Electronic Emission Notices

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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 instructions contained in this manual, may cause harmful interference to radio and television 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 THE RECEIVER
- CONNECT THE EQUIPMENT INTO AN OUTLET ON A CIRCUIT DIFFERENT FROM THAT OF THE RECEIVER
- CONSULT THE DEALER OR AN EXPERIENCED AUDIO/TELEVISION TECHNICIAN

NOTE: Connecting this device to peripheral devices that do not comply with Class B requirements, or using an unshielded peripheral data cable, could also result in harmful interference to radio or television reception.

The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

To ensure that the use of this product does not contribute to interference, it is necessary to use shielded I/O cables.

Copyright

While every precaution has been taken in the preparation of this manual, no responsibility for errors or omissions is assumed. Neither is any liability assumed for damages resulting from the use of the information contained herein.

Trademarks

Table of Contents

HARDWARE CONFIGURATION

Key Features :

Chipset

- VIA K8T800/K8M800+VT8237 chipset.

Processor

- Support for AMD™ K8/ClawHammer™ Processor.
- Supports AMD Athlon™ 64 processor.
- Processor interface via Hypertransport™ bus.

VRM 9.0(Voltage Regulator Modules) On board

- Flexible motherboard design with on board VRM 9.0, easy to upgrade with future processors.

System Memory

- A total of two 184-pin DDR SDRAM sockets.
- Supports DDR400/DDR333/DDR266 SDRAM.
- DIMM sizes from 64 Mbytes to 2Gbyte.
- 2.5V DRAM interface for DDR SDRAM.

System BIOS

- PnP, APM, ATAPI and Windows® 98/2000/XP.
- Full support of ACPI & DMI.
- Auto detects and supports LBA harddisks with capacities over 160GB.
- Easy to upgrade BIOS by end-user.

On-board VGA (only for K8M800)

- 8/16/32/64 MB frame buffers using system memory.
- Internal AGP 8x equivalent performance.
- Graphics engine clock up to 200 MHz decoupled from memory clock.
- High quality DVD video playback.
- 128-bit 2D graphics engine.
- 128-bit 3D graphics engine.

On-board I/O

- On board two PCI fast IDE ports supporting up to 4 ATA, ATA2 , Ultra ATA33/ 66/100/133 IDE HDDs, CD-ROMs, ZIP drives and LS-120 drives as boot drive.
- One ECP/EPP parallel port.
- Two 16550 Compatible UART serial ports.(One port via a header)
- One floppy port supports two FDD of 360KB, 720KB, 1.2MB , 1.44MB and 2.88MB capacity.
- Eight USB2.0 ports.
- PS/2 keyboard connector.
- PS/2 mouse is supported.
- One Front Panel Sound Connector.
- Infrared (IrDA) is supported via a header.

Expanded USB Support

- Includes 4 UHCI host controllers,increasing the number of external ports to eight.
- Includes 1 EHCI USB2.0 Host Controller that supports eight ports (Bandwidth shared between eight ports).

Full Featured Accelerated Graphics Port (AGP)

- Supports AGP3.0 including 4X/8X AGP card.
- AGP 1.5V connector support only.
- High priority access support.

Plug-and-Play

- Supports Plug and Play specification 1.1.
- Plug and Play for Windows® 98, Windows® 2000 as well as Windows® XP.
- Fully steerable PCI interrupts.

On-board AC97 Sound(optional)

- Integrated AC97 controller with standard AC97 Codec.
- Direct Sound and Sound Blaster compatible.
- Full-Duplex 16-bit record and play back.
- PnP and APM 1.2 support.
- Windows® 98/2000/XP drivers ready.
- Line-in, Line-out, Mic-in and MIDI/Game port.
- Supports ALC650/655 AC97 Code for six sound channel output (optional).

Integrated serial ATA/RAID Controller

- Independent DMA operation on two ports.
- Data transfer rate 150Mb/s.
- SATA devices can be configured in multiple RAID configurations-supports RAID Level0,RAID Level1 and JBOD.

On-board VT6103 LAN (optional)

- High performance PCI master interface with scatter / gather and bursting capability.
- Standard MII interface to external PHYceiver.
- 10/100MHz full and half duplex operation.

Power Management

- Supports SMM, APM and ACPI.
- Break switch for instant suspend/resume on system operations.
- Energy star “Green PC” compliant.
- Hardware monitoring circuit is supported, provide voltage, temperature, fan speed, etc. monitoring (optional).
- WOL (Wake-On-Lan) header support.
- Supports suspend-to-RAM(STR)(optional).

On-board IEEE1394(optional)

- Compliant with 1394 open HCI specifications v1.0 and v1.1.
- Integrated 400Mbit 2 port PHY.

