mATX
iQ965-IGM Series

Intel® Quad-core / Core™ 2 Extreme / Core™ 2 Duo / Pentium® D / Pentium® 4 / Celeron® D mATX Main Board

User's Manual

Ver. 1.00

Contents

Notices

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received including interference that may cause undesired operation.

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

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

> The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

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

This class B digital apparatus complies with Canadian ICES-003.

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 adpater 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.

About this guide

This user guide contains the information you need when installing and configuring the motherboard.

How this guide is organized

This manual contains the following parts:

- **Chapter 1: Product introduction**

  This chapter describes the features of the motherboard and the new technology it supports. It also lists the hardware setup procedures that you have to perform when installing system components. It includes description of the jumpers and connectors on the motherboard.

Where to find more information

Refer to the following sources for additional information and for product and software updates.

Optional documentation

Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

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.

Typography

Bold text	Indicates a menu or an item to select.
Italics	Used to emphasize a word or a phrase.
<Key>	Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key.
	Example: <Enter> means that you must press the Enter or Return key.
<Key1>+<Key2>+<Key3>	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+).
	Example: <Ctrl+Alt+D>
Command	Means that you must type the command exactly as shown, then supply the required item or value enclosed in brackets.
	Example: At the DOS prompt, type the command line:
	afudos /i[filename]
	afudos /iP5BVMDA.ROM

iQ965-IGM specifications summary

CPU	LGA775 socket for Intel® Quad-core / Core™2 Extreme/ Core™2 Duo / Pentium® D / Pentium® 4 / Celeron® D processor Compatible with Intel® 05B/05A/06 processors Intel® Hyper-Threading Technology ready
Chipset	Intel® Q965 / ICH8 or ICH8DO (optional) with Intel® Active Management Technology
System Bus	1066 / 800 / 533 MHz
Memory	4 x DIMM, max. 8GB, DDR2 800 / 667 / 533 MHz, non-ECC, un-buffered memory Dual channel memory architecture
Expansion Slots	1 x PCI-E x16 slot 1 x PCI-E x4 slot 2 x PCI slots
VGA	Intel® Graphics Media Accelerator 3000 (Intel® GMA 3000) integrated High Definition Video Processing with max. resolutions to Max resolution to 2048 x 1536 bpp (@75Hz) Max. shared memory of 256MB Support Microsoft® DX 9, OpenGL 1.4, Pixel Shader 2.0

Storage	Southbridge
	  - 4 x SATA 3.0 Gb/s ports, or 6 x SATA 3.0 Gb/s ports (Intel® ICH8DO only)
	  - Intel® Matrix Storage Technology supports RAID 0, 1, 5, and 10 (Intel® ICH8DO only)
	
	JMicron® JMB363 PATA and SATA controller
	  - 1 x UltraDMA 133/100/66/33 for up to 2 PATA devices
	  - 1 x Internal SATA 3.0 Gb/s port
	  - 1 x External SATA 3.0 Gb/s port (SATA On-the-Go)
	  - Support SATA RAID 0, 1 and JBOD (by 1 x External SATA & 1 x Internal SATA)

LAN	Intel® 82566DM PCI-E Gigabit Ethernet Controller

Audio	ADI® AD 1988 8-channel High Definition Audio CODEC
	  - Support Jack-Sensing, Enumeration, Multi-streaming and Jack-Retasking
	  - S/PDIF_OUT interface

IEEE 1394	TI® 1394a controller supports 2 x IEEE 1394a ports (one at midboard; one at back panel) (optional)

(continued on the next page)

iQ965-IGM specifications summary

USB	10 x USB 2.0 ports (6 ports at mid-board, 4 ports at back panel)
Back Panel I/O Ports	1 x PS/2 keyboard port 1 x PS/2 mouse port 1 x Parallel port 1 x External Serial ATA port 1 x VGA port 1 x IEEE 1394a connector (optional) 1 x RJ45 port 4 x USB 2.0/1.1 ports 8-channel Audio I/O ports (6 jacks)
Internal Connectors	3 x USB 2.0 connectors support additional 6 USB ports 1 x Floppy disk drive connector 1 x IDE connector for two devices 1 x COM connector 1 x TPM connector 5 x Serial ATA connectors, or 7 x Serial ATA connectors (Intel® ICH8DO only) 1 x CPU Fan connector 2 x Chassis Fan connectors 1 x Power Fan connector 1 x IEEE1394a connector (optional) 1 x Front panel audio connector 1 x S/PDIF Out Header 1 x Chassis intrusion connector 1 x CD audio in 1 x 24-pin ATX Power connector 1 x 4-pin ATX 12 V Power connector 1 x System panel connector
BIOS Features	16 Mb Flash ROM, AMI BIOS, PnP, DMI 2.0, WfM2.0, SM BIOS 2.3, ACPI 2.0a
Form Factor	uATX form factor: 9.6" x 9.6" (24.4 cm x 24.4 cm)

*Specifications are subject to change without notice.

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

Product introduction

1

1.1 Special features

Intel® Core™2 Processor Ready

This motherboard supports the latest Intel® Core™2 processor in the LGA775 package. With the new Intel® Core™ microarchitecture technology and 1066/800/ 533 MHz FSB, Intel® Core™2 processor is one of the most powerful and energy efficient CPU in the world.

Intel® Q965 Express Chipset

The Intel® Q965 Express Chipset provides all business wth more effective costs management, safer computing environmrnt, and deploys more responsive PCs. It features the integrated graphics engine, Intel® Graphics Media Accelerator 3000, and Intel® Active Management Technology, both of which provide advancements in manageability, graphics, stability, data protection, and optimizations to support the most advanced business operating systems.

Intel® vPro™ Technology

The Intel® vPro™ Technology allows IT organizations to remotely manage corporate PCs, even when they are powered off or with non-functional operating systems. It features the Intel® Active Management Technology and offers IT organizations a lighter-weight form of virtualization to audit all Intel® AMT-based platforms in a network environment. PCs with Intel® vPro™ Technology allow IT departments to remotely retrieve assets and hardware/software inventories, contain security threats, resolve system problems, and increase the uptime of desktops with lower maintenance costs. To enable the Intel® vPro™ Technology, first enable the related vPro™ Technology settings.

DDR2 memory support

The motherboard supports DDR2 memory that features data transfer rates of 800/667/533 MHz to meet the higher bandwidth requirements of the latest 3D graphics, multimedia, and Internet applications. The dual-channel DDR2 architecture doubles the bandwidth of your system memory to boost system performance, eliminating bottlenecks with peak bandwidths of up to 12.8 GB/s. Without restriction to the memory size across the two channels, the motherboard allows you to install DIMMs with different memory size and enjoy dual-channel feature at the same time.

Serial ATA 3.0 Gb/s technology and SATA on the go

This motherboard supports the next-generation hard drives based on the Serial ATA (SATA) 3Gb/s storage specification, delivering enhanced scalability and doubling the bus bandwidth for high-speed data retrieval and saves. The external SATA port located at the back I/O provides smart setup and hot-plug functions. Easily backup photos, videos and other entertainment contents to external devices.

IEEE 1394a support (optional)

The IEEE 1394a interface provides high speed digital interface for audio/video appliances such as digital television, digital video camcorders, storage peripherals & other PC portable devices.

Dual RAID solution (Intel® ICH8DO only)

The Intel® ICH8DO chipset incorporates six Serial ATA connectors with high performance RAID 0, 1, 5 and 10 functions. The JMicron controller provides another two Serial ATA connectors for RAID 0, 1, and JBOD functions. Making this motherboard an ideal solution to enhance hard disk performance and data back up protection without the cost of add-on cards.

S/PDIF digital sound ready

The motherboard supports the S/PDIF-out (SONY-PHILIPS Digtal Interface) function through the S/PDIF interface at mid-board. It allows to transfer digital audio without converting to analog format and keeps the best signal quality.

High Definition Audio

Enjoy high-end sound quality on your PC! The onboard 8-channel HD audio (High Definition Audio, previously codenamed Azalia) CODEC enables high-quality 192KHz/24-bit audio output, jack-sensing feature, retasking functions and multi-streaming technology that simultaneously sends different audio streams to different destinations. You can now talk to your partners on the headphone while playing multi-channel network games.

