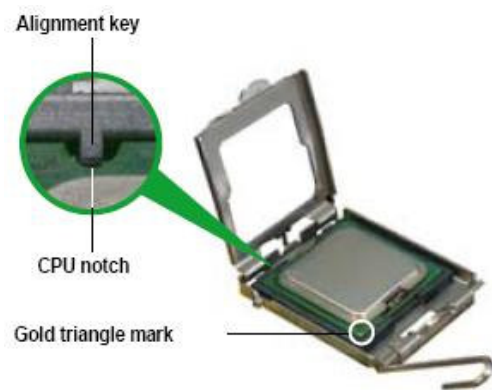
3. Lift the load lever in the direction of the arrow to a 135° angle.



4. Lift the load plate with your thumb and forefinger to a 100° angle (A), then push the PnP cap from the load plate window to remove (B).



5. Position the CPU over the socket, making sure that the gold triangle is on the bottom-left corner of the socket then fit the socket alignment key into the CPU notch.



6. Close the load plate (A), then push the load lever (B) until it snaps into the retention tab.
7. If installing a dual-core CPU, connect the chassis fan cable to the CHA_FAN1 connector to ensure system stability.



The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!



The motherboard supports Intel® LGA775 processors with the Intel® Enhanced Memory 64 Technology (EM64T), Enhanced Intel SpeedStep® Technology (EIST), and Hyper-Threading Technology.

1.4.2 Installing the CPU Heatsink and Fan

The Intel® Core™2 Duo/Pentium® D/Pentium® 4 and Celeron® D processor requires a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.



-
- Install the motherboard to the chassis before you install the CPU fan and heatsink assembly.
 - When you buy a boxed Intel® processor, the package includes the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel®-certified multi-directional heatsink and fan.
 - Your Intel® LGA775 heatsink and fan assembly comes in a push-pin design and requires no tool to install.
-

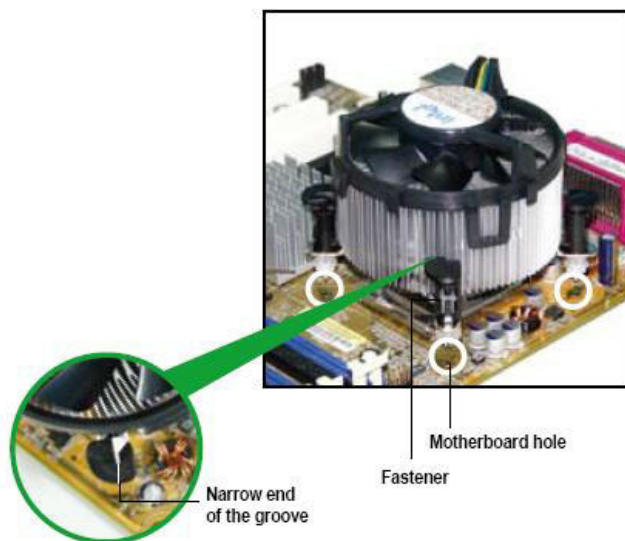


If you purchased a separate CPU heatsink and fan assembly, make sure that you have properly applied Thermal Interface Material to the CPU heatsink or CPU before you install the heatsink and fan assembly.

1. Place the heatsink on top of the installed CPU, making sure that the four fasteners match the holes on the motherboard.

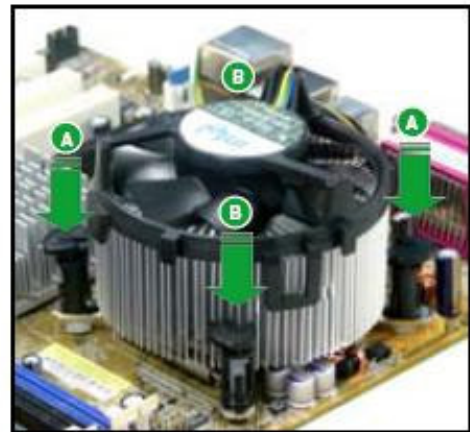
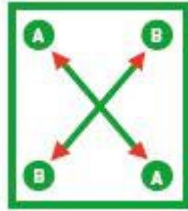


Orient the heatsink and fan assembly such that the CPU fan cable is closest to the CPU fan connector.

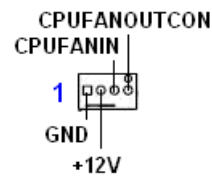
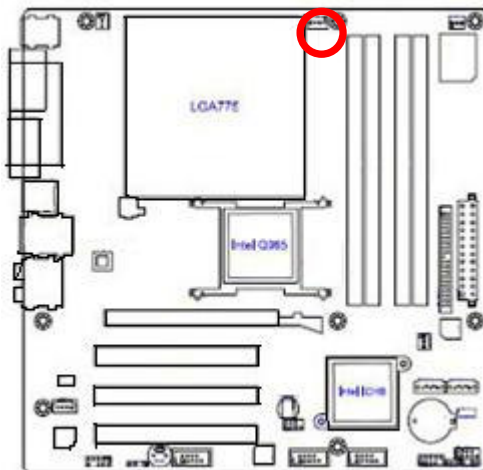


Make sure each fastener is oriented as shown, with the narrow groove directed outward.

2. Push down two fasteners at a time in a diagonal sequence to secure the heatsink and fan assembly in place.



3. Connect the CPU fan cable to the connector on the motherboard labelled **CPU_FAN**.



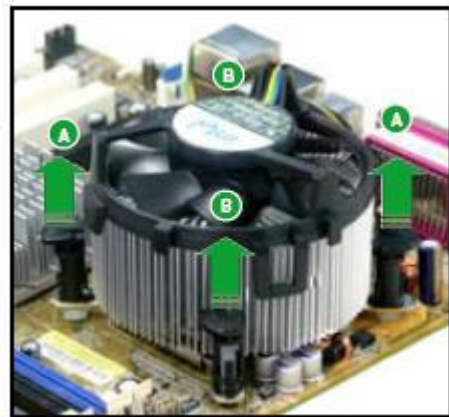
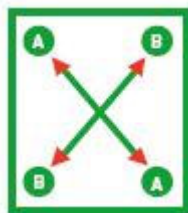
- Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components, and hardware monitoring errors can occur if you fail to plug this connector.
- These are not jumpers! DO NOT place jumper caps on the fan connectors.