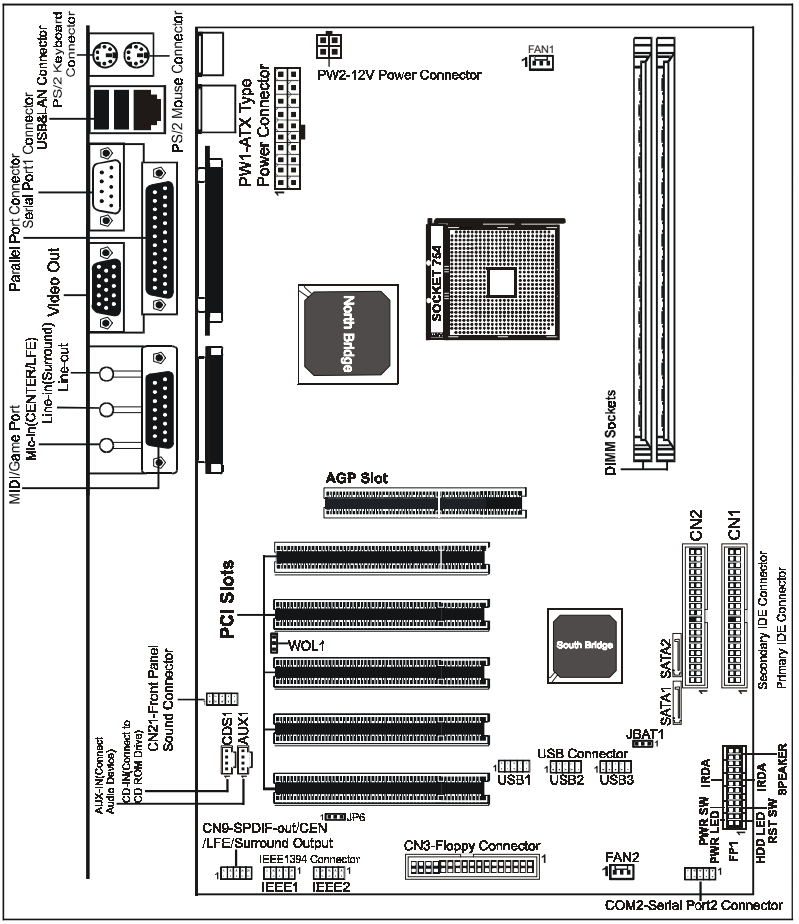
Expansion Slots

- 1 AGP slot (support AGP 3.0-8X).
- 5 PCI bus master slots - ver. 2.1 compliant.

Static electricity can harm delicate components of the motherboard. To prevent damage caused by static electricity, discharge the static electricity from your body before you touch any of the computers electronic components.

Motherboard Layout (35-AA14-X0-XX)

The following diagrams show the relative positions of the jumpers, connectors, major components and memory banks on the motherboard.



 # The LAN ,Video Out, IEEE1394, CN9 and JP6 Connectors are optional.

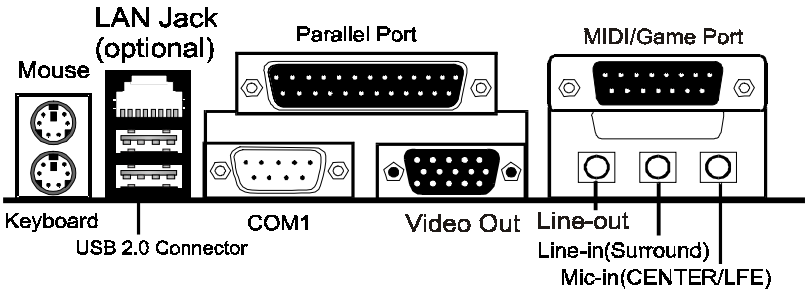
 # The ALC650/655 embeds an internal analog switch (by driver software) to share LINE input with Surround output, and share MIC input with CENTER/LFE output.

NOTE

1) Be sure to check the cable orientation in order to match the colored strip to the pin 1 end of the connector.
2) When you start up the system, please wait for 5 seconds after you power on AC.
3) It is not recommended to add a metal spacer plate on the back of the Socket754. Otherwise, some components will be short and damaged.

Rear Panel

The back panel provides the following connectors:



Mouse Connector

The mainboard provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse.You can plug a PS/2® mouse directly into this connector.

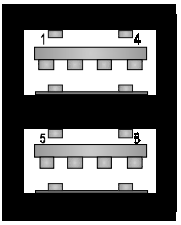
Keyboard Connector

The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a PS/2® keyboard.You can plug a PS/2® keyboard directly into this connector.

USB 2.0 Connector

The mainboard provides a UHCI (Universal Host Controller Interface) Universal Serial Bus root for attaching USB devices such as keyboard, mouse or other USB-compatible devices.You can plug the USB device directly into the connector.

USB 2.0 Connector



USB 2.0 Connector Description

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V/5VSB (optional)
2	-Data 0	Negative Data Channel 0
3	+Data0	Positive Data Channel 0
4	GND	Ground
5	VCC	+5V/5VSB (optional)
6	-Data 1	Negative Data Channel 1
7	+Data 1	Positive Data Channel 1
8	GND	Ground

Serial Port Connectors: COM1

The Port is 16550A high speed communication ports that send/receive 16bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connectors.