1.2 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.

SB_PWR

ON
Standby Power

OFF
Powered Off

iQ965-IGM Onboard LED
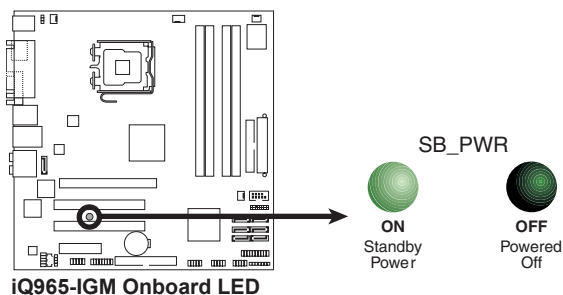
1.3   Motherboard overview

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

⚠ 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.

## 1.3.1   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.
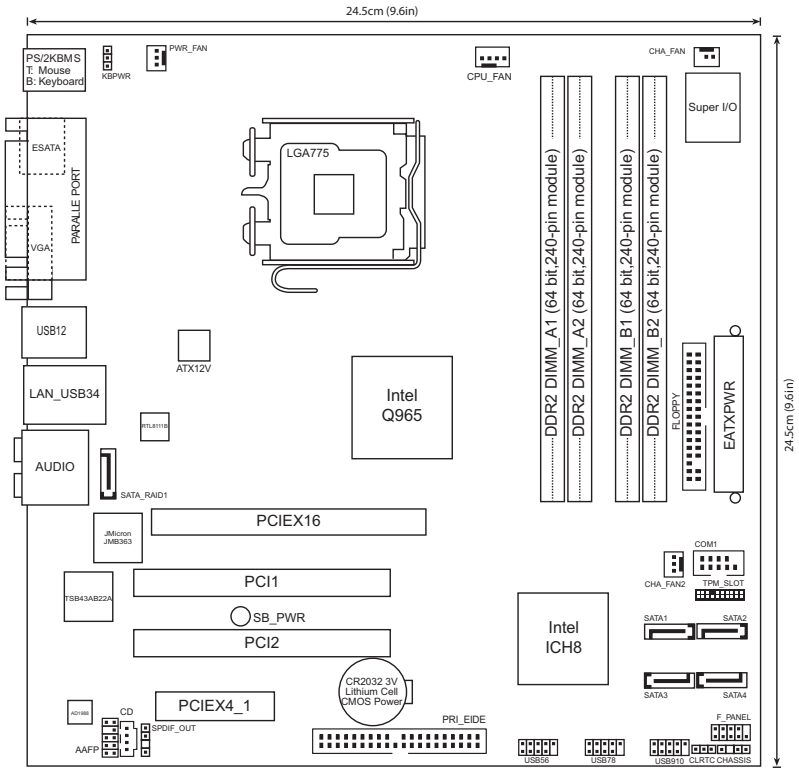
1.3.2   Screw holes

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

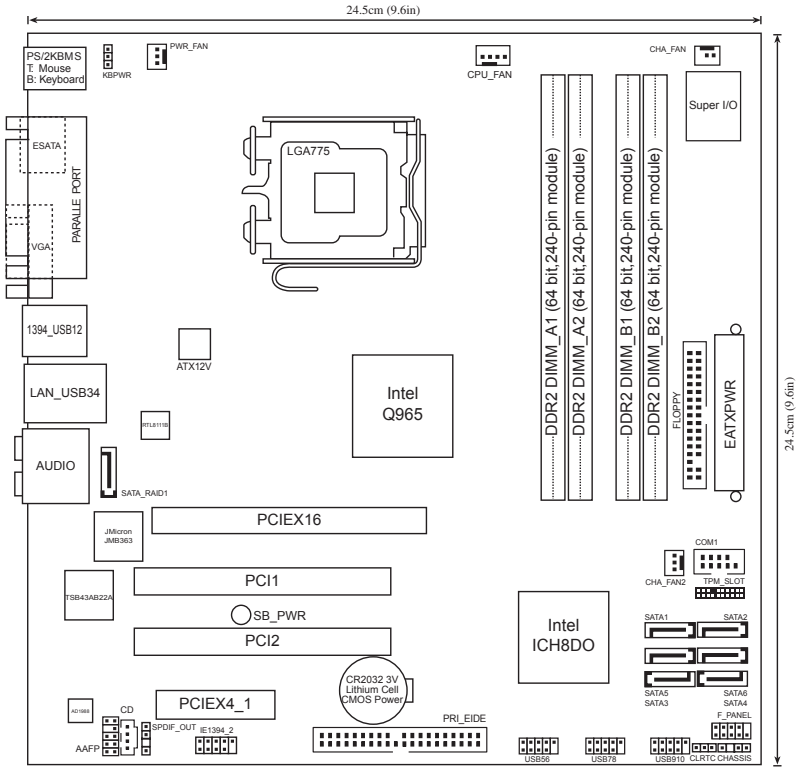⚠ Do not overtighten the screws! Doing so can damage the motherboard.

Place this side towards the rear of the chassis
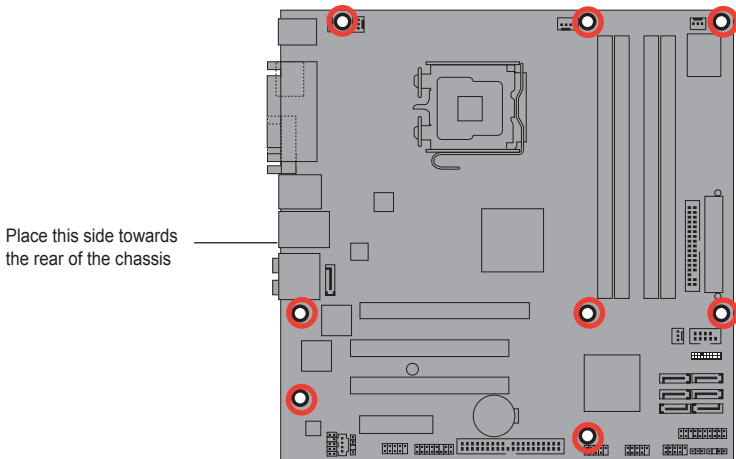
1.3.3   Motherboard layout (standard version)

1.3.4 Motherboard layout (optional version)

*South bridge changes to ICH8, and IEEE1394 is applied.

24.5cm (9.6in)

PWR_FAN
PS/2KBMS
T: Mouse
B: Keyboard
KBPWR
CPU_FAN
CHA_FAN
Super I/O

ESATA
PARALLE PORT
LGA775

VGA

1394_USB12
ATX12V

LAN_USB34
RTL8111B
Intel
Q965

DDR2 DIMM_A1 (64 bit, 240-pin module)
DDR2 DIMM_A2 (64 bit, 240-pin module)
DDR2 DIMM_B1 (64 bit, 240-pin module)
DDR2 DIMM_B2 (64 bit, 240-pin module)
FLOPPY
EATXPWR

AUDIO
SATA_RAID1

24.5cm (9.6in)

JMicron
JMB363
PCIEX16

COM1
CHA_FAN2   TPM_SLOT

TSB43AB22A
PCI1
SB_PWR
PCI2
Intel
ICH8DO

SATA1   SATA2

SATA5   SATA6
SATA3   SATA4

AD1988
CD
PCIEX4_1
CR2032 3V
Lithium Cell
CMOS Power

F_PANEL
SPDIF_OUT   IE1394_2
PRI_EIDE

AAFP
USB56   USB78   USB910   CLRTC CHASSIS

Refer to **1.8 Connectors** for more information about rear panel connectors and internal connectors.

