IPIBL-LA
(Berkeley-GL8E)

Motherboard

Contents

IPIBL-LA (Berkeley-GL8E) specifications summary

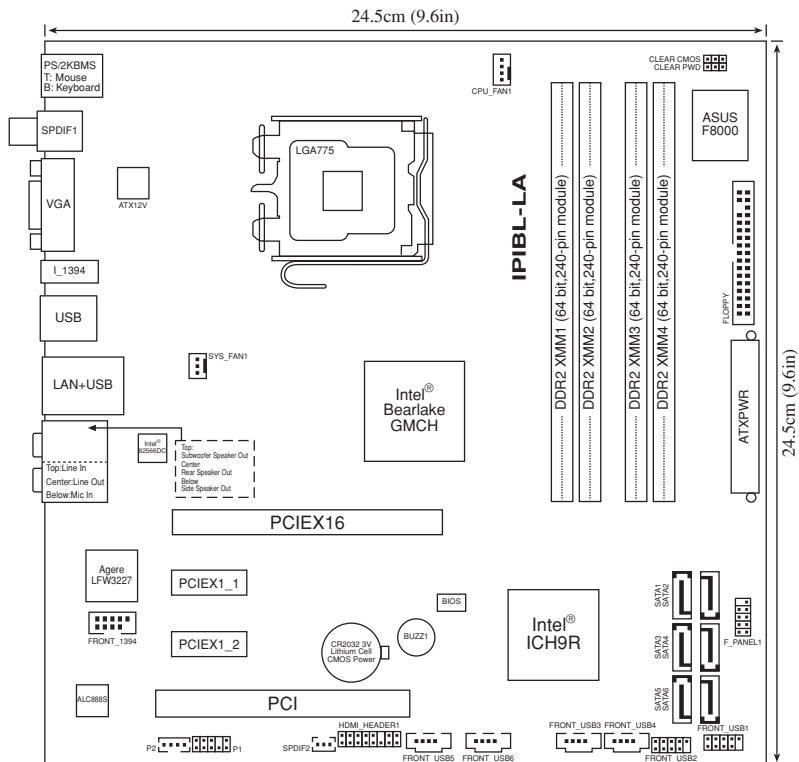|	
CPU	LGA775 socket for the Intel® Conroe//Kentsfield processor
Chipset	Northbridge: Intel® G33 Memory Controller Hub (MCH) Southbridge: Intel® ICH9R
Front Side Bus(FSB)	1066 MHz/800MHz/533MHz
Memory	Dual-channel memory architecture 4 x 240-pin DIMM sockets support unbuffered non-ECC 8GB 800/667 MHz DDR2 memory modules
Expansion slots	1 x PCI Express x16 slot for discrete graphics card 2 x PCI Express x1 slot 1 x PCI slots
Rear panel	1 x PS/2 keyboard port 1 x PS/2 mouse port 1 x IEEE 1394a port 1 x LAN (RJ-45) port 1 x VGA Connector 6 x audio ports support 8-channels audio configuration 4 x USB 2.0 ports support hot-plug function 1 x Coaxial SPDIF out port 1 x Coaxial SPDIF in port
Internal connectors	1 x Floppy connector 1 x 24-pin ATX power connector 1 x 4-pin ATX 12 V power connector 6 x Serial ATA connectors 1 x IEEE 1394a connector 4 x USB 2.0 connectors 1 x CPU fan connector 1 x System fan connectors 1 x HDMI connector 1 x Digital audio connector 1 x Front panel audio connector 1 x System panel connector
Storage	Southbridge supports: 6 x Serial ATA hard disk drives with hot-swap function
Audio	Southbridge supports 8-channel audio configuration with Realtek® ALC888S High Definition Audio CODEC
LAN	Intel® 82566DC 10/100/1000 Mbps Fast Ethernet LAN PHY

(continued on the next page)

IPIBL-LA (Berkeley-GL8E)-LA specifications summary

IEEE 1394	Agere LFW3227 supports two IEEE 1394a ports
PC health monitoring	ASUS F8000 for CPU, system, chassis fan control, motherboard, and CPU temperature
BIOS features	8 Mb SPI flash ROM HP BIOS with enhanced ACPI, DMI, Green, and PnP Features Plus
Form factor	Micro-ATX form factor: 9.6 in x 9.6 in

*Specifications are subject to change without notice.