1.4.3 Uninstalling the CPU Heatsink and Fan

1. Disconnect the CPU fan cable from the connector on the motherboard.
2. Rotate each fastener counter-clockwise.



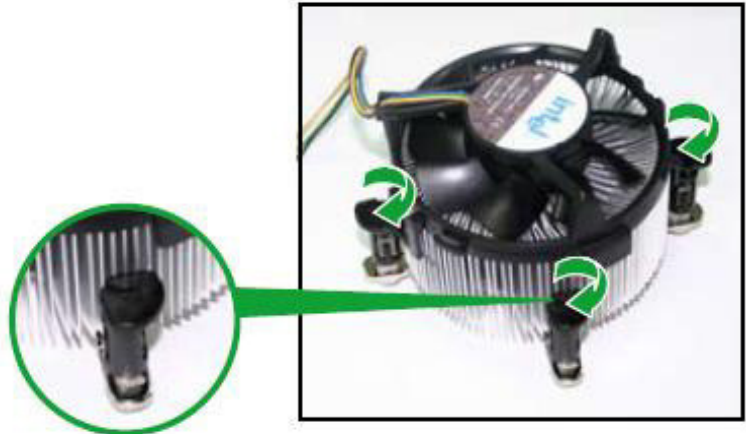
3. Pull up two fasteners at a time in a diagonal sequence to disengage the heatsink and fan assembly from the motherboard



4. Carefully remove the heatsink and fan assembly from the motherboard.



5. Rotate each fastener clockwise to ensure correct orientation when reinstalling.



The narrow end of the groove should point outward after resetting. (The photo shows the groove shaded for emphasis.)

Narrow end of the groove



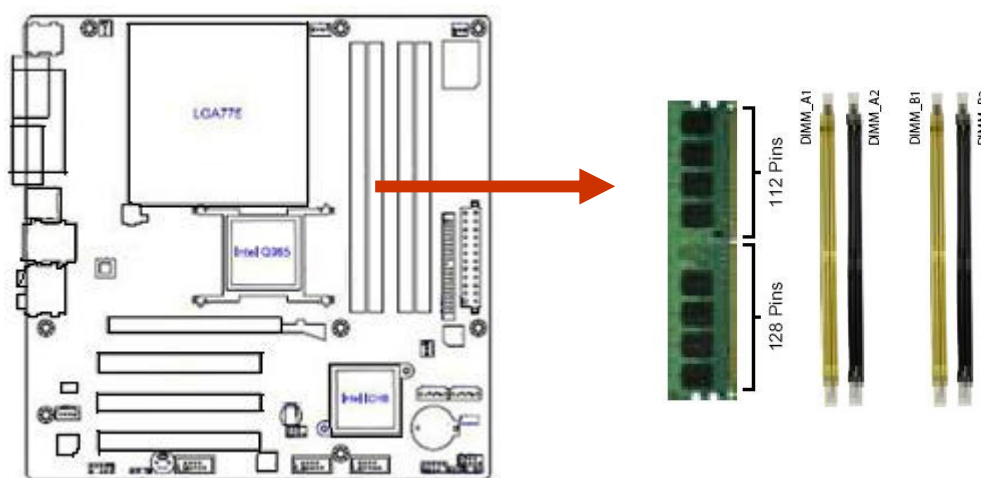
Refer to the documentation in the boxed or stand-alone CPU fan package for detailed information on CPU fan installation.

1.5 System Memory

1.5.1 DIMM Sockets Location

The motherboard comes with four 240-pin Double Data Rate 2 (DDR2) Dual Inline Memory Modules (DIMM) sockets.

A DDR2 module has the same physical dimensions as a DDR DIMM but has a 240-pin footprint compared to the 184-pin DDR DIMM. DDR2 DIMMs are notched differently to prevent installation on a DDR DIMM socket. The following figure illustrates the location of the sockets:



Channel	Socket
Channel A	DIMM_A1 and DIMM_A2
Channel B	DIMM_B1 and DIMM_B2

1.5.2 Memory Configurations

You may install 256 MB, 512 MB, 1 GB and 2GB unbuffered non-ECC DDR2 DIMMs into the DIMM sockets using the memory configurations in this section.



-
- You may install varying memory sizes in Channel A and Channel B. The system maps the total size of the lower-sized channel for the dual-channel configuration. Any excess memory from the higher-sized channel is then mapped for single-channel operation.
 - Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor.
 - Due to chipset resource allocation, the system may detect less than 4 GB system memory when you installed four 1 GB DDR2 memory modules. This limitation appears on Windows® XP 32-bit operation system which does not support Physical Address Extension (PAE).
 - If you install Windows® XP 32-bit operation system, a total memory of less than 3GB is recommended.
 - This motherboard does not support memory modules made up of 128 Mb chips or double-sided x16 memory modules.
-



Notes on memory limitations

- Due to chipset limitation, this motherboard can only support up to 8 GB on the operating systems listed below. You may install a maximum of 2 GB DIMMs on each slot, but only DDR2-533 and DDR2-667 2 GB density modules are available for this configuration.

32-bit	64-bit
Windows 2000 Advanced Server	Windows XP Professional x64 Ed.