1.3.5   Layout contents

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Internal connectors		Page
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2.	Digital Audio connector (4-1 pin SPDIF_OUT)	1-32
3.	IDE connector (40-1 pin PRI_IDE)	1-33
4.	ICH8DO Serial ATA connectors (7-pin SATA1 [red], SATA2 [red], SATA3 [red], SATA4 [red], SATA5 [black], SATA6 [black])	1-34
5.	IEEE 1394a port connector (10-1 pin IE1394_2)	1-34
6.	JMicron® JMB363 Serial ATA RAID connector (7-pin SATA_RAID1)	1-35
7.	TPM connector (20-1 pin TPM_SLOT)	1-35
8.	USB connectors (10-1 pin USB56, USB 78, USB910)	1-36
9.	Optical drive audio connector (4-pin CD)	1-36
10.	CPU, chassis, and power fan connectors (4-pin CPU_FAN, 3-pin CHA_FAN, 3-pin CHA_FAN2, 3-pin PWR_FAN)	1-37
11.	Serial port connector (10-1 pin COM1)	1-37
12.	Chassis intrusion connector (4-1 pin CHASSIS)	1-38
13.	Front panel audio connector (10-1 pin AAFP)	1-38
14.	ATX power connectors (24-pin EATXPWR, 4-pin EATX12V)	1-39
15.	System panel connector (20-8-pin PANEL) • System power LED (2-pin PLED) • Hard disk drive activity LED (2-pin IDE_LED) • System warning speaker (4-pin SPEAKER) • ATX power button/soft-off button (2-pin PWRSW) • Reset button (2-pin RESET)	1-40

1.4   Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA775 socket designed for the Intel® Core™2 Extreme/Core™2 Duo/Pentium® D/Pentium® 4 and Celeron® D 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_FAN connector to ensure system stability.

- • Upon purchase of the motherboard, make sure that the PnP cap is on the socket and the socket contacts are not bent.
- • Keep the cap after installing the motherboard.
- • 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

To install a CPU:

1. Locate the CPU socket on the motherboard.

iQ965-IGM CPU socket 775
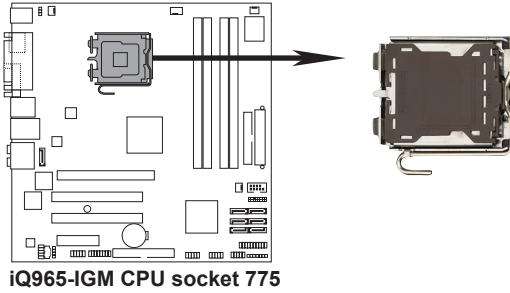
> Before installing the CPU, make sure that the cam box is facing towards you and the load lever is on your left.

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

Retention tab

Load lever

A

B

PnP cap

This side of the socket box should face you.
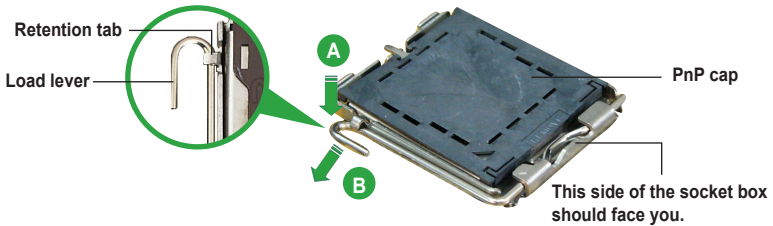
> To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.

3. Lift the load lever in the direction of the arrow to a 135º angle.
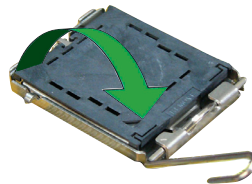
4. Lift the load plate with your thumb and forefinger to a 100º angle (A), then push the PnP cap from the load plate window to remove (B).

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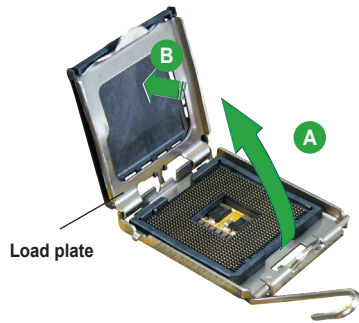
5. Position the CPU over the socket, making sure that the gold triangle is on the bottom-left corner of the socket then fit the socket alignment key into the CPU notch.

Alignment key

CPU notch

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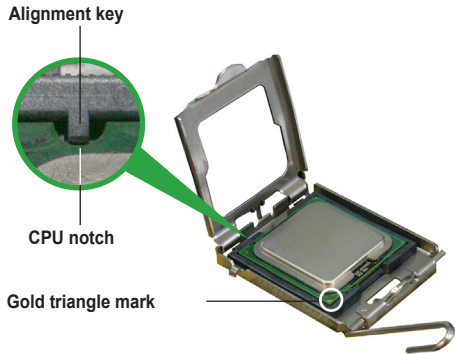
> The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

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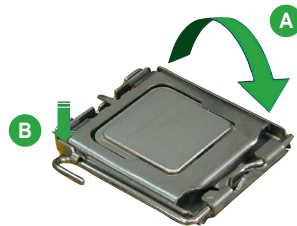
> The motherboard supports Intel® LGA775 processors with the Intel® Enhanced Memory 64 Technology (EM64T), Enhanced Intel SpeedStep® Technology (EIST), and Hyper-Threading Technology.

1.4.2   Installing the CPU heatsink and fan

The Intel® LGA775 processor requires a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.

- • 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.

Make sure that you have installed the motherboard to the chassis before you install the CPU fan and heatsink assembly.

To install the CPU heatsink and fan:

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.
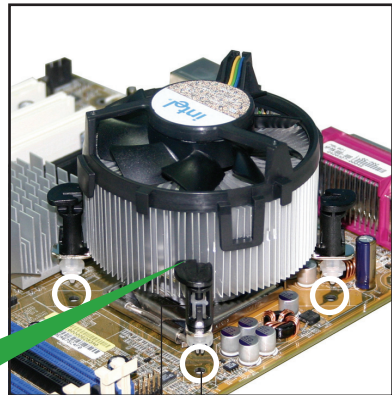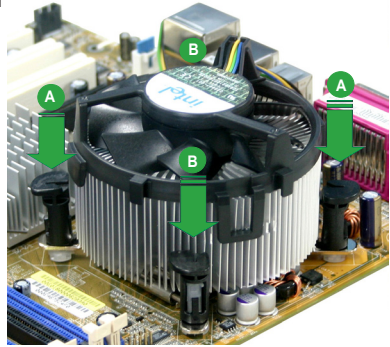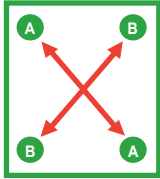

Motherboard hole

Fastener

Narrow end of the groove

Make sure to orient each fastener with the narrow end of the groove pointing outward. (The photo shows the groove shaded for emphasis.)

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 labeled CPU_FAN.

CPU_FAN

GND
CPU FAN PWR
CPU FAN IN
CPU FAN PWM
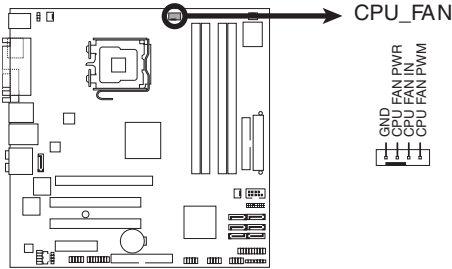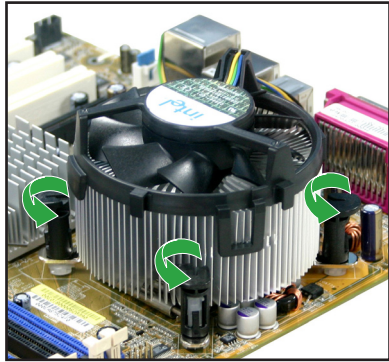
iQ965-IGM CPU Fan Connector

Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector.