1.   Motherboard layout

24.5cm (9.6in)

24.5cm (9.6in)

IPIBL-LA

PS/2KBMS
T: Mouse
B: Keyboard

SPDIF1

VGA

ATX12V

LGA775

CPU_FAN1

CLEAR CMOS
CLEAR PWD

ASUS
F8000

DDR2 XMM1 (64 bit,240-pin module)

DDR2 XMM2 (64 bit,240-pin module)

DDR2 XMM3 (64 bit,240-pin module)

DDR2 XMM4 (64 bit,240-pin module)

FLOPPY

I_1394

USB

LAN+USB

SYS_FAN1

Intel®
Bearlake
GMCH

ATXPWR

Intel®
82566DC

Top:
Subwoofer Speaker Out
Center
Center
Rear Speaker Out
Below
Side Speaker Out

Top:Line In
Center:Line Out
Below:Mic In

PCIEX16

Agere
LFW3227

PCIEX1_1

BIOS

SATA1
SATA2

FRONT_1394

PCIEX1_2

CR2032 3V
Lithium Cell
CMOS Power

BUZZ1

Intel®
ICH9R

SATA3
SATA4

F_PANEL1

ALC888S

PCI

SATA5
SATA6

HDMI_HEADER1

FRONT_USB3 FRONT_USB4

FRONT_USB1

P2   P1

SPDIF2

FRONT_USB5 FRONT_USB6

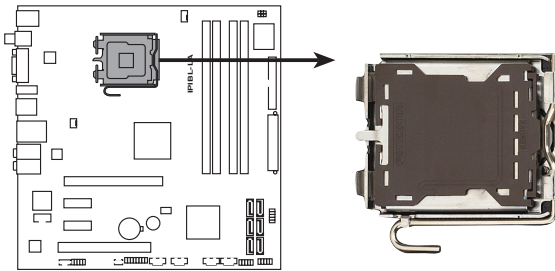FRONT_USB2

2. Central Processing Unit (CPU)

2.1 Overview

The motherboard comes with a surface mount LGA775 socket designed for the Intel® Mainstream/Value FMB processor in the 775-land package.

2.2 Installing the CPU

To install a CPU:

1. Locate the CPU socket on the motherboard.

**IPIBL-LA(Berkeley-GL8E)
CPU Socket 775**

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.

Retention tab

Load lever

A

B

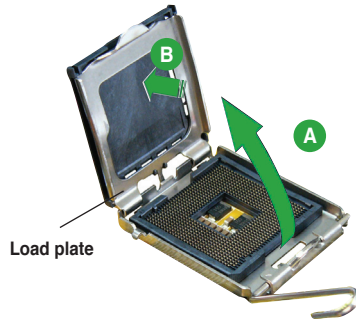**PnP cap**

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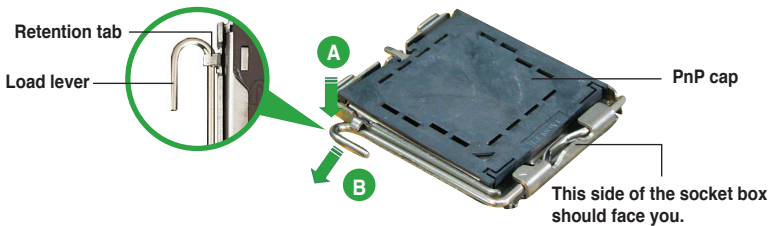
To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.