Video Out Connector (Optional)

The mainboard provides a Video out port to connect a 15-pin analog video monitor.

LAN Jack (Optional)

The mainboard provides one standard RJ-45 jack for connection to Local Area Network(LAN).You can connect a network cable to the LAN jack.

Parallel Port Connector:LPT1

The mainboard provides a 25-pin female centronic connector as LPT. A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.

MIDI/Game Port (optional)

The mainboard provides the game port to connect a joystick or a MIDI device.

Audio Port Connector

Line-Out is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic In** is a connector for microphones. The ALC650/655 embeds an internal analog switch (by driver software) to share LINE input with Surround output, and share MIC input with CENTER/LFE output.

The ALC655 embeds the jack sensing function.When you plug an audio device into the corresponding connector, the system will show you what you pluged into the motherboard.

Audio Configuration

After installing the audio driver, you can select 4/6 channel surround audio output in software utility and then connect surround speakers to appropriate audio ports.

There are two ways to obtain 4/6 channel surround audio output:

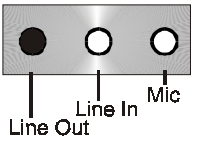
1. 4/6 surround audio output of back panel only. All surround speaker connect to audio connector.

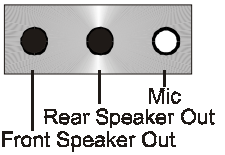
2. S-Bracket (optional cable). You have installed S-Bracket into the computer, and then connect two front speakers to back panel's "Line-out" port, and the rest of speakers to S-Bracket. Detail connection is refer to Page 46.

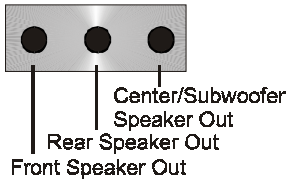
Speaker Configuration

Method 1: 4/6 Surround audio output of back panel only.

After installing the audio drivers, you can attach the speakers for 2-/4-/6-channel audio output. Always connect the speakers to the LINE OUT connectors. Different connector configurations for 2-/4-/6-channel operations are listed below:







2-Channel

In 2-channel configuration, Line Out, Line In and MIC functions all exist.

4-Channel

When set to 4-channel configuration, Line In is replaced by Rear Speaker Out. Line in function does not exist.

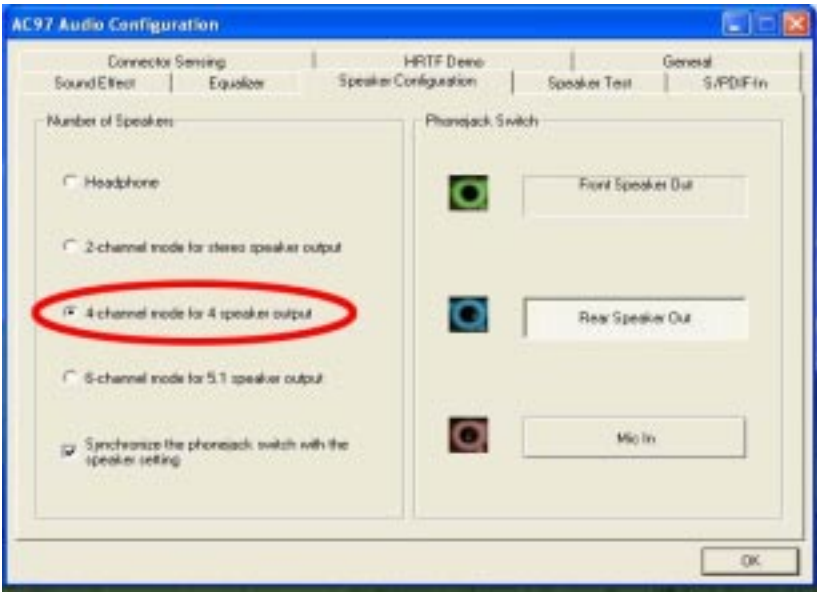
6-Channel

When set to 6-channel configuration, Line In is replaced by Rear Speaker Out. Mic is replaced by Center/ Subwoofer Speaker Out. Line in and Mic do not exist function.

In utility, double click “AC97 Audio configuration” icon  from the window tray on the right bottom.

Then the “AC97 Audio Configuration” will appear. Click on the **Speaker Configuration** tab to select the audio mode.

A. When you choose 4-channel mode for 4 speaker output, the selected item is showed as below (Figure1)



(Figure1)

B. When you choose 6-channel mode for 5.1 speaker output, the selected item is showed as below (Figure2)

(Figure2)

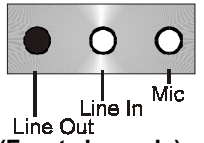
Method 2: Using S-BRACKET connectors:

S-Bracket (The S-Bracket is showed in page 46) is an optional accessory. It gives access to analog and digital audio output by integrating both SPDIF and analog LINE OUT connectors. To use the S-Bracket, you should select correct setting in the software utility. For information about the setting, refer to selecting 4- or 6- Channel Setting later in the section.