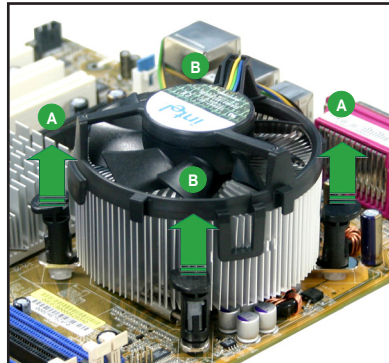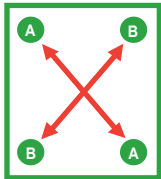### 1.4.3   Uninstalling the CPU heatsink and fan

To uninstall the CPU heatsink and fan:

1.   Disconnect the CPU fan cable from the connector on the motherboard.

2.   Rotate each fastener counterclockwise.

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.
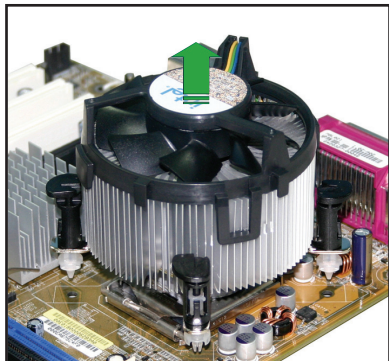
5. Rotate each fastener clockwise to ensure correct orientation when reinstalling.
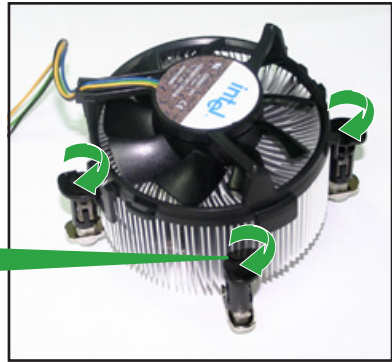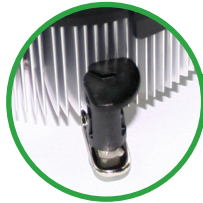
Narrow end of the groove

The narrow end of the groove should point outward after resetting. (The photo shows the groove shaded for emphasis.)
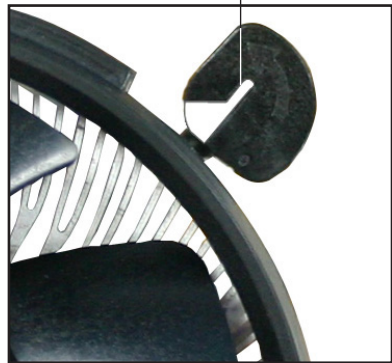
Refer to the documentation in the boxed or stand-alone CPU fan package for detailed information on CPU fan installation.

1.5 System memory

1.5.1 Overview

The motherboard comes with four 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 figure illustrates the location of the DDR2 DIMM sockets:
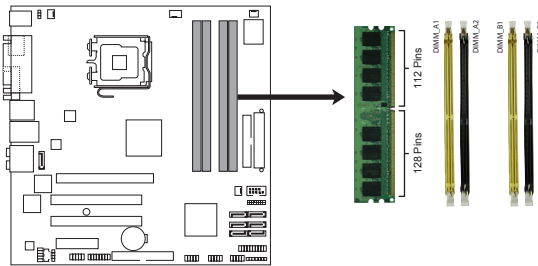
iQ965-IGM 240-pin DDR2 DIMM socket

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

Install at least a memory module in DIMM_A1 or DIMM_A2 slot to support the Intel® Quiet System Technology and for optimum performance. Otherwise, system will halt.

1.5.2 Memory configurations

You may install 256 MB, 512 MB, 1 GB, and 2 GB unbuffered non-ECC DDR2 DIMMs into the DIMM sockets.

- 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.

- If you install four 1 or 2GB memory modules, the system may only recognize less than 3GB because the address space is reserved for other critical functions. 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 Edition

- 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.

iQ965-IGM Motherboard Qualified Vendors Lists (QVL)

DDR2-800MHz capability

Size	Vendor	Chip No.	SS/DS	Part No.	DIMM support A	B	C
512MB	KINGSTON	K4T51083QC	SS	KVR800D2N5/512	•	•	•
1024MB	KINGSTON	K4T51083QC	DS	KVR800D2N5/1G	•	•	•
1024MB	KINGSTON	Heat-Sink Package	DS	KHX6400D2LL/1G		•	
1024MB	KINGSTON	Heat-Sink Package	SS	KHX6400D2LLK2/1GN	•	•	•
2048MB	KINGSTON	Heat-Sink Package	DS	KHX6400D2K2/2G	•	•	•
512MB	Qimonda	HYB18T256800AF25F	DS	HYS64T64020HU-25F-A	•	•	•
256MB	Qimonda	HYB18T512160BF-25F	SS	HYS64T32000HU-25F-B	•	•	•
512MB	Qimonda	HYB18T512800BF25F	SS	HYS64T64000HU-25F-B	•	•	•
1024MB	Qimonda	HYB18T512800BF25F	DS	HYS64T128020HU-25F-B	•	•	•
512MB	SAMSUNG	EDD339XX	SS	M378T6553CZ3-CE7	•	•	•
256MB	SAMSUNG	K4T51163QC-ZCE7	SS	M378T3354CZ3-CE7	•	•	•
512MB	SAMSUNG	ZCE7K4T51083QC	SS	M378T6553CZ3-CE7	•	•	•
1024MB	SAMSUNG	ZCE7K4T51083QC	DS	M378T2953CZ3-CE7	•	•	•
512MB	Hynix	HY5PS12821BFP-S5	SS	HYMP564U64BP8-S5	•	•	•
1024MB	Hynix	HY5PS12821BFP-S5	DS	HYMP512U64BP8-S5	•	•	
512MB	MICRON	5JAIIZ9DQQ	SS	MT8HTF6464AY-80EA3	•	•	•
1024MB	MICRON	5JAIIZ9DQQ	DS	MT16HTF12864AY-80EA3	•	•	•
512MB	MICRON	5ZD22D9GKX	SS	MT8HTF6464AY-80ED4	•	•	•
1024MB	MICRON	5ZD22D9GKX	DS	MT16HTF12864AY-80ED4	•	•	
512MB	MICRON	6CD22D9GKX	SS	MT8HTF6464AY-80ED4	•	•	•
1024MB	MICRON	6CD22D9GKX	DS	MT16HTF12864AY-80ED4	•	•	•
1024MB	CORSAIR	Heat-Sink Package	DS	CM2X1024-6400C4	•	•	•
1024MB	ELPIDA	E1108AB-8E-E(ECC)	SS	EBE10EE8ABFA-8E-E	•	•	
2048MB	ELPIDA	E1108AB-8E-E(ECC)	DS	EBE21EE8ABFA-8E-E			•
512MB	A-DATA	N/A	SS	M2OAD6G3H3160J1E52	•	•	•
512MB	A-DATA	AD29608A8A-25EG	SS	M20AD6G3H3160I1E5E	•	•	
512MB	Crucial	Heat-Sink Package	SS	BL6464AA804.8FD	•	•	•
1024MB	Crucial	Heat-Sink Package	DS	BL12864AA804.16FD	•	•	•
512MB	Apacer	Heat-Sink Package	SS	AHU512E800C5K1C	•	•	•
1024MB	Apacer	Heat-Sink Package	DS	AHU01GE800C5K1C		•	•
512MB	Transcend	K4T51083QC	SS	TS64MLQ64V8J	•	•	•

Chapter 1: Product introduction

iQ965-IGM Motherboard Qualified Vendors Lists (QVL)