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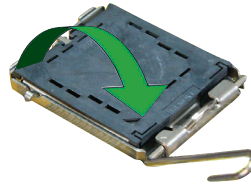
4. Lift the load plate with your thumb and forefinger to a 100º angle (A), then push the PnP cap from the load plate window to remove (B).

B

A

Load plate

Alignment key

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.
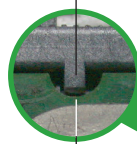
CPU notch

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.
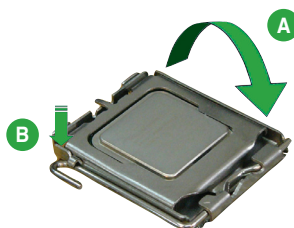
Notes on Intel® Hyper-Threading Technology

- This motherboard supports Intel® Mainstream/Value FMB processor in the 775-land package with Hyper-Threading Technology.

- Hyper-Threading Technology is supported under Windows® XP/2003 Server/ Vista and Linux 2.4.x (kernel) and later versions only. Under Linux, use the Hyper-Threading compiler to compile the code. If you are using any other operating systems, disable the Hyper-Threading Techonology item in the BIOS to ensure system stability and performance.

- Installing Windows® XP Service Pack 1 or later version is recommended.

- Make sure to enable the Hyper-Threading Technology item in BIOS before installing a supported operating system.

- For more information on Hyper-Threading Technology, visit www.intel.com/ info/hyperthreading.

To use the Hyper-Threading Technology on this motherboard:

1. Install an Intel® Intel® Mainstream/Value FMB processor that supports Hyper-Threading Technology.

2. Power up the system and enter the BIOS Setup. Under the Advanced Menu, make sure that the item Hyper-Threading Technology is set to [Enabled]. The item appears only if you installed a CPU that supports Hyper-Threading Techonology.

3. Reboot the computer.

3.   System memory

The motherboard comes with four Double Data Rate 2 (DDR2) Dual Inline Memory Module (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 DDR2 DIMM sockets.

IPIBL-LA(Berkeley-GL8E)
240-pin DDR2 DIMM sockets
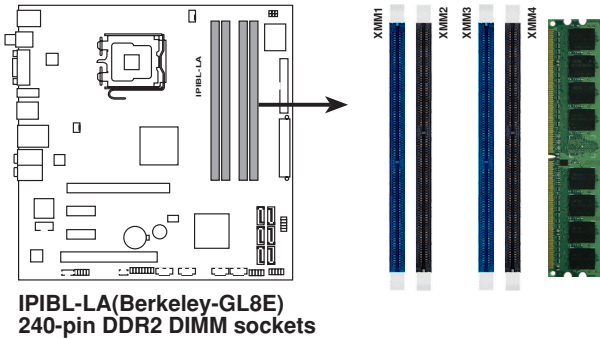
3.1   Memory configurations

You can install 512 MB, 1 GB, and 2 GB DDR2 SDRAM DIMMs into the DIMM sockets using the memory configurations in this section.

- Installing DDR2 DIMMs other than the recommended configurations may cause memory sizing error or system boot failure. Use any of the recommended configurations on the next page.

- Install only **identical** (the same type and size) DDR2 DIMM pairs using the recommended configurations.

- Make sure that the memory frequency matches the CPU FSB (Front Side Bus). Refer to the Memory frequency/CPU FSB synchronization table on the next page.

- This motherboard does not support double-sided 16-bit DDR DIMMs.

- Do not create a three-DIMM configuration in dual-channel mode. The third DIMM is ignored in the dual-channel operation.

Recommended memory configurations

Sockets					
Mode		**DIMM1**	**DIMM2**	**DIMM3**	**DIMM4**
Single-channel	(1)	Installed	–	–	–
	(2)	–	Installed	–	–
	(3)	–	–	Installed	–
	(4)	–	–	–	Installed
Dual-channel*	(1)	Installed	–	Installed	–
	(2)	–	Installed	–	Installed
	(3)	Installed	Installed	Installed	Installed

* Use only identical DDR2 DIMM pairs.