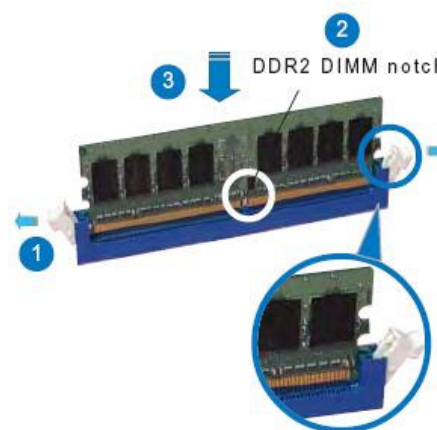
- Some old-version DDR2-800/667 DIMMs may not match Intel®'s On-Die-Termination (ODT) requirement and will automatically downgrade to run at DDR2-533. If this happens, contact your memory vendor to check the ODT value.
 - Due to chipset limitation, DDR2-800 with CL=4 will be downgraded to run at DDR2-667 by default setting. If you want to operate with lower latency, adjust the memory timing manually.
 - Due to chipset limitation, DDR2-667 with CL=3 will be downgraded to run at DDR2-533 by default setting. If you want to operate with lower latency, adjust the memory timing manually.
 - The total memory may has 8MB reduction under Single Channel mode, and 16MB reduction under Dual Channel mode because the address space is reserved for the Intel® vPro™ Technology and the Intel® Quiet System Technology.
-

1.5.3 Installing a DIMM



Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

1. Unlock a DIMM socket by pressing the retaining clips outward
2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.
3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.



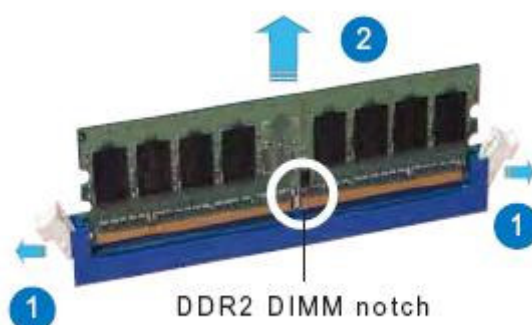
Unlocked retaining clip



- A DDR2 DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.
- The DDR2 DIMM sockets do not support DDR DIMMs. DO NOT install DDR DIMMs to the DDR2 DIMM socket.

1.5.4 Removing a DIMM

1. Simultaneously press the retaining clips outward to unlock the DIMM.
2. Remove the DIMM from the socket.



Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

1.6 Expansion Slots

In the future, you may need to install expansion cards. The following sub-sections describe the slots and the expansion cards that they support.



Make sure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.

1.6.1 Installing an Expansion Card

1. Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.
2. Remove the system unit cover (if your motherboard is already installed in a chassis).
3. Remove the bracket opposite the slot that you intend to use. Keep the screw for later use.
4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
5. Secure the card to the chassis with the screw you removed earlier.
6. Replace the system cover.

1.6.2 Configuring an Expansion Card

After installing the expansion card, configure it by adjusting the software settings.

1. Turn on the system and change the necessary BIOS settings if any.
2. Assign an IRQ to the card if needed. Refer to the tables on the next page.
3. Install the software drivers for the expansion card.

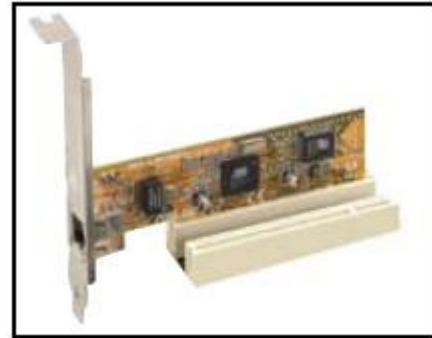
1.6.3 Standard Interrupt Assignments

IRQ	Priority	Standard Function
0	1	System Timer
1	2	Keyboard Controller
2	-	Redirect to IRQ#9
3	11	IRQ holder for PCI steering*
4	12	Communications Port (COM1)*
5	13	IRQ holder for PCI steering*
6	14	Floppy Disk Controller
7	15	Printer Port (LPT)*
8	3	System CMOS/Rear Time
9	4	IRQ holder for PCI steering*
10	5	IRQ holder for PCI steering*
11	6	IRQ holder for PCI steering*
12	7	PS/2 Compatible Mouse Port*
13	8	Numeric Data Processor
14	9	Primary IDE Channel
15	10	Secondary IDE Channel

* These IRQs are usually available for ISA or PCI devices.

1.6.4 PCI Slots

iQ96503 has three PCI slots. The PCI slots support cards such as a LAN card, SCSI card, USB card, and other cards that comply with PCI specifications. The figure shows a LAN card installed on a PCI slot.



1.6.5 PCI Express X16 Slot

This motherboard supports one PCI Express x16 graphic cards that comply with the PCI Express specifications. The following figure shows a graphics card installed on the PCI Express x16 slot.



1.7 Jumpers

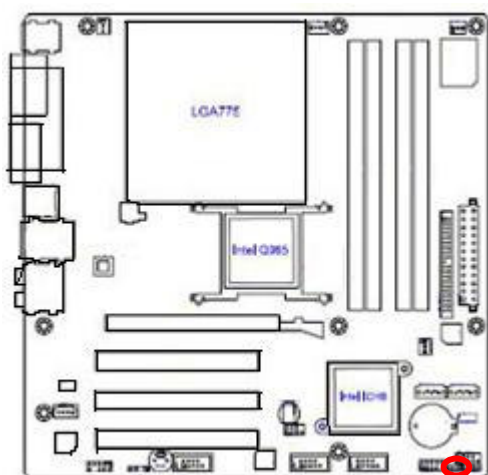
1.7.1 Clear CMOS (CLRTC)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords. To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the onboard battery.
3. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
4. Re-install the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the key during the boot process and enter BIOS setup to re-enter data.



Except when clearing the CMOS, never remove the cap on **CLRTC** jumper default position. Removing the cap will cause system boot failure!