DDR2-667MHz capability

Size	Vendor	Chip No.	SS/DS	Part No.	DIMM support A	B	C
512MB	KINGSTON	E5108AE-6E-E	SS	KVR667D2N5/512	•	•	•
1024MB	KINGSTON	E5108AE-6E-E	DS	KVR667D2N5/1G	•	•	•
512MB	KINGSTON	E5108AE-6E-E	SS	KVR667D2E5/512	•	•	•
256MB	KINGSTON	HYB18T256800AF3	SS	KVR667D2N5/256	•	•	•
512MB	KINGSTON	D6408TEBGGL3U	SS	KVR667D2N5/512	•	•	•
1024MB	KINGSTON	D6408TEBGGL3U	DS	KVR667D2N5/1G	•	•	•
256MB	KINGSTON	HYB18T256800AF3S	SS	KVR667D2N5/256	•	•	•
256MB	Qimonda	HYB18T512160AF-3S	SS	HYS64T32000HU-3S-A	•	•	•
512MB	Qimonda	HYB18T512800AF3S	SS	HYS64T64000HU-3S-A	•	•	•
256MB	Qimonda	HYB18T256800AF3S(ECC)	SS	HYS72T32000HU-3S-A	•	•	•
512MB	Qimonda	HYB18T512800AF3S(ECC)	SS	HYS72T64000HU-3S-A	•	•	•
1024MB	Qimonda	HYB18T512800AF3S(ECC)	DS	HYS72T128020HU-3S-A	•	•	
512MB	Qimonda	HYB18T512800BF3S(ECC)	SS	HYS72T64000HU-3S-B	•	•	•
1024MB	Qimonda	HYB18T512800BF3S(ECC)	DS	HYS72T128020HU-3S-B	•		•
256MB	Qimonda	HYB18T512160BF-3S	SS	HYS64T32000HU-3S-B	•	•	•
512MB	Qimonda	HYB18T512800BF3S	SS	HYS64T64000HU-3S-B	•	•	•
1024MB	Qimonda	HYB18T512800BF3S	DS	HYS64T128020HU-3S-B	•		•
256MB	SAMSUNG	K4T51163QC-ZCE6	SS	M378T3354CZ0-CE6	•	•	
512MB	SAMSUNG	ZCE6K4T51083QC	SS	M378T6553CZ0-CE6	•	•	
1024MB	SAMSUNG	ZCE6K4T51083QC	DS	M378T2953CZ0-CE6	•	•	
1024MB	SAMSUNG	ZCE6K4T51083QC	DS	M378T2953CZ3-CE6	•	•	
512MB	Hynix	HY5PS12821AFP-Y5	SS	HYMP564U64AP8-Y5	•	•	•
1024MB	Hynix	HY5PS1G831FP-Y5(ECC)	SS	HYMP112U72P8-Y5	•	•	•
512MB	Hynix	HY5PS12821AFP-Y5(ECC)	SS	HYMP564U72AP8-Y5	•	•	•
1024MB	Hynix	HY5PS12821AFP-Y5(ECC)	DS	HYMP512U72AP8-Y5	•	•	
512MB	Hynix	HY5PS12821AFP-Y4	SS	HYMP564U64AP8-Y4	•	•	•
512MB	Hynix	HY5PS12821AFP-Y4(ECC)	SS	HYMP564U72AP8-Y4	•	•	•
256MB	CORSAIR	MIII00605	SS	VS256MB667D2	•	•	•
512MB	CORSAIR	64M8CFEG	SS	VS512MB667D2	•	•	•
1024MB	CORSAIR	64M8CFEG	DS	VS1GB667D2	•	•	•
256MB	ELPIDA	E2508AB-6E-E	SS	EBE25UC8ABFA-6E-E	•	•	
512MB	ELPIDA	E5108AE-6E-E	SS	EBE51UD8AEFA-6E-E	•	•	•
512MB	A-DATA	AD29608A8A-3EG	SS	M2OAD5G3H3166I1C52	•	•	
1024MB	A-DATA	AD29608A8A-3EG	DS	M2OAD5G3I4176I1C52	•	•	
1024MB	crucial	Heat-Sink Package	DS	BL12864AA663.16FD	•		
1024MB	crucial	Heat-Sink Package	DS	BL12864AL664.16FD	•	•	
512MB	Apacer	AM4B5708GQJS7E	SS	AU512E667C5KBGC	•	•	•
1024MB	Apacer	AM4B5708GQJS7E	DS	AU01GE667C5KBGC	•	•	
512MB	Apacer	AM4B5708PJS7E	SS	AU512E667C5KBGC	•	•	•
512MB	Apacer	AM4B5708GQJS7E	SS	AU512E667C5KBGC	•	•	
1024MB	Apacer	N/A	DS	AU01GE667C5KBGC	•	•	
512MB	Kingmax	KKEA88B4LAUG-29DX	SS	KLCC28F-A8KB5	•	•	•
1024MB	Kingmax	KKEA88B4LAUG-29DX	DS	KLCD48F-A8KB5	•	•	•
512MB	Transcend	E5108AE-6E-E	SS	TS64MLQ64V6J	•	•	
1024MB	Transcend	E5108AE-6E-E	DS	TS128MLQ64V6J	•	•	
512MB	Transcend	J12Q3AB-6	SS	JM367Q643A-6	•	•	•
1024MB	Transcend	J12Q3AB-6	DS	JM388Q643A-6	•	•	

iQ965-IGM Motherboard Qualified Vendors Lists (QVL)

DDR2-553 MHz capability

Size	Vendor	Chip No.	SS/DS	Part No.	DIMM support		
					A	B	C
256MB	KINGSTON	E5116AF-5C-E	SS	KVR533D2N4/256	•		•
512MB	KINGSTON	HYB18T512800AF37	SS	KVR533D2N4/512	•	•	•
1024MB	KINGSTON	5YDIID9GCT	DS	KVR533D2N4/1G	•	•	•
256MB	Qimonda	HYB18T512160AF-3.7	SS	HYS64T32000HU-3.7-A	•	•	•
512MB	Qimonda	HYB18T512800AF37	SS	HYS64T64000HU-3.7-A	•	•	•
1024MB	Qimonda	HYB18T512800AF37	DS	HYS64T128020HU-3.7-A	•	•	•
256MB	Qimonda	HYB18T5121608BF-3.7	SS	HYS64T32000HU-3.7-B	•	•	•
512MB	Qimonda	HYB18T512800BF37	SS	HYS64T64000HU-3.7-B	•	•	•
1024MB	Qimonda	HYB18T512800BF37	DS	HYS64T128020HU-3.7-B	•	•	•
256MB	Qimonda	HYB18T256800AF37(ECC)	SS	HYS72T32000HU-3.7-A	•	•	•
1024MB	Qimonda	HYB18T512800AF37(ECC)	DS	HYS72T128020HU-3.7-A	•	•	•
512MB	SAMSUNG	ZCD5K4T51083QC	SS	M378T6553CZ3-CD5	•	•	•
1024MB	SAMSUNG	ZCD5K4T51083QC	DS	M378T2953CZ3-CD5	•	•	•
512MB	Hynix	HY5PS12821F-C4	SS	HYMP564U648-C4	•	•	•
1024MB	Hynix	HY5PS12821F-C4	DS	HYMP512U648-C4	•	•	•
1024MB	Hynix	HY5PS12821F-C4(ECC)	DS	HYMP512U728-C4	•		
512MB	Hynix	HY5PS12821FP-C4(ECC)	SS	HYMP564U728-C4	•		•
512MB	Hynix	HY5PS12821AFP-C3	SS	HYMP564U64AP8-C3	•	•	•
1024MB	Hynix	HY5PS12821AFP-C3	DS	HYMP512U64AP8-C3	•	•	•
1024MB	CORSAIR	64M8CEDG	DS	VS1GB533D2		•	•
512MB	ELPIDA	E5108AB-5C-E	SS	EBE51UD8ABFA-5C-E	•	•	•
512MB	KINGMAX	E5108AE-5C-E	SS	KLBC28F-A8EB4	•	•	•
1024MB	KINGMAX	E5108AE-5C-E	DS	KLBD48F-A8EB4	•	•	•
512MB	KINGMAX	KKEA88E4AAK-37	SS	KLBC28F-A8KE4	•	•	•
1024MB	KINGMAX	5MB22D9DCN	DS	KLBD48F-A8ME4	•	•	•

SS - Single-sided   DS - Double-sided

DIMM support:

A - Supports one module inserted into either slot in Single-channel memory configuration.

B - Supports one pair of modules inserted into either the yellow slots or the black slots as one pair of Dual-channel memory configuration.

C - Supports four modules inserted into both the yellow and black slots as two pairs of Dual-channel memory configuration.

1.5.3 Installing a DIMM

⚠ Unplug the power supply before adding or removing DIMMs or other system components. Failure to do so can cause severe damage to both the motherboard and the components.

To install a DIMM:

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.
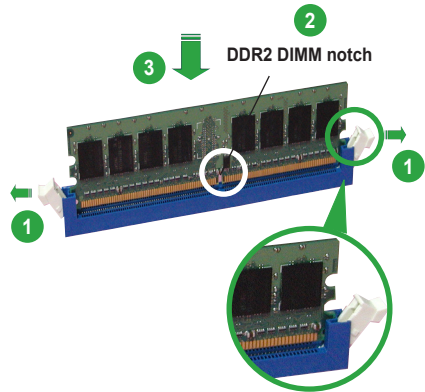
DDR2 DIMM notch

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 sockets.