Connector configurations for 4- and 6- channel using S-Bracket are described below:

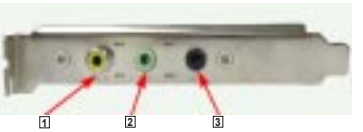
4-Channel Analog Audio Output

Back Panel **S-Bracket**



(Front channels)

+



1 SPDIF jack (coaxial)

2 Rear Speaker Out

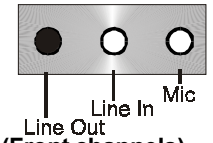
3 No function

Description:

Connect two speakers to back panel's Line Out connector and two speakers to one Line Out connector of S-Bracket. If you want to use ***Line In*** *function, please click the* ***Rear Speaker Out*** *button (showed as below)*

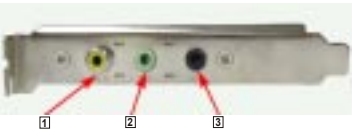
6-Channel Analog Audio Output

Back Panel **S-Bracket**



(Front channels)

+



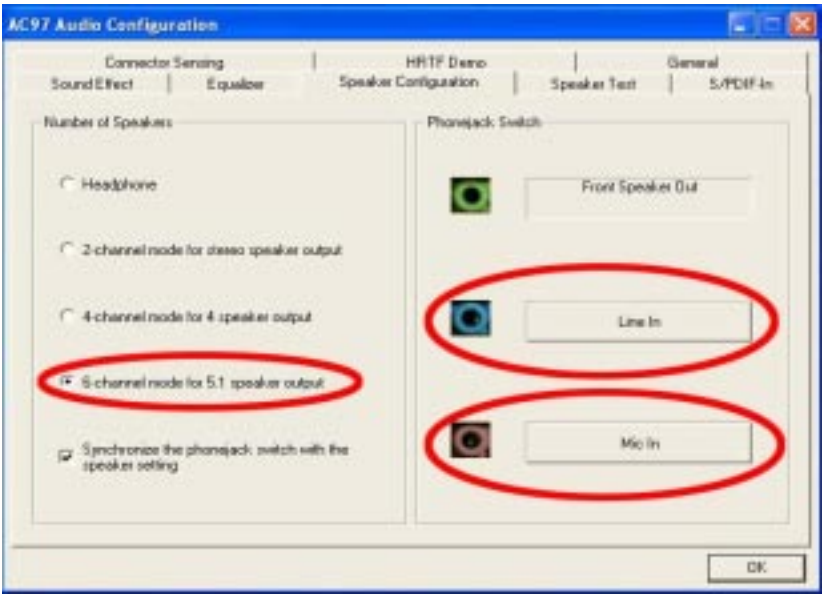
1 SPDIF jack (coaxial)

2 Rear Speaker Out

3 Center and Subwoofer Out

Description:

*Connect two speakers to back panel's Line Out connector and four speakers to both Line Out connectors of S-Bracket. If you want to use **Line In** and **MIC** function at the same time, please click the **Rear Speaker Out** and **Center/Subwoofer Speaker Out** buttons. (showed as below)*



Jack-Sensing Instruction

Jack-Sensing provides audio connectors error-detection function.

CAUTION! Install Microsoft DirectX8.1 before to enable Jack-Sensing support for Windows 98/98SE/2000/ME.

Jack-Sensing includes 2 parts:AUTO and MANUAL. Following is an example for 2 channels (Windows XP):

Introduction of audio connectors

You may connect CDROM, Walkman or others audio input devices to Line In jack. speakers, earphone or others output devices to Line Out jack. and microphone to MIC In jack.

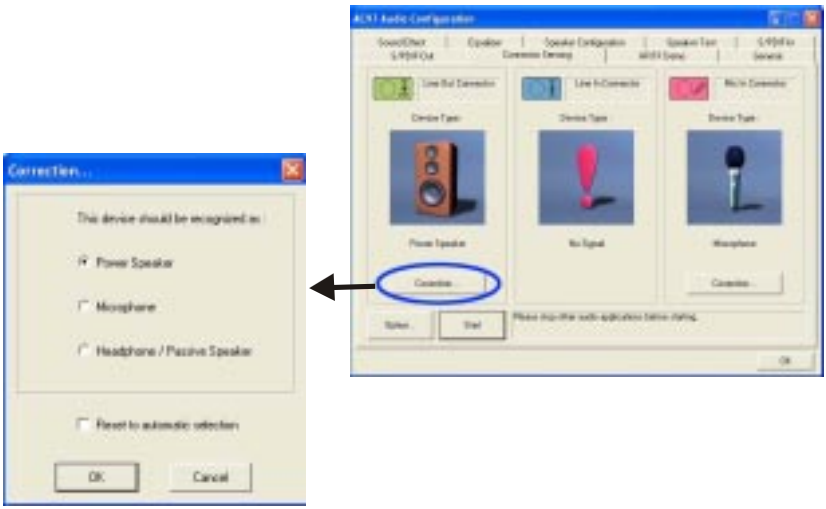
Auto-detecting:

Please connect the devices to the right jacks as above. A window will appear as below picture if you setup the devices properly.