Memory frequency/CPU FSB synchronization

| CPU FSB	DDR DIMM Type	Memory Frequency
1066MHz	PC2-6400/PC2-5300/PC2-4200	800/667/553 MHz
800MHz	PC2-6400/PC2-5300/PC2-4200	667/533 MHz
533MHz	PC2-5300/PC2-4200	667/533 MHz

3.2   Installing a DDR2 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.

2

DDR2 DIMM notch

3

1

1
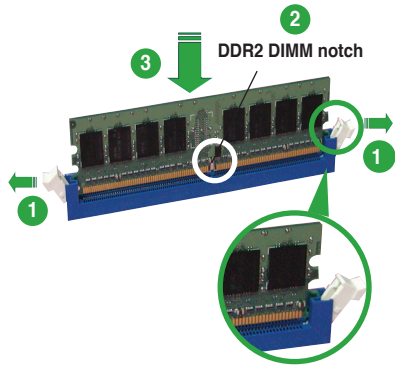
Unlocked retaining clip

⚠
- 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.

3.3   Removing a DDR2 DIMM

Follow these steps 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.

2

1

1

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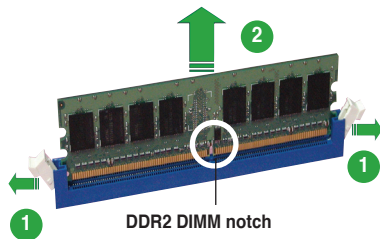
2. Remove the DIMM from the socket.

4. 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.

4.1 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.

4.2 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. 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.

4.3 interrupt assignments

IRQ	Standard function
0	System Timer
1	Standard 101/102-key or Microsoft® Natural PS/2 Keyboard
8	System CMOS/Real Time Clock
9	Microsoft® ACPI-Compliant System
11	Intel® ICH9 Family SMBus Controller
12	Microsoft® PS/2 Mouse
13	Numeric Data Processor
16	Intel® G33/G31 Express Chipset Family
16	Intel® ICH9 Family USB Universal Host Controller
16	Intel® ICH9 Family USB Universal Host Controller
18	Intel® ICH9 Family USB Universal Host Controller
18	Intel® ICH9 Family USB2 Enhanced Host Controller
19	Intel® 82801HR/HH/HO SATA RAID Controller
19	Intel® ICH9 Family USB Universal Host Controller
20	Intel® 82566DC-2 Gigabit Network Connection
20	OHCI Compliant IEEE 1394 Host Controller
21	Intel® ICH9 Family USB Universal Host Controller
22	Microsoft UAA Bus Driver for High Definition Audio
23	Intel® ICH9 Family USB Universal Host Controller
23	Intel® ICH9 Family USB2 Enhanced Host Controller

IRQ assignments for this motherboard

|	A	B	C	D	E	F
PCI Slot 1	—	shared	—	—	—	—
Onboard 1394	—	—	—	—	used	—

4.4   PCI Express x16 slot

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

4.5   PCI Express x1 slot

This motherboard supports PCI
Express x1 network cards, SCSI cards
and other cards that comply with the
PCI Express specifications. The figure
shows a network card installed on the
PCI Express x1 slot.
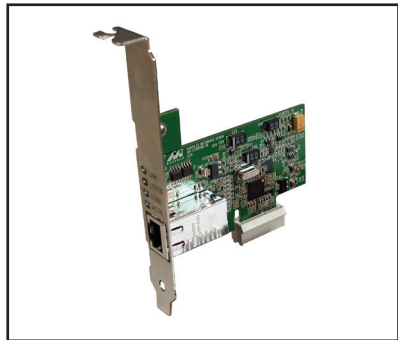
4.6   PCI slots