1.5.4 Removing a DIMM

To remove a DIMM:

1. Simultaneously press the retaining clips outward to unlock the DIMM.

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

DDR2 DIMM notch
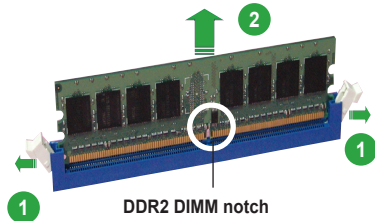
2. Remove the DIMM from the socket.

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

To install 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. See Chapter 2 for information on BIOS setup.

2. Assign an IRQ to the card. Refer to the tables on the next page.

3. Install the software drivers for the expansion card.

When using PCI cards on shared slots, ensure that the drivers support "Share IRQ" or that the cards do not need IRQ assignments. Otherwise, conflicts will arise between the two PCI groups, making the system unstable and the card inoperable. Refer to the table on the next page for details.

1.6.3   Interrupt assignments

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 (LPT1)*
8	3	System CMOS/Real Time Clock
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.

IRQ assignments for this motherboard

	A	B	C	D	E	F	G	H
PCI Slot 1	shared	—	—	—	—	—	—	—
PCI Slot 2	—	shared	—	—	—	—	—	—
PCIE x 16_1	shared	—	—	—	—	—	—	—
PCIE x 4_1	shared	—	—	—	—	—	—	—
Onboard ESATA, SATA_RAID	shared	—	—	—	—	shared	—	—
Onboard PRI_IDE	shared	—	—	—	—	—	—	—
Onboard HD Audio (AD1988)	—	—	—	—	—	—	shared	—
Onboard GbEthernet (82566DM)	—	shared	—	—	—	—	—	—
USB 2.0 EHCI#1	—	—	—	—	—	—	—	shared
USB 2.0 EHCI#2	—	—	—	—	—	—	shared	—
USB12 UHCI#1	—	—	—	—	—	—	—	shared
USB34 UHCI#2	—	—	—	shared	—	—	—	—
USB56 UHCI#3	—	—	shared	—	—	—	—	—
USB78 UHCI#4	shared	—	—	—	—	—	—	—
USB910 UHCI#5	shared	—	—	—	—	—	—	—
SATA1/2/5/6 (ICH8DO)	—	—	shared	—	—	—	—	—
SATA3/4 (ICH8DO)	—	—	—	shared	—	—	—	—
IDE-R controller	—	—	shared	—	—	—	—	—
KT controller	—	shared	—	—	—	—	—	—

1.6.4   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.
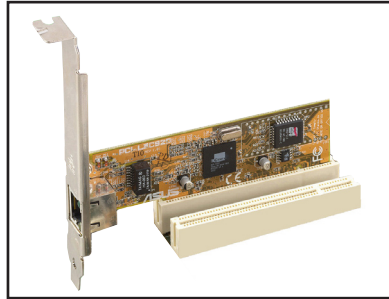
1.6.5   PCI Express x4 slot

This motherboard supports PCI Express
x4 network cards, SCSI cards and other
cards that comply with the PCI Express
specifications. The following figure shows
a network card installed on the PCI
Express x4 slot.
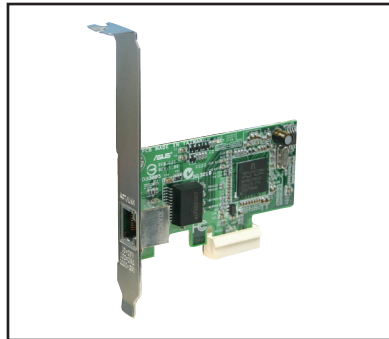
1.6.6   PCI Express x16 slot

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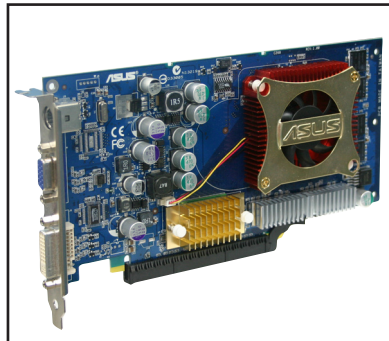
1.7 Jumper

1. Clear RTC RAM (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. Reinstall the battery.

5. Plug the power cord and turn ON the computer.

6. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

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

CLRTC

1 2   2 3

Normal   Clear CMOS
(Default)

iQ965-IGM Clear RTC RAM
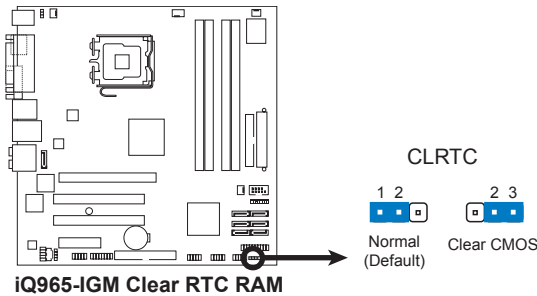
> • You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values.
>
> • Due to the chipset limitation, AC power off is required prior using C.P.R. function. You must turn off and on the power supply or unplug and plug the power cord before reboot the system.

2. Keyboard power (3-pin KBPWR)

This jumper allows you to enable or disable the keyboard wake-up feature. Set this jumper to pins 2-3 (+5VSB) to wake up the computer when you press a key on the keyboard (the default is the Space Bar). This feature requires an ATX power supply that can supply at least 1A on the +5VSB lead, and a corresponding setting in the BIOS.

KBPWR

2
1
+5V
(Default)

3
2
+5VSB
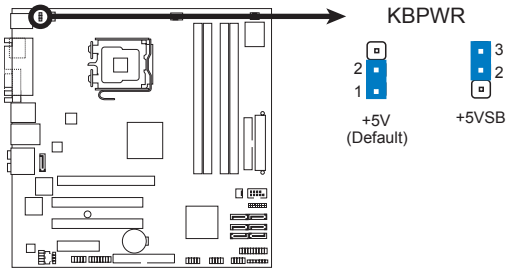
iQ965-IGM Keyboard Power Setting

1.8   Connectors

1.8.1   Rear panel connectors
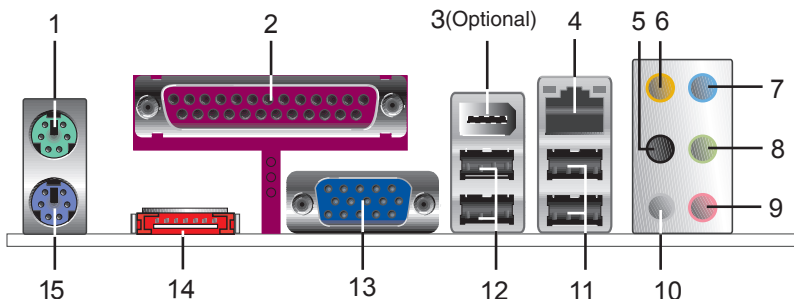
1.   **PS/2 mouse port (green).** This port is for a PS/2 mouse.

2.   **Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.

3.   **IEEE 1394a port (optional).** This 6-pin IEEE 1394a port provides high-speed connectivity for audio/video devices, storage peripherals, PCs, or portable devices.

4.   **LAN (RJ-45) port.** Supported by Realtek® Gigabit LAN controller, 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.

LAN port LED indications

Activity/Link Speed LED			
Status	**Description**	**Status**	**Description**
OFF	No link	OFF	10 Mbps connection
ORANGE	Linked	ORANGE	100 Mbps connection
BLINKING	Data activity	GREEN	1 Gbps connection
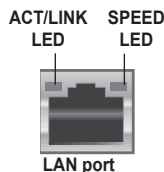
5.   **Rear Speaker Out port (black).** This port connects the rear speakers in a 4-channel, 6-channel, or 8-channel audio configuration.

6.   **Center/Subwoofer port (orange).** This port connects the center/subwoofer speakers.

7.   **Line In port (light blue).** This port connects the tape, CD, DVD player, or other audio sources.

8.   **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.

9.   **Microphone port (pink).** This port connects a microphone.

10.   **Side Speaker Out port (gray).** This port connects the side speakers in an 8-channel audio configuration.

Refer to the audio configuration table below for the function of the audio ports in 2, 4, 6, or 8-channel configuration.