Normal (Default)

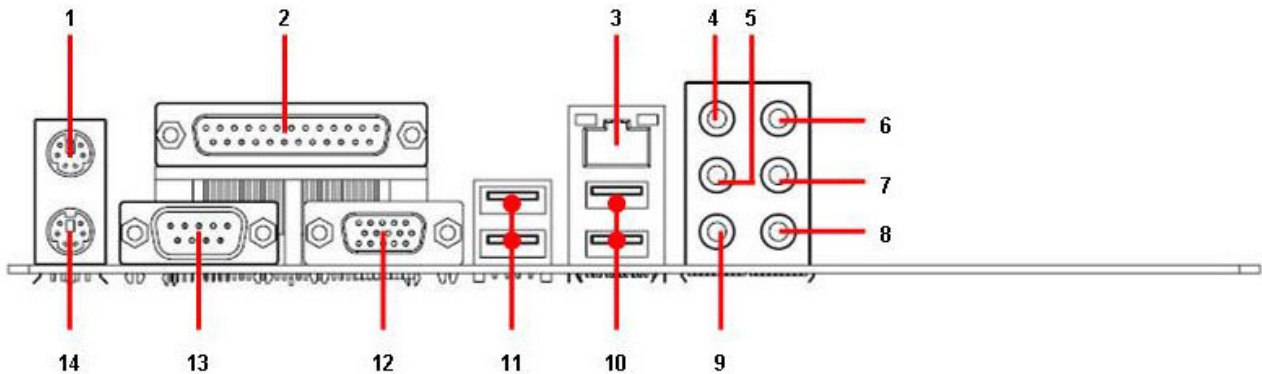


Clear RTC

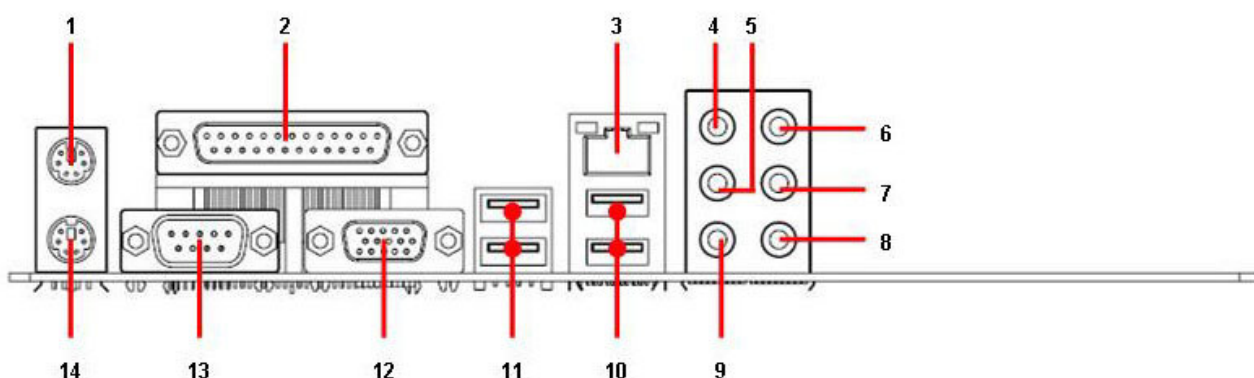



1.8 Connectors

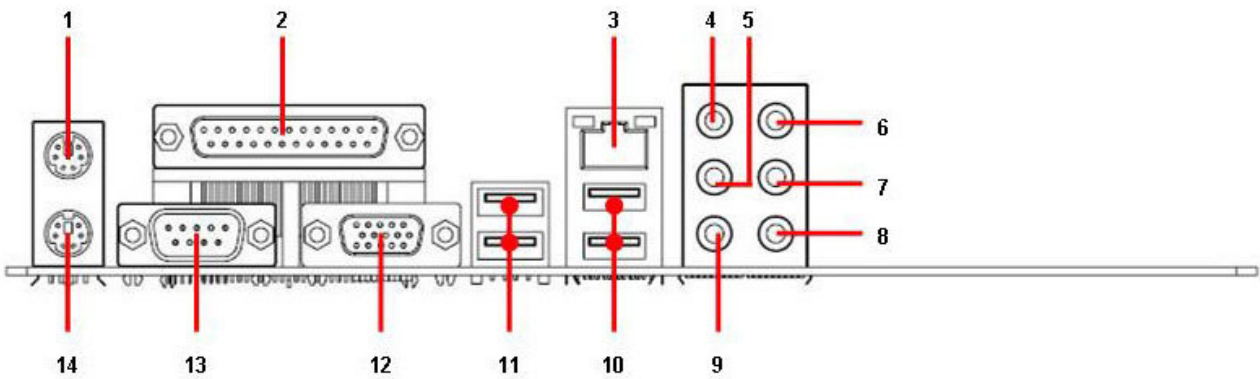
1.8.1 Rear Panel Connectors



No	Label	Function	Description																				
1	KBMS	PS/2 mouse connector	The standard PS/2 mouse DIN connector is for a PS/2 mouse.																				
2	LPT	Parallel port connector	This 25-pin parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode																				
3	LAN_USB34	LAN (RJ-45) connector	This port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications. The optional 10/100 Mbps LAN controller allows 10/100 Mbps connection to a Local Area Network (LAN) through a network hub.																				
<p>ACT/LINK LED SPEED LED</p> <p>LAN port</p>																							
<table border="1"> <thead> <tr> <th colspan="2">ACT / LINK LED</th> <th colspan="2">SPEED LED</th> </tr> <tr> <th>Status</th> <th>Description</th> <th>Status</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>No link</td> <td>OFF</td> <td>10Mbps connection</td> </tr> <tr> <td>Orange</td> <td>Linked</td> <td>ORANGE</td> <td>100Mbps connection</td> </tr> <tr> <td>Blinking</td> <td>Data activity</td> <td>GREEN</td> <td>1Gbps connection</td> </tr> </tbody> </table>				ACT / LINK LED		SPEED LED		Status	Description	Status	Description	OFF	No link	OFF	10Mbps connection	Orange	Linked	ORANGE	100Mbps connection	Blinking	Data activity	GREEN	1Gbps connection
ACT / LINK LED		SPEED LED																					
Status	Description	Status	Description																				
OFF	No link	OFF	10Mbps connection																				
Orange	Linked	ORANGE	100Mbps connection																				
Blinking	Data activity	GREEN	1Gbps connection																				
4	AUDIO	Center/Subwoofer port (Orange)	The port connects the center/subwoofer speakers in a 6-channel or 8-channel audio configuration.																				