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.
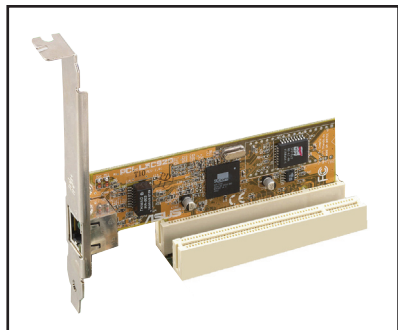
5.   Jumpers

1.   Clear RTC RAM (3-pin CLEAR CMOS)

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.   Move the jumper cap from pins 2-3 (Normal) to pins 1-2 (Clear CMOS) Keep the cap on pins 1-2 for about 5~10 seconds, then move the cap back to pins 2-3.

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

4.   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 from the default position. Removing the cap will cause system boot failure!
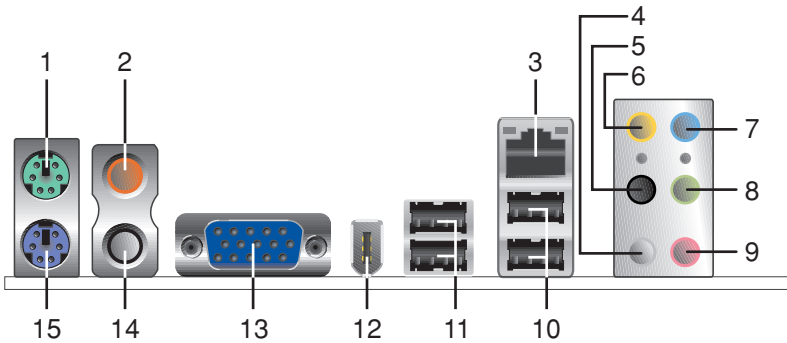
CLEAR CMOS

1 2   2 3

Clear CMOS   Normal
                    (Default)

**IPIBL-LA(Berkeley-GL8E)
Clear RTC RAM**
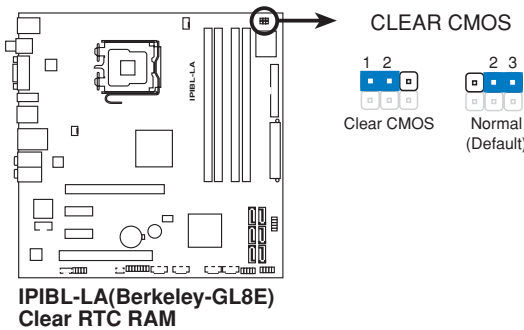
2.   Clear password (3-pin CLEAR PWD)

This jumper allows you to clear the password if you forgot your password.

CLEAR PWD

1 2   2 3

Clear Password   Normal
                    (Default)

**IPIBL-LA(Berkeley-GL8E)
Clear password setting**
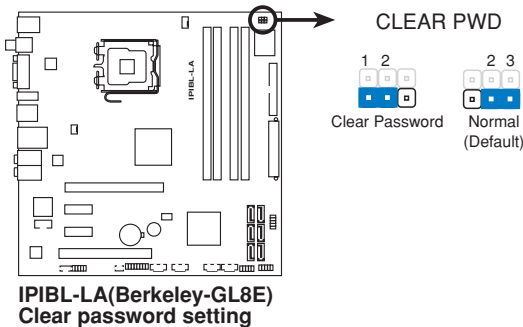
6. Connectors

6.1 Rear panel connectors

1. **PS/2 mouse port (green).** This port is for a PS/2 mouse.
2. **Coaxial S/PDIF Out port.** This port connects an external audio output device via a coaxial S/PDIF cable.
3. **LAN (RJ-45) port.** This port allows connection to a Local Area Network (LAN) through a network hub.
4. **Side Speaker Out port (gray).** This port connects to the side speakers in an 8-channel audio configuration.
5. **Rear Speaker Out port (black).** This port connects to the rear speakers on a 4-channel, 6-channel, or 8-channel audio configuration.
6. **Center/Subwoofer port (yellow orange).** This port connects the center/ subwoofer speakers.
7. **Line In port (light blue).** This port connects a 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 mode, the function of this port becomes Front Speaker Out.
9. **Microphone port (pink).** This port connects a microphone.