If you set wrong with the connectors, the warning message will come out as following picture.

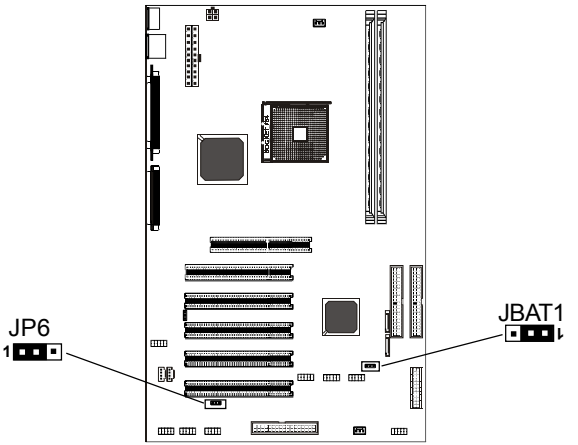
Manual setting:

If the device picture shows different from what you set, please press “Correction...” to set.



Jumper Settings

This chapter explains how to configure the motherboard's hardware. Before using your computer, make sure all jumpers and DRAM modules are set correctly. Refer to this chapter whenever in doubt.



CPU Speed Selection

In this motherboard, jumperless feature is implemented such that no jumper is required to be set for different type of CPU installed.

Notice:
1. Be sure to save the CMOS setting when exit the CMOS.
2. If the CPU is frequency multiplier locked, no CPU speed change will be seen even if the frequency multiplier setting in CMOS setup is changed.

JBAT1 - CMOS Clear

JBAT1	Selection
1-2*	Normal*
2-3	CMOS Clear

JP6-On Board IEEE1394 Select (optional)

JP6	Function
1-2*	IEEE1394 Enable*
2-3	IEEE1394 Disable

Close Open * = *Default setting.*

Connectors

The mainboard provides connectors to connect to FDD, IDE HDD, Serial ATA Hard Disk,USB devices, CPU/PWRFAN/WOL ,etc.

Floppy Disk Drive Connector:CN3

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.

Hard Disk Connectors:CN1&CN2

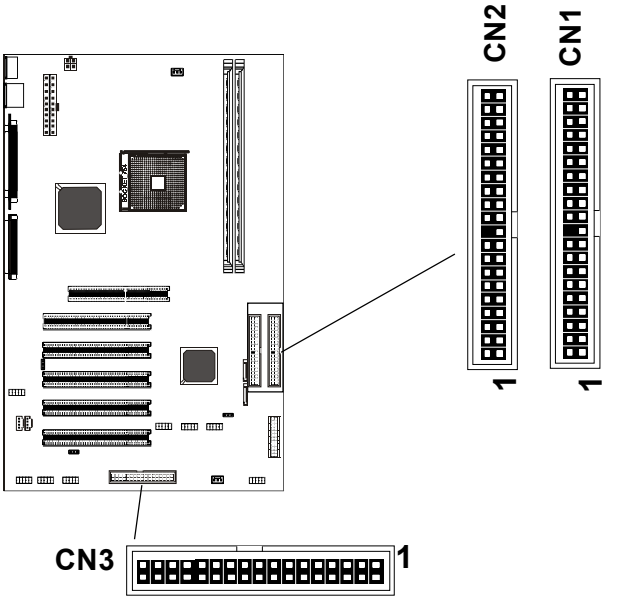
The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100/133controller that provides PIO mode 0~4, Bus Master, and Ultra DMA 33/66/100/133function. You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices.

CN1 (Primary IDE Connector)

The first hard drive should always be connected to IDE1.IDE1 can connect a Master and a Slave drive.You must configure second hard drive to Slave mode by setting the jumper accordingly.

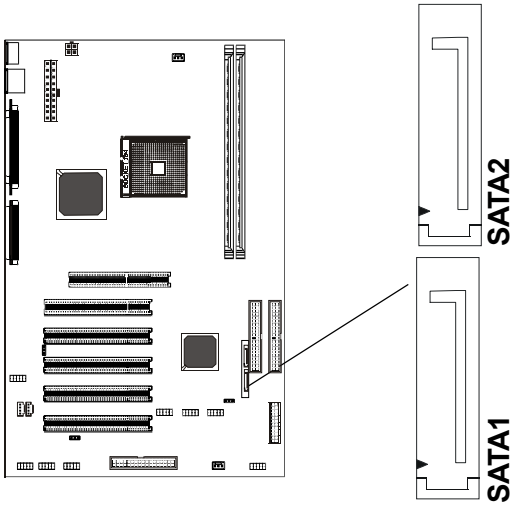
CN2 (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.