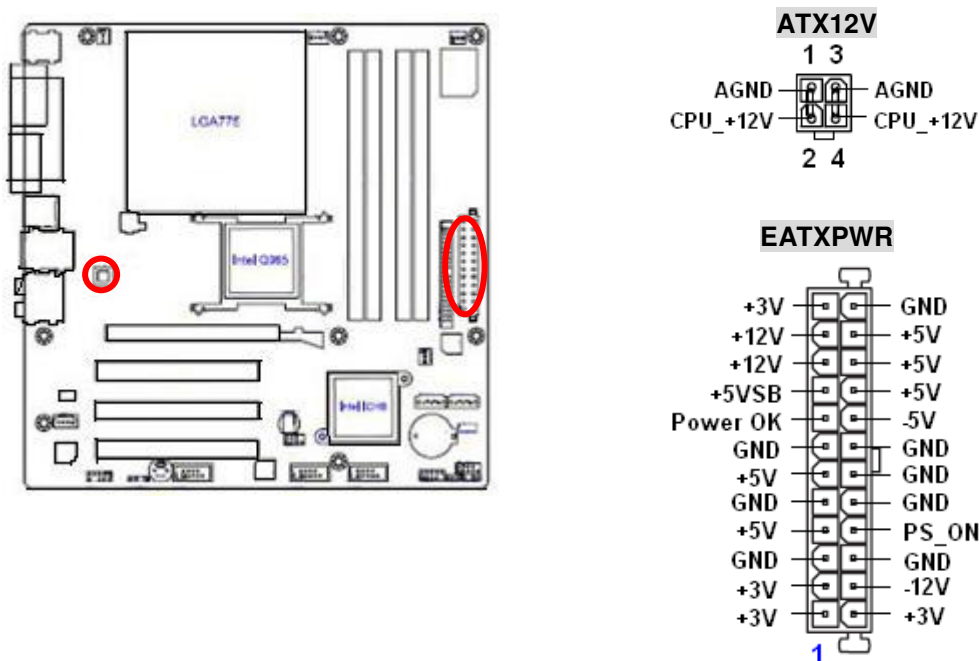
No	Label	Function	Description	
5	AUDIO	Rear speaker out port (Black)	This port connects the rear speakers in a 4-channel, 6-channel, or 8-channel audio configuration.	
6	AUDIO	Line-In port (Light Blue).	This port connects a tape, CD, DVD player, or other audio sources.	
7	AUDIO	Line-Out port (Lime)	This port connects a headphone or a speaker. In 4-channel, 6-channel, and 8-channel configuration, the function of this port becomes Front Speaker Out.	
8	AUDIO	Microphone port (Pink)	This port connects a microphone.	
9	AUDIO	Side Speaker Out port (Gray)	This port connects the side speakers in an 8-channel audio configuration.	
 <p>Refer to the audio configuration table below for the function of the audio ports in 2, 4, 6, or 8-channel configuration.</p>				
Port		Headset		
	2-channel	4-channel	6-channel	8-channel
Light Blue	Line in	Line in	Line in	Line in
Lime	Line out	Front speaker out	Front speaker out	Front speaker out
Pink	Mic In	Mic In	Mic In	Mic In
Orange	-	-	Center/Subwoofer	Center/Subwoofer
Black	-	Rear speaker out	Rear speaker out	Rear speaker out
Gray	-	-	-	Side speaker out
10	LAN_USB34	USB 2.0 connector	These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.	



No	Label	Function	Description
11	USB01	USB 2.0 connector	These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
12	VGA	VGA port	This 15-pin port is for a VGA monitor or other VGA-compatible devices.
13	COM1	Serial port connector	D-Sub 9-pin, male
14	KBMS	PS/2 KB connector	This port is for a PS/2 keyboard

1.8.2 ATX Power Connector (ATX12V, EATXPWR)

These connector are for ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.



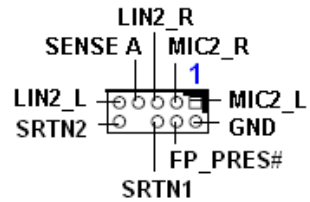
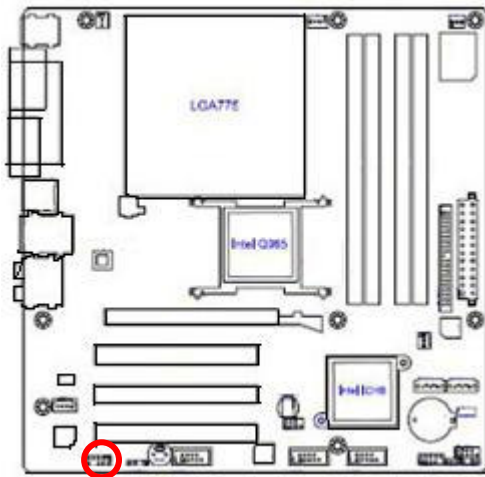
Important notes on the Motherboard Power Requirements



- Do not forget to connect the 4-pin ATX +12 V power plug; otherwise, the system will not boot up.
- To power the motherboard, it is recommended that you use an ATX 12 V Specification 2.0 power supply unit (PSU) with a minimum 350 W power rating. This PSU type has a 24-pin and 4-pin ATX power plugs.
- If you intend to use a PSU with a 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15A on +12 V and that the PSU has a minimum power rating of 350 W. The system may become unstable or may not boot up if the power is inadequate. We do not, however, recommend the use of a 20-pin PSU.
- The ATX 12 V 350 W Spec. 2.0 PSU passed the motherboard power requirement test with the following configuration:
 - CPU : Intel® Pentium® 4 3.6 GHz
 - Memory : 512 MB DDR2 (x 4)
 - Graphics card : PCI Express x16 Nvidia EN5900
 - Parallel ATA devices : IDE hard disk drive (x 2)
 - Serial ATA device : SATA hard disk drive
 - Optical drives : CD-ROM (x 2)
- You must install a PSU with a higher power rating if you intend to install additional devices.