> Refer to the audio configuration table on the next page for the funtion of the audio ports in 2, 4, 6, or 8-channel configuration.

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

Port	Headset 2-channels	4-channels	6-channels	8-channels
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. **USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

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

13. **VGA port**. This 15-pin VGA port connects to a VGA monitor.

14. **Coaxial S/PDIF in port.** This port connects an external audio input device via a coaxial S/PDIF cable.

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

6.2 Internal connectors

This section describes and illustrates the internal connectors on the motherboard.

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 an FDD cable with a covered Pin 5.
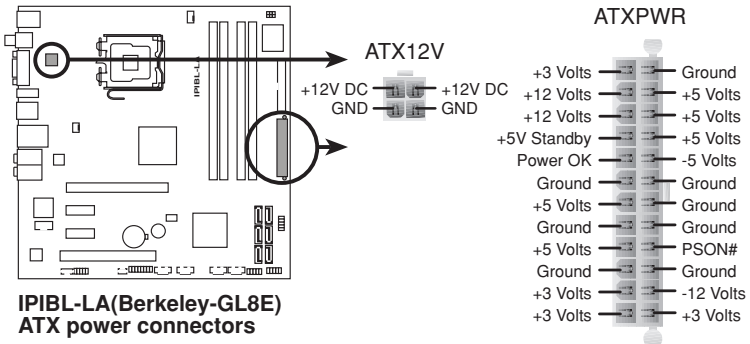

PIN 1 — FLOPPY

NOTE: Orient the red markings on the floppy ribbon cable to PIN 1.
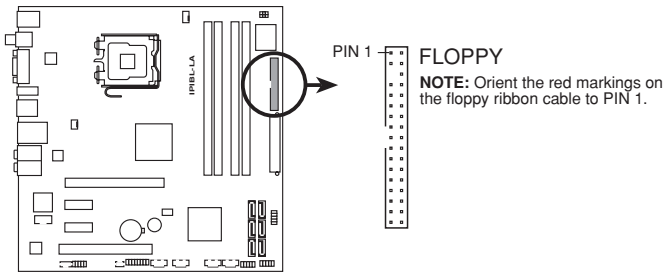
**IPIBL-LA(Berkeley-GL8E)
Floppy disk drive connector**

2.   ATX power connectors (24-pin ATXPWR, 4-pin ATX12V)

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

> •   Do not forget to connect the 4-pin ATX +12 V power plug; otherwise, the system will not boot up.
>
> •   Make sure that your ATX 12V power supply can provide 8A on the +12V lead and at least 1A on the +5-volt standby lead (+5VSB). The minimu recommended wattage is 230W, or 300W for a fully configured system. The system can become unstable and might experience difficulty powering up if the power supply is inadequate.
>
> •   You must install a PSU with a higher power rating if you intend to install additional devices.

ATXPWR

+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

ATX12V

+12V DC   +12V DC
GND   GND

IPIBL-LA(Berkeley-GL8E)
ATX power connectors

3.   HDMI connector (2x8 pin HDMI_HEADERS)

This connector is for an High-Definition Multimedia Interface (HDMI) port(s). Connect the HDMI module cable to this connector, then install the module to a slot opening at the back of the system chassis.
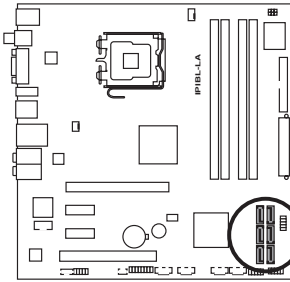
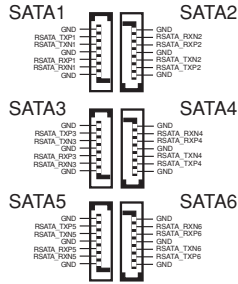The HDMI module is purchased separately.