Audio 2, 4, 6, or 8-channel configuration

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

11. **USB 2.0 ports 1 and 2**. These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

12. **USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

13. **VGA port**. This port is for a VGA monitor or other VGA-compatible devices.

14. **External SATA port**. This port connects to an external Serial ATA hard disk drive. To configure a RAID 0, a RAID 1, or a JBOD set, install an external Serial ATA hard disk drive and an internal Serial ATA hard disk drive to the SATA connector labeled SATA_RAID or SATA_RAID1.

The external SATA port supports external Serial ATA 3.0 Gb/s devices. Longer cables support higher power requirements to deliver signal up to two meters away, and enables improved hot-swap function.

• Before creating a RAID set using Serial ATA hard disks, make sure that you have connected the Serial ATA signal cable and installed Serial ATA hard disk drives; otherwise, you cannot enter the JMicron RAID utility and SATA BIOS setup during POST.

• If you intend to create a RAID configuration using this connector, set the **JMicron SATA Controller Mode** item in the BIOS to [RAID].

• DO NOT insert a different connector to this port.

• DO NOT unplug the external Serial ATA box when a RAID 0 or JBOD is configured.

15. **PS/2 keyboard port (purple)**. This port is for a PS/2 keyboard.

1.8.2   Internal connectors

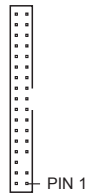**1.   Floppy disk drive connector (34-1 pin FLOPPY)**

This connector is for the provided floppy disk drive (FDD) signal cable. Insert one end of the cable to this connector, then connect the other end to the signal connector at the back of the floppy disk drive.

Pin 5 on the connector is removed to prevent incorrect cable connection when using a FDD cable with a covered Pin 5.
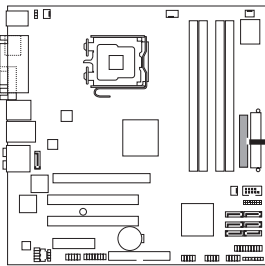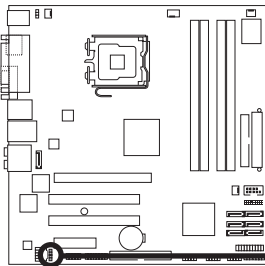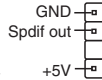

FLOPPY

PIN 1

NOTE: Orient the red markings on the floppy ribbon cable to PIN 1.

iQ965-IGM Floppy Disk Drive Connector

2.   Digital Audio connector (4-1 pin SPDIF_OUT)

This connector is for the S/PDIF audio module to allow digital sound output. Connect one end of the S/PDIF audio cable to this connector and the other end to the S/PDIF module.

SPDIF_OUT

GND
Spdif out

+5V

iQ965-IGM SPDIF OUT connector
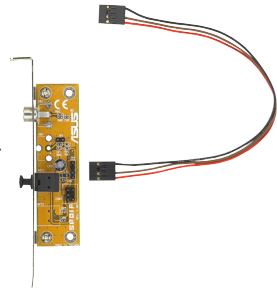
The S/PDIF out module is purchased separately.

3. IDE connector (40-1 pin PRI_EIDE)

The onboard IDE connector is for the Ultra DMA 133/100/66 signal cable. There are three connectors on each Ultra DMA 133/100/66 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 IDE devices.

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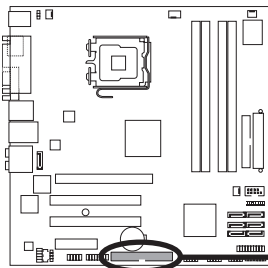


iQ965-IGM IDE connector

PRI_EIDE

PIN1

NOTE: Orient the red markings (usually zigzag) on the ID ribbon cable to PIN 1.

4. **Serial ATA connectors (7-pin SATA1[red], SATA2 [red], SATA3 [red], SATA4 [red], SATA5 [black], SATA6 [black])**

These connectors are for the Serial ATA signal cables for Serial ATA hard disk drives.

*SATA5 and SATA6 exist with ICH8DO only.

iQ965-IGM SATA connectors

SATA1 SATA2

SATA5 SATA6

SATA3 SATA4
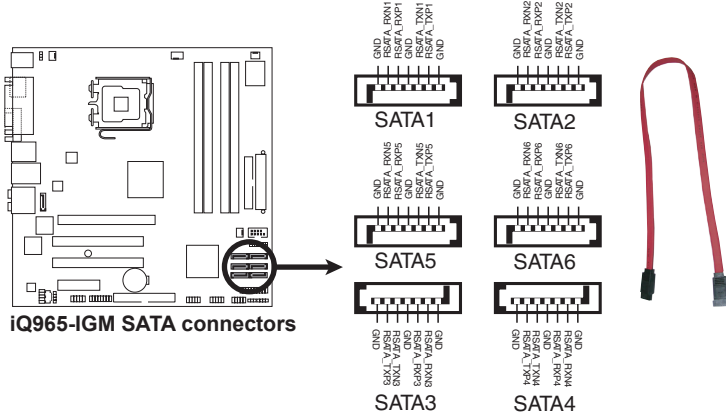
5. **IEEE 1394a port connector (10-1pin IE1394_2) (optional)**

This connector is for a IEEE 1394a port. Connect the IEEE 1394a module cable to this connector, then install the module to a slot opening at the back of the system chassis.


IE1394_2

iQ965-IGM IEEE 1394a Connector
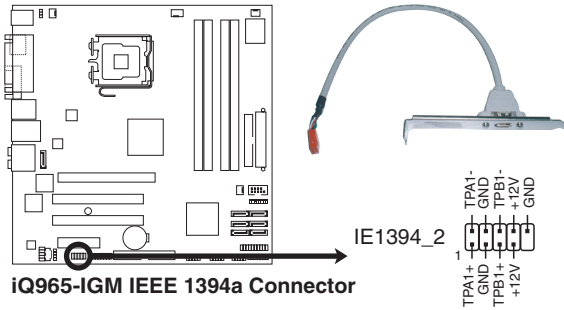
The IEEE 1394a module is purchased separately.

6. JMicron JMB363® Serial ATA RAID connector (7-pin SATA_RAID1)

This connector is for a Serial ATA signal cable. This connector supports a Serial ATA hard disk drive, which you can combine with an external Serial ATA hard disk drive to configure for RAID via the unboard Serial ATA RAID controller.

> The **JMicron controller mode** item in the BIOS is set to [BASIC] by default. When set to [RAID], this item allows you to use the connectors to build a RAID set.
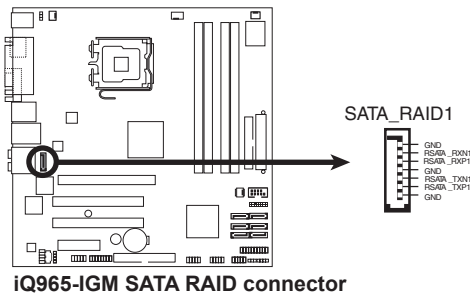
iQ965-IGM SATA RAID connector

> Before creating a RAID set using Serial ATA hard disks, make sure that you have connected the Serial ATA signal cables and installed Serial ATA hard disk drives; otherwise, you cannot enter the JMicron® JMB363 RAID utility and SATA BIOS setup during POST.