1.8.3 Front Panel Audio Connector (AAFP1)

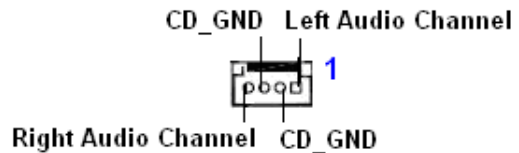
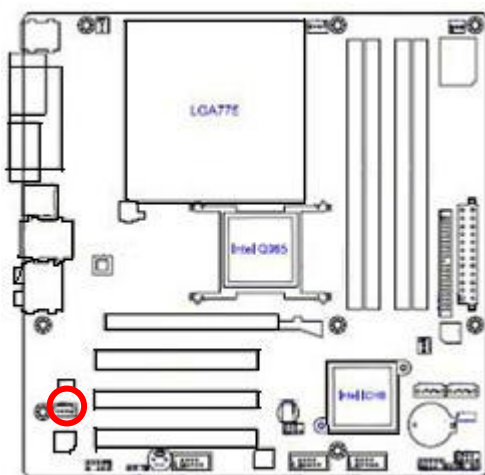
This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC '97 (optional) audio standard. Connect one end of the front panel audio I/O module cable to this connector.



For motherboards with the optional HD Audio feature, we recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability.

1.8.4 Optical Drive Audio Connector (CD)

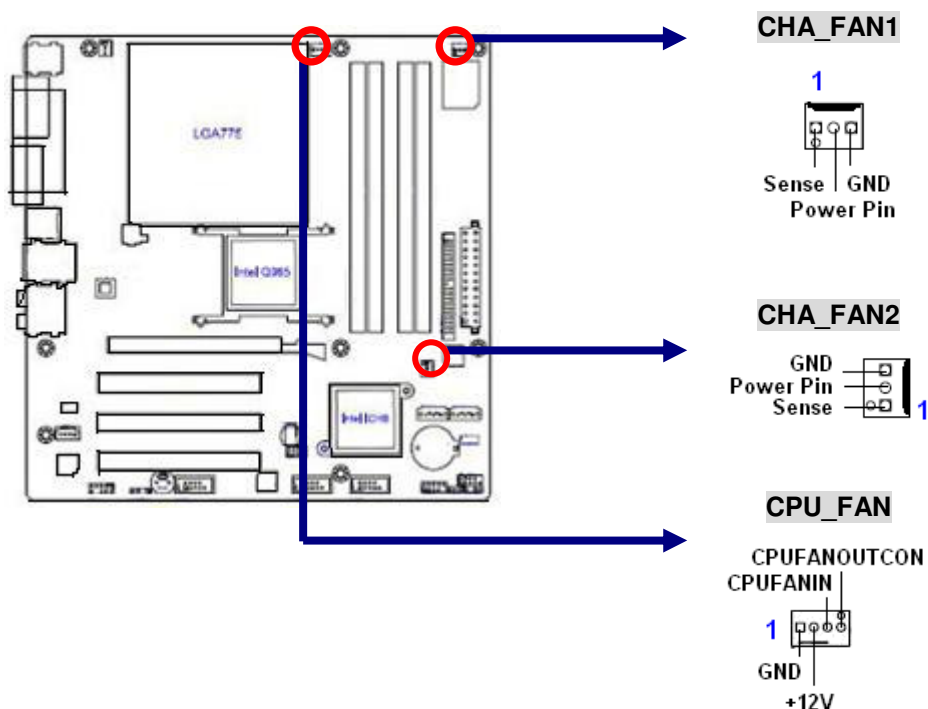
This connector is for the 4-pin audio cable that connects to the audio connector at the back of the optical drive



Enable the CD-IN function in the audio utility when using this connector.

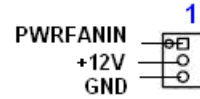
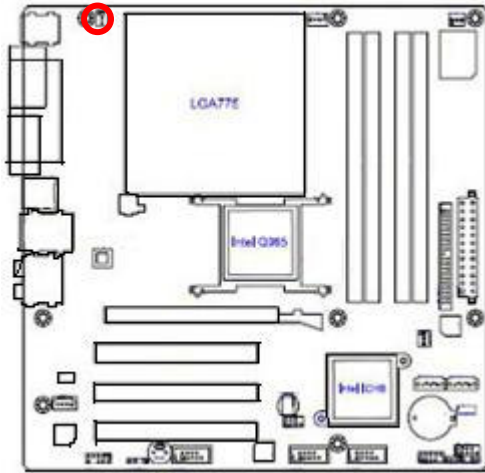
1.8.5 CPU and Chassis Fan Connector (CPU_FAN, CHA_FAN1, CHA_FAN2)

The fan connectors support cooling fans of 350 mA ~ 2000 mA (24 W max.) or a total of 1 A ~ 7 A (84 W max.) at +12V. Connect the fan cables to the fan connectors on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector



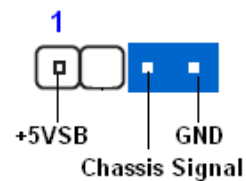
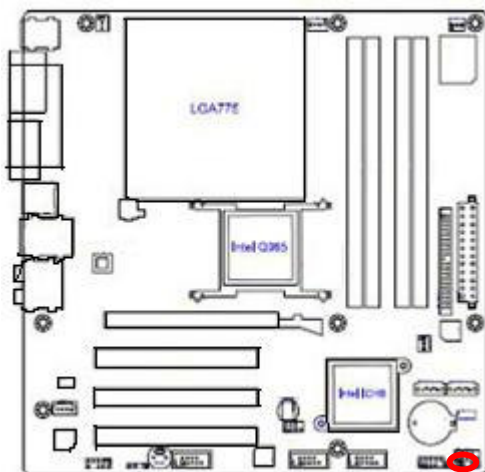
- Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components, and hardware monitoring errors can occur if you fail to plug this connector.
- These are not jumpers! DO NOT place jumper caps on the fan connectors.