IPIBL-LA(Berkeley-GL8E)
HDMI connector
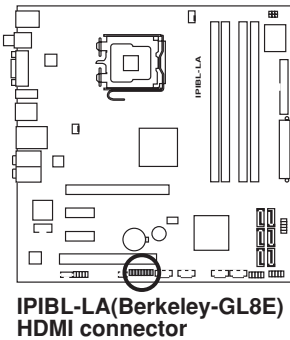
4. **Serial ATA connectors (7-pin SATA1, SATA2, SATA3, SATA4, SATA5, SATA6)**

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

**IPIBL-LA(Berkeley-GL8E)
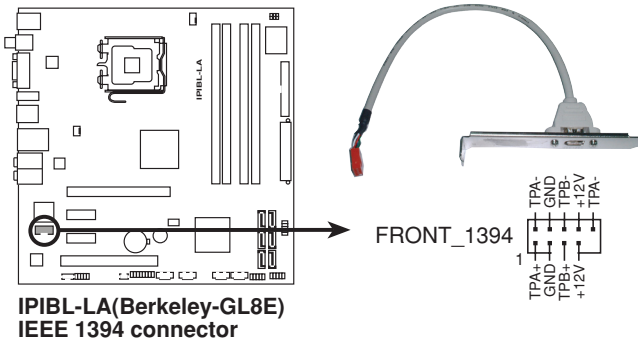SATA connectors**

- Install the Windows® 2000 Service Pack 4, Windows® XP Service Pack1 or Windows Vista before using Serial ATA.

- When using the connectors in Standard IDE mode, connect the primary (boot) hard disk drive to the SATA1 connector.

Serial ATA hard disk drive connection

Connector	Color	Setting	Use
SATA1	Black	1st	Boot Disk
SATA2	White	2nd	Boot Disk
SATA3	Red	5th	Boot Disk
SATA4	Teal	6th	Boot Disk
SATA5	Blue	3rd	Boot Disk
SATA6	Yellow	4th	Boot Disk

5. **IEEE 1394a connector (10-1 pin FRONT_1394)**

This connector is for an 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.


FRONT_1394

IPIBL-LA(Berkeley-GL8E) IEEE 1394 connector

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

6. **USB connectors (10-1 pin FRONT_USB1, FRONT_USB2, FRONT_USB3)**

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.

FRONT_USB1   FRONT_USB2
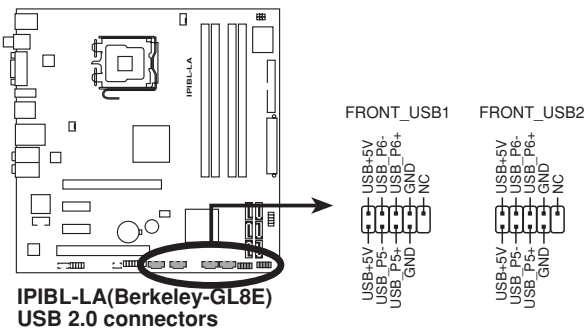
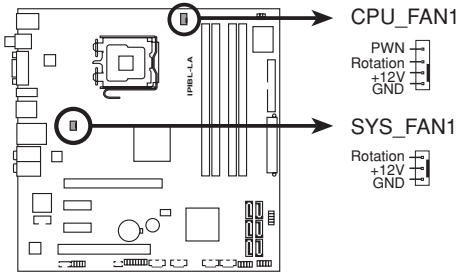**IPIBL-LA(Berkeley-GL8E) USB 2.0 connectors**

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

7.   CPU and System fan connectors (4-pin CPU_FAN1, 3-pin SYS_FAN1)

These fan connectors support cooling fans of 350 mA~740 mA (8.88 W max.) or a total of 1 A~2.22 A (26.64 W max.) at +12 V. 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.