7. TPM connector (20-1 pin TPM_SLOT)

This connector supports a Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

iQ965-IGM TPM connector
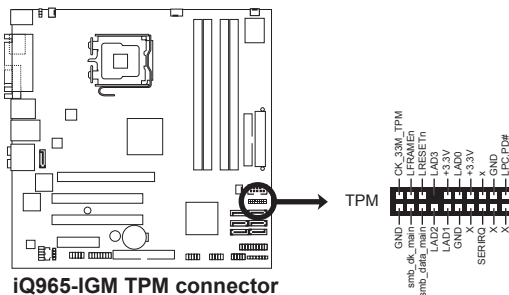
8. USB connectors (10-1 pin USB56, USB 78, USB910)

These connectors are for USB 2.0 ports. Connect the USB 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.
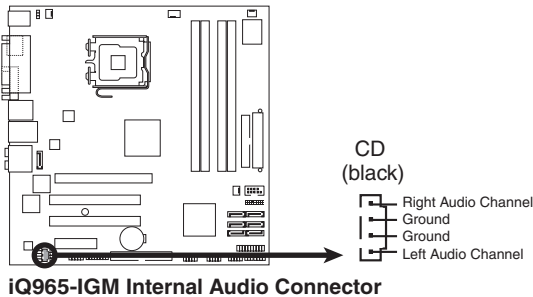

iQ965-IGM USB 2.0 connectors
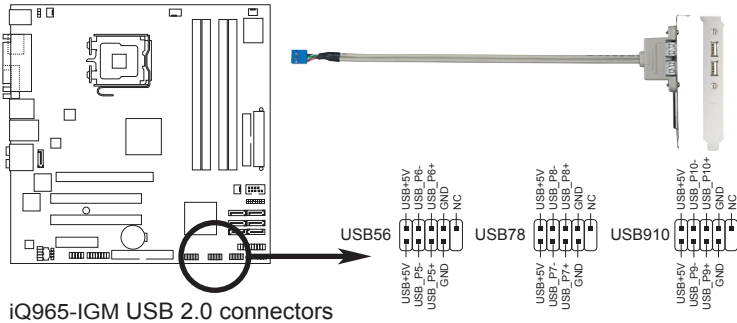
Never connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!

The USB module is purchased separately.

9. Optical drive audio connector (4-pin CD)

These connectors allow you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card.
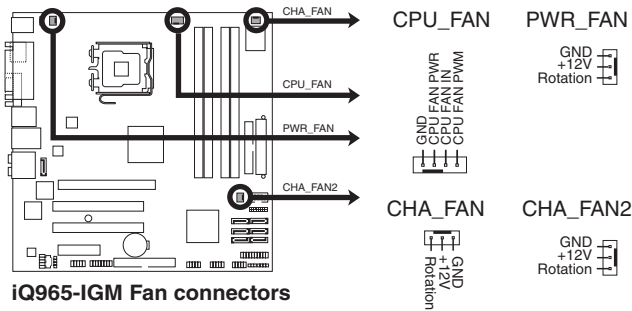

CD
(black)

Right Audio Channel
Ground
Ground
Left Audio Channel

iQ965-IGM Internal Audio Connector

10. CPU, chassis, and power fan connectors
(4-pin CPU_FAN, 3-pin CHA_FAN, 3-pin CHA_FAN2, 3-pin PWR_FAN)

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. These are not jumpers! Do not place jumper caps on the fan connectors!

iQ965-IGM Fan connectors

CPU_FAN

PWR_FAN
GND
+12V
Rotation

CPU FAN PWR
CPU FAN IN
CPU FAN PWM
GND

CHA_FAN
GND
+12V
Rotation

CHA_FAN2
GND
+12V
Rotation

11. Serial port connector (10-1 pin COM1)

This connector is for a serial (COM) port. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.


COM1

PIN1

iQ965-IGM Serial port connector
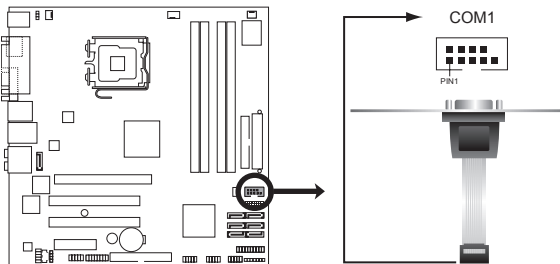
> The COM module is purchased separately.

## 12. Chassis intrusion connector (4-1 pin CHASSIS)

This connector is for a chassis-mounted 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.

iQ965-IGM Chassis Intrusion connector
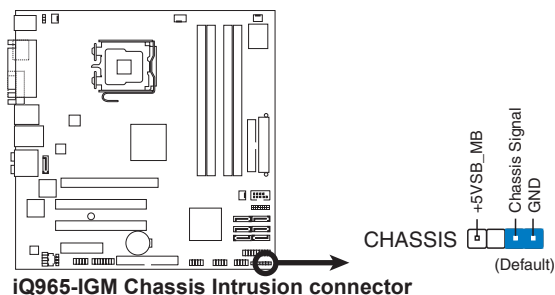
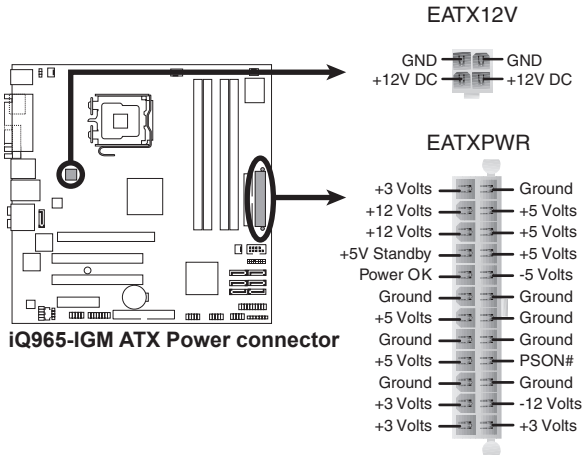## 13. Front panel audio connector (10-1 pin AAFP)

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

iQ965-IGM Front panel audio connector
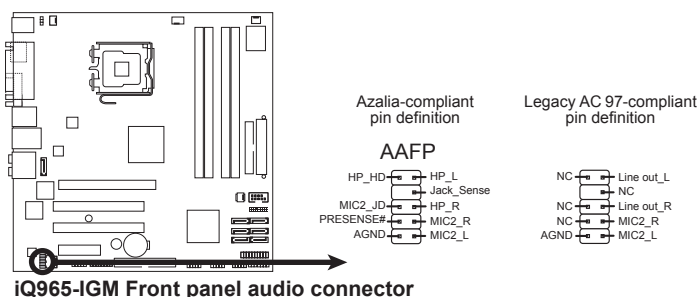
• We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability.

• By default, this connector is set to [HD Audio]. If you want to connect a AC' 97 front panel audio module to this connector, set the **Front Panel Support Type** item in the BIOS setup to [AC97].

## 14. ATX power connectors (24-pin EATXPWR, 4-pin EATX12V)

These connectors 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.

EATX12V

```
GND  ───  GND
+12V DC  ───  +12V DC
```

EATXPWR

```
+3 Volts     ───  Ground
+12 Volts    ───  +5 Volts
+12 Volts    ───  +5 Volts
+5V Standby  ───  +5 Volts
Power OK     ───  -5 Volts
Ground       ───  Ground
+5 Volts     ───  Ground
Ground       ───  Ground
+5 Volts     ───  PSON#
Ground       ───  Ground
+3 Volts     ───  -12 Volts
+3 Volts     ───  +3 Volts
```

iQ965-IGM ATX Power connector

- • For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12 V Specification 2.0 (or later version) and provides a minimum power of 400 W.

- • Do not forget to connect the 4-pin EATX12V power plug; otherwise, the system will not boot.

- • Use of a PSU with a higher power output is recommended when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.

- • The ATX 12 V Specification 2.0-compliant (400W) PSU has been tested to support the motherboard power requirements with the following configuration:
  CPU: Intel® Pentium® Extreme 3.73GHz
  Memory: 512 MB DDR2 (x4)
  Parallel ATA device: IDE hard disk drive
  Serial ATA device: SATA hard disk drive (x2)
  Optical drive: DVD-RW

15. System panel connector (10-1 pin F_PANEL)

This connector supports several chassis-mounted functions.

iQ965-IGM System Panel Connector

* Requires an ATX power supply
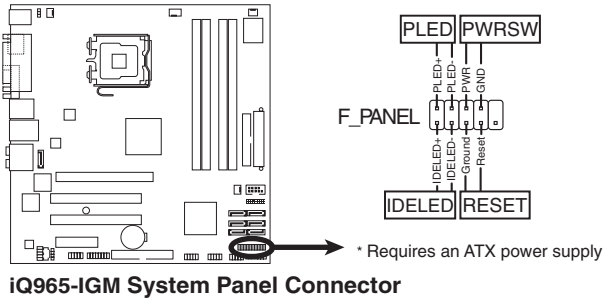
- **System power LED (2-pin PLED)**

  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.

- **Hard disk drive activity LED (2-pin IDE_LED)**

  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.

- **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.

- **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.