Serial ATA Hard Disk Connectors: SATA1&SATA2

The mainboard has 2 SATA connectors. The mainboard provides dual high-speed Serial ATA interface ports, SATA1,SATA2 Each supports 1st generation serial ATA data rates of 150 MB/s. Both connectors are fully compliant with Serial ATA 1.0 specifications. Each Serial ATA connector can connect to 1 hard disk device. Please refer to Serial ATA Raid manual for detail software installation procedure.



SATA1&SATA2

PIN	SIGNAL
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

Serial ATA Cable

Connect one end of the SATA cable to the mainboard, and connect another end to the SATA Hard Disk.

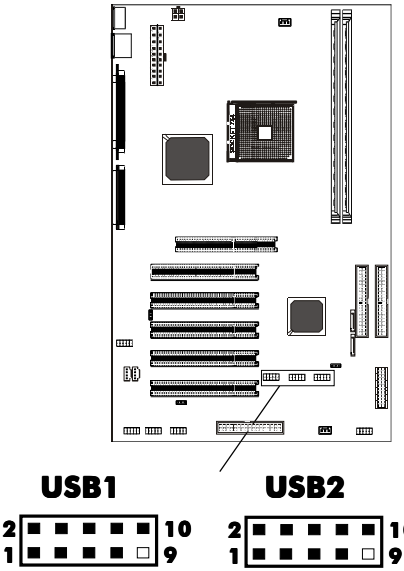
CAUTION!

Please do not fold the serial ATA cable in a 90-degree angle, which will cause the loss of data during the transmission.

Serial ATA Hard Disk Devices Power Cable(optional)

USB Connectors: USB1/USB2/USB3

This mainboard has USB ports. Some computer cases have a special module that mounts USB ports at the front of the case. If you have this kind of case, use auxiliary USB connector USB1/USB2/USB3 to connect the front mounted ports to the mainboard.

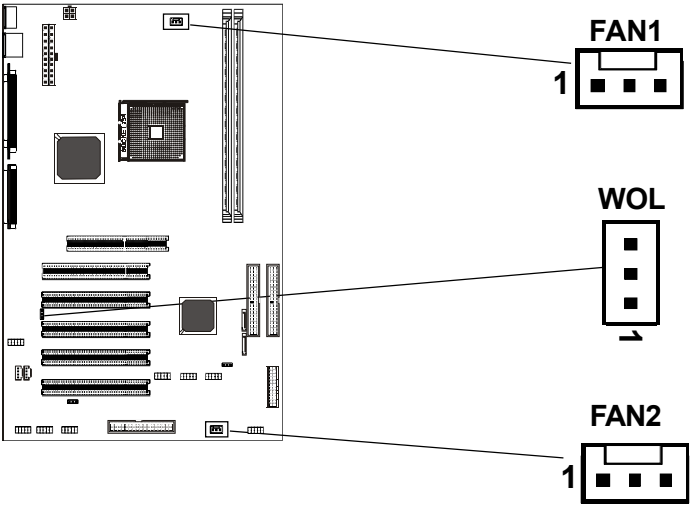


USB Connector

PIN	Assignment
1	VCC
2	VCC
3	USBP0-
4	USBP1-
5	USBP0+
6	USBP1+
7	GND
8	GND
9	KEY
10	OC#

Fan Power Connectors:FAN1&FAN2

The FAN1 (processor fan), FAN2 (system fan) support system cool-ing fan with +12V.It supports three-pin head connector. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.



WOL: Wake On LAN

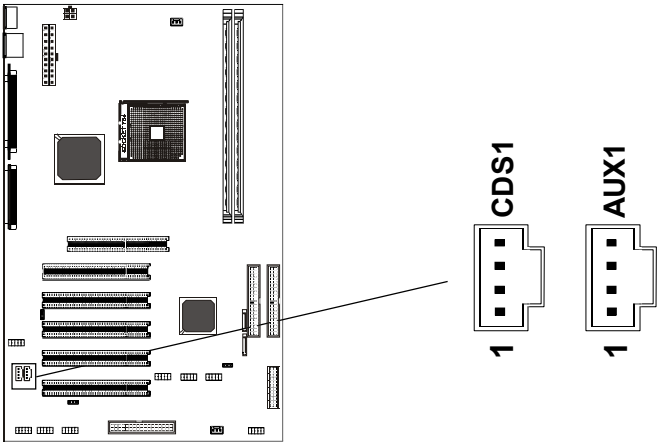
If you have installed a LAN card, use the cable provied with the card to plug into the mainboard WOL connector. This enables ables the Wake On LAN (WOL) feature. When your system is in a power-saving mode, any LAN signal automatically resumes the system.You must enable this item using the Power Mannagement page of the Setup Utility.

AUX-IN Connector:AUX1

The connector is for Audio Device.

CD-IN Connector:CDS1

The connector is for CD-ROM Drive.