IPIBL-LA(Berkeley-GL8E) Fan connectors

CPU_FAN1

PWN
Rotation
+12V
GND

SYS_FAN1

Rotation
+12V
GND

8.   Internal audio connector (F_LINE_IN [White])

This connector allows you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card.
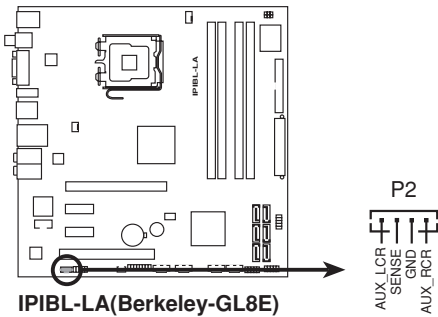

IPIBL-LA(Berkeley-GL8E) Internal audio connector

P2

AUX_LCR
SENSE
GND
AUX_RCR

9. Digital audio connector (3-pin SPDIF2 [White])

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.
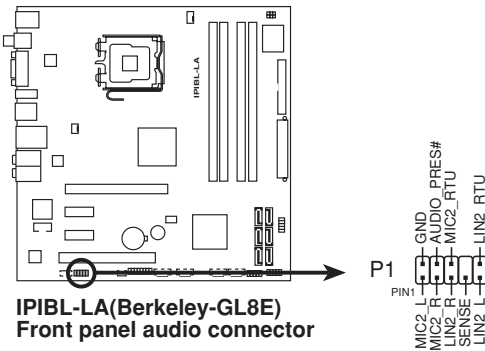
The S/PDIF module is purchased separately.

SPDIF2

GND
SPDIFOUT
+5V

IPIBL-LA(Berkeley-GL8E)
Digital audio connector
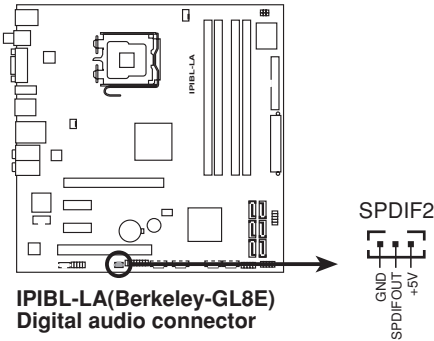
10. Front panel audio connector (10-1-pin F_AUDIO)

This connector is for a chassis-mounted front panel headphone port.

P1

PIN1

GND
AUDIO_PRES#
MIC2_RTU
LIN2_RTU

MIC2_L
MIC2_R
LIN2_R
SENSE
LIN2_L

IPIBL-LA(Berkeley-GL8E)
Front panel audio connector

12. **System panel connector (10-1 pin F_PANEL)**

    This connector supports several chassis-mounted functions.

**IPIBL-LA(Berkeley-GL8E)
System panel connector**
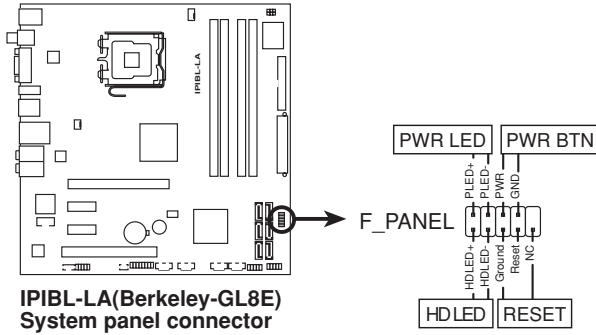
- **System power LED (2-pin PLED)**
  This 2-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **Hard disk drive activity LED (2-pin 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.

- **ATX power button/Soft-off button (2-pin PWR)**
  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.