1.8.6 Power Fan Connector (PWR_FAN)



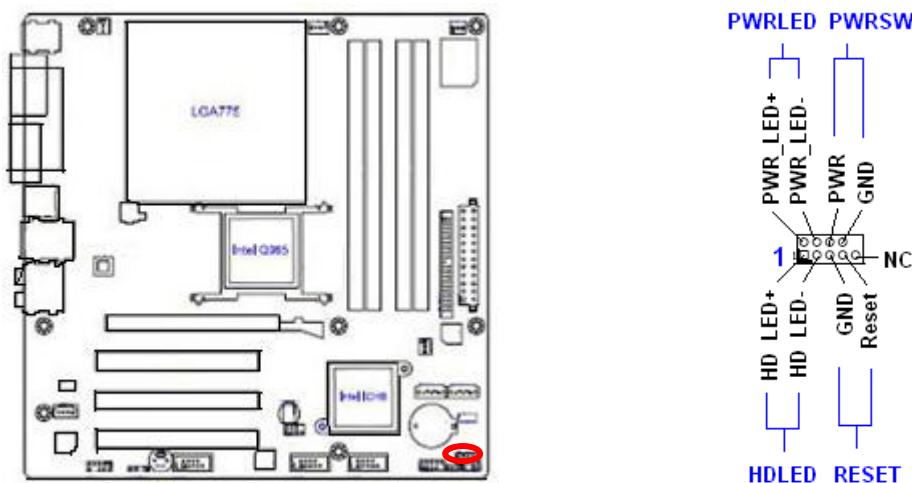
1.8.7 Chassis Intrusion Connector (CHASSIS)

This connector is for a chassis-mount intrusion detection sensor or switch. Connect one end of the chassis intrusion sensor or switch cable to this connector. The chassis intrusion sensor or switch sends a high-level signal to this connector when a chassis component is removed or replaced. The signal is then generated as a chassis intrusion event. By default, the pin labeled “Chassis Signal” and “Ground” are shorted with a jumper cap. Remove the jumper caps only when you intend to use the chassis intrusion detection feature.



1.8.8 System Panel Connector (F_PANEL)

This connector supports several chassis-mounted functions.



- **System Power LED (2-pin PWRLED)**

This 2-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **ATX Power Button/Soft-off Button (2-pin PWRSW)**

This connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

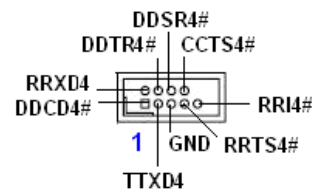
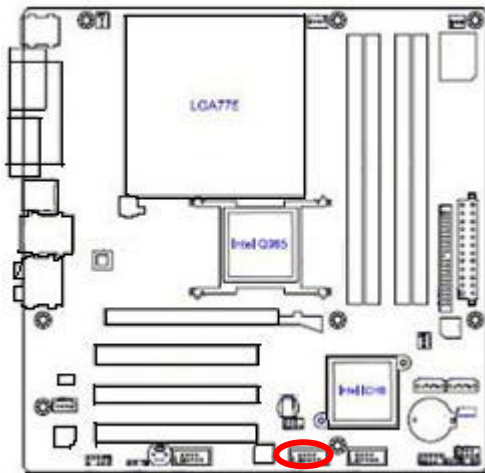
- **Hard Disk Drive Activity LED (2-pin HDLED)**

This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.

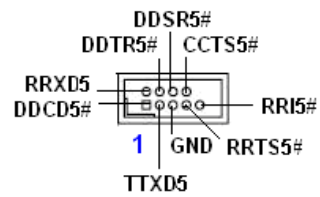
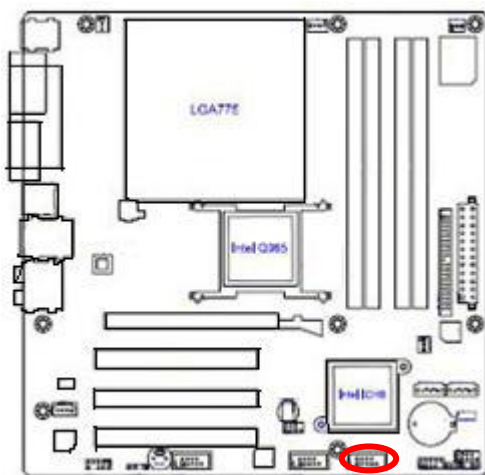
- **Reset Button (2-pin RESET)**

This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

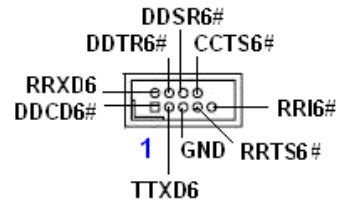
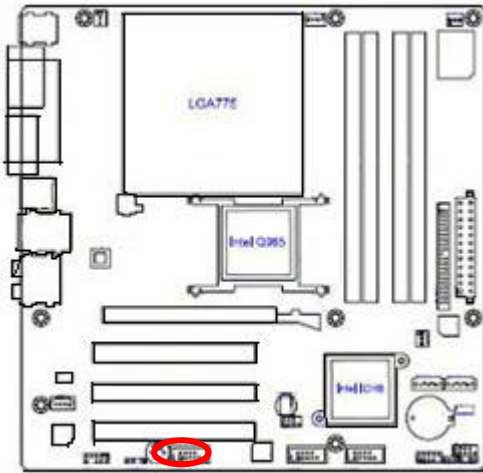
1.8.9 Serial Port Connector 2 (JCOM2)



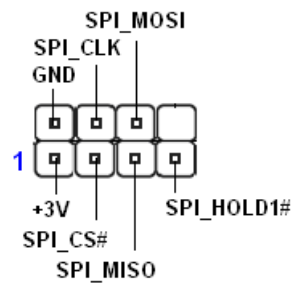
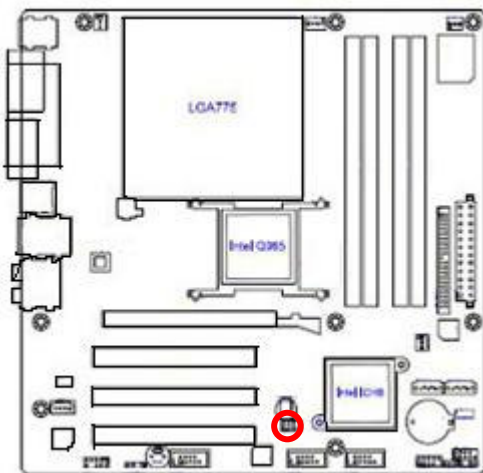
1.8.10 Serial Port Connector 3 (JCOM3)



1.8.11 Serial Port Connector 4 (JCOM4)



1.8.12 SPI Connector (JSPI)



1.8.13 Primary IDE Connector (PRI_EIDE1)

The onboard IDE connector is for the Ultra DMA 133/100/66/33 signal cable. There are three connectors on each Ultra DMA 133/100/66/33 signal cable: blue, black, and gray. Connect the blue connector to the motherboard's IDE connector, then select one of the following modes to configure your device.