CDS1 : CDS1

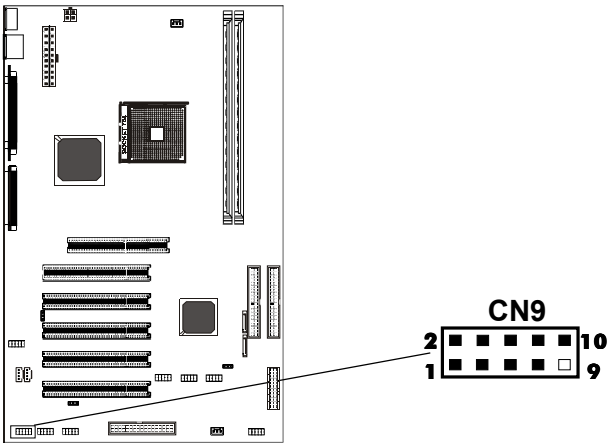
PIN	Assignment
1	CD-L
2	GND
3	GND
4	CD-R

AUX1 : AUX1

PIN	Assignment
1	AUX-L
2	GND
3	GND
4	AUX-R

S-Bracket(SPDIF)/CEN/LFE/Surround Output Connector: CN9 (optional)

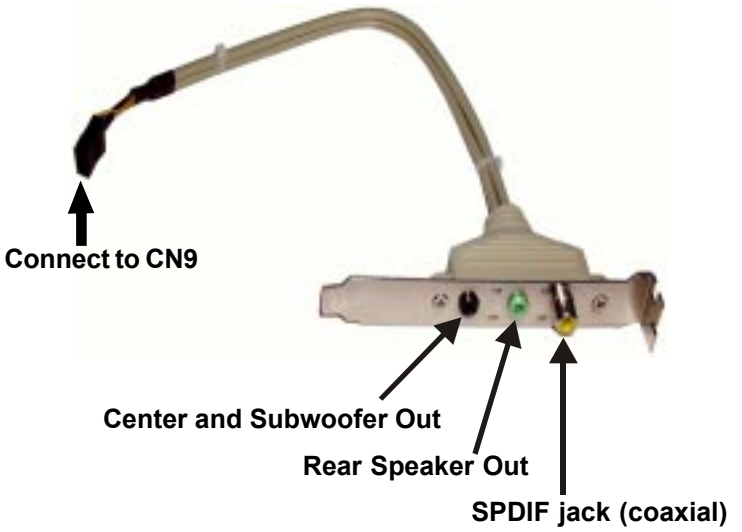
The connector allows you to connect a S-Bracket for a Digital Interface (SPDIF). The S-Bracket offers 1 SPDIF jacks for digital audio transmission and 2 analog Line-Out jacks for other 4-channel audio output. So you can use Line in, Mic in and 6 channel audio output features at the same time.



CN9-S-Bracket

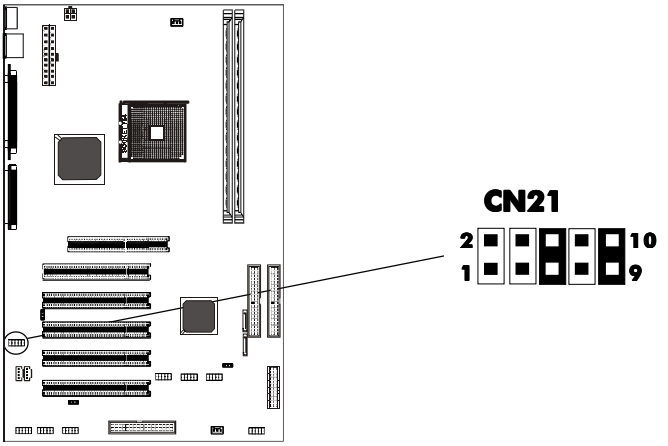
PIN	SIGNAL	DESCRIPTION
1	SOUT-L	Audio left surrounding output
2	SOUT-R	Audio right surrounding output
3	GND	Ground
4	GND	Ground
5	CET-OUT	Audio center output
6	LFE-OUT	Audio bass output
7	GND	Ground
8	SPDIF	S/PDIF input
9	(No Pin)	Key
10	SPDFO	S/PDIF output

S-Bracket Cable (optional)



Front Panel Audio Header: CN21

This mainboard supports front panel microphone and speaker out ports. If your computer case has these ports,connect them to CN21.