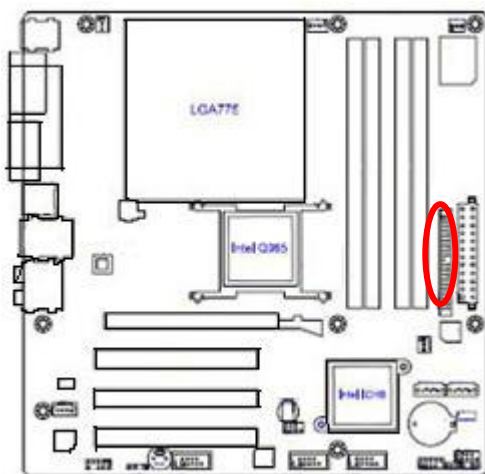
	Drive jumper setting	Mode of device(s)	Cable connector
Single device	Cable-select or Master	-	Black
Two devices	Cable-select	Master	Black
		Slave	Gray
	Master	Master	Black or Gray
	Slave	Slave	



- Pin 20 on the IDE connector is removed to match the covered hole on the Ultra DMA cable connector. This prevents incorrect insertion when you connect the IDE cable.
- Use the 80-conductor IDE cable for Ultra DMA 133/100/66/33 IDE devices.

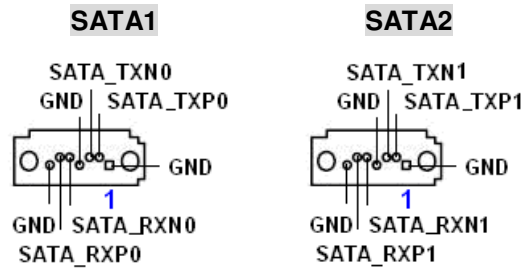
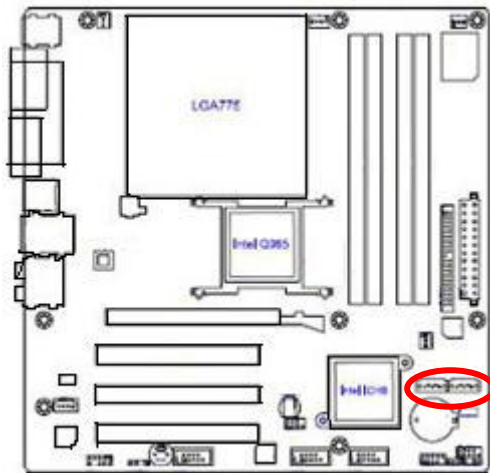


If any device jumper is set as “Cable-Select,” make sure all other device jumpers have the same setting



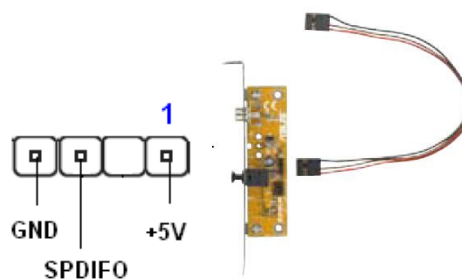
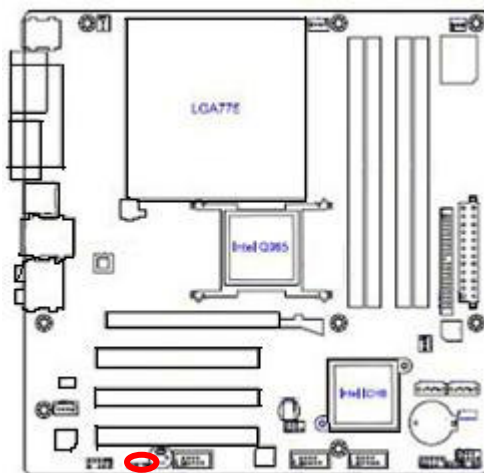
- Orient the red markings (usually zigzag) on the IDE cable to Pin 1.

1.8.14 Serial SATA Connector 1 & 2 (SATA1, SATA2)



1.8.15 Digital Audio Connector (SPDIF_OUT)

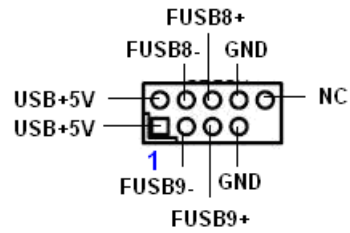
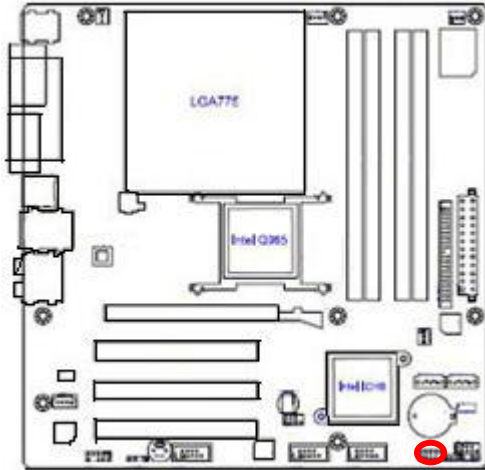
This connector is for an additional Sony/Philips Digital Interface (S/PDIF) port(s). Connect the S/PDIF module cable to this connector, then install the module to a slot opening at the back of the system chassis.



The S/PDIF module is purchased separately.

1.8.16 USB 2.0 Connector (USB910)

These connectors are for USB 2.0 ports. Connect the USB/GAME module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.



Never connect a **1394 cable** to the USB connectors. Doing so will damage the motherboard!



The USB module is purchased separately.