CN21

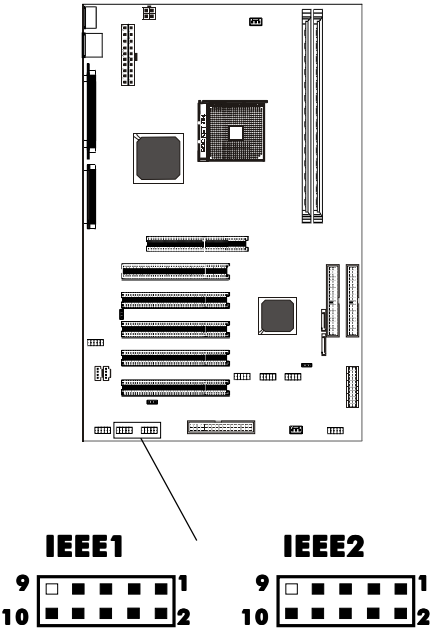
PIN	Assignment
1	MIC
2	GND
3	REF
4	POWER
5	Front Audio(R)
6	Rear Audio(R)
7	Reserved
8	Key(No pin)
9	Front Audio(L)
10	Rear Audio(L)

Note:

If you want to use "Front Audio" connector, you must remove 5-6,9-10 jumper. In order to utilize the front audio header, your chassis must have front audio connector. Also please make sure the pin assignment on the cable is the same as the pin assignment on the MB header. To find out if the chassis you are buying support front audio connector, please contract your dealer.

IEEE 1394 Connectors: IEEE1&IEEE2 (optional)

The mainboard provides two 1394 pin headers that allow you to connect IEEE 1394 ports.



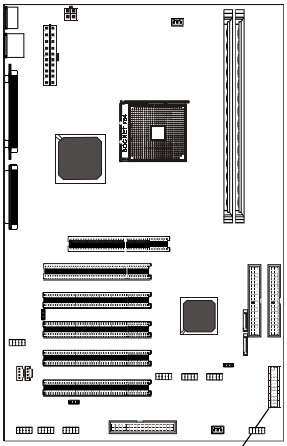
IEEE1&IEEE2 Pin Definition

PIN	SIGNAL
1	TPA+
2	TPA-
3	Ground
4	Ground
5	TPB+
6	TPB-
7	Cable power
8	Cable power
9	Key (no pin)
10	Ground

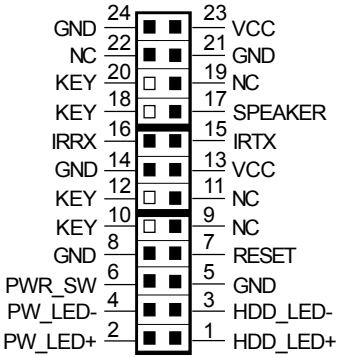
IEEE 1394 Cable (optional)

Front Panel Header: FP1

The mainboard provides one front panel connector for electrical connecti -on to the front panel switches and LEDs.

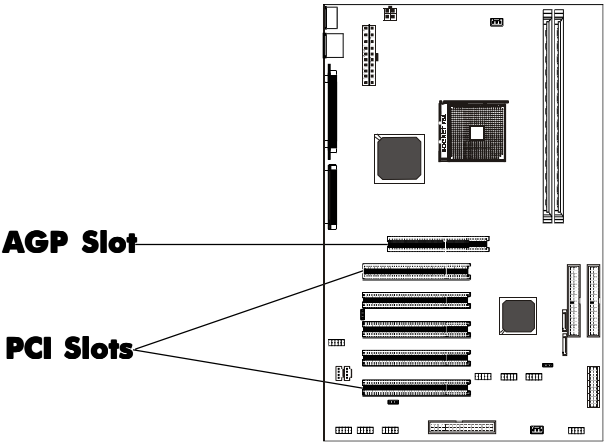


FP1



Slots

The motherboard provides one AGP slot,five 32-bit PCI bus slots.



AGP (Accelerated Graphics Port) Slot

The AGP slot allows you to insert the AGP graphics card. AGP is an interface specification designed for the throughput demands of 3D graphics. It introduces a 66MHz, 32-bit channel for the graphics controller.

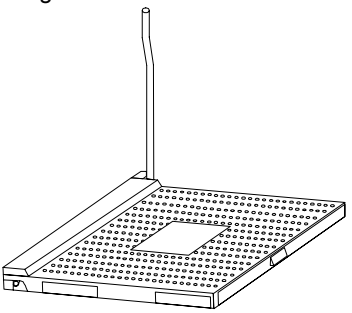
PCI (Peripheral Component Interconnect) Slots

The PCI slots allow you to insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile,read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

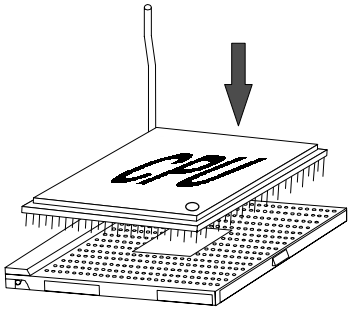
CPU Installation

Please refer to the following steps to install the CPU.

1. Please turn off the power and unplug the power cord before installing the CPU. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90 degree angle.



2. Look for the gold arrow. The gold arrow should point towards the lever pivot. The CPU can only fit in the correct orientation.



2. If the CPU is correctly installed, the pins should be completely embedded into the socket and can not be seen. Please note that any violation of the correct installation procedures may cause permanent damages to your mainboard.