USER'S MANUAL

Of

NVIDIA MCP78S

Based

Mini-ITX M/B For AMD Socket AM2+ Processor

NO.G03-NC62-F

Rev1.0

Release date: May, 2008

Trademark:

*** Specifications and Information contained in this documentation are furnished for information use only, and are subject to change at any time without notice, and should not be construed as a commitment by manufacturer.**

Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.

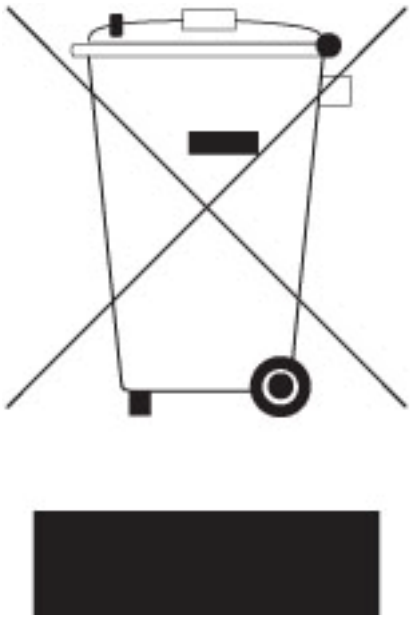


TABLE OF CONTENT

USER'S NOTICE

Manual Revision Information

Reversion	Revision History	Date
1.0	First Edition	May, 2008

Item Checklist

- ☑ Motherboard
- ☑ Cable for IDE Port
- ☑ CD for motherboard utilities
- ☑ Motherboard User's Manual
- ☑ Back panel(optional)
- ☑ DVI to HDMI Connector

Chapter 1

Introduction of the Motherboard

1-1 Feature of motherboard

The motherboard series are designed for the new generation AMD processor family guaranteed both of the performance and stability of general purpose IPC and dedicated IPC platform solutions. The MCP78S chipset is fully optimized to provide the variety IPC platform solutions by featuring the high compatibilities and cost-effective, low power consumption, high performance, and superior core graphics engine.

The motherboard AMD Socket AM2+ Quad core Opteron&Phenom, with low power consumption never denies high performance. The embedded AMD Socket AM2+ Quad core Opteron&Phenom family processor has evolved to meet the specific requirements of extended temperature applications in telecommunications infrastructure (including wired, wireless, and BSC/MSC), single board computing, automotive and transportation systems and industrial control and monitoring.

The motherboard series support HT3.0 and DDRII 400/533/667/800 system RAM Modules which is expandable to 2.0GB. The motherboard offers ULTRA **ATA 133** HDD connectors and Serial ATA2 with RAID 0 ,1, 5,10，JBOD functions which support up to IDE and four Serial ATA2 devices to accelerate hard disk drives and guarantee the data security without failure in advanced computing performance. The motherboard provide two Gigabit Ethernet LAN for internet or intranet connections, one is PCI-E LAN, the other one is PHY LAN （optional）. The motherboard series are also integrated Realtek ALC883 8channel Audio CODEC on system which is fully compatible with Sound Blaster Pro® that gives you the best sound quality and compatibility.

Embedded 10 USB2.0 functional ports delivering 480Mb/s data transfer rate, these motherboards meet USB2.0 demands data transport demands which are also equipped with

hardware monitor function on system to monitor and protect your system and maintain your non-stop business computing.

Targets at High Growth Markets: Digital Home / Digital Office / Digital World

- Personal electronics such as personal video recorders (PVR), set top boxes, home theatres, digital audio centers, etc.
- Mini PCs / Green clients / Quiet desktop PCs / High density servers
- Home server appliances / Public information/entertainment kiosks / Point-of-Sales systems / Intelligent displays / Edge networking devices / Hospital monitoring systems / Municipal control & monitoring systems

1-1.1 Special Feature of motherboard

OC-CON ---（High-polymer Solid Electrolysis Aluminum Capacitors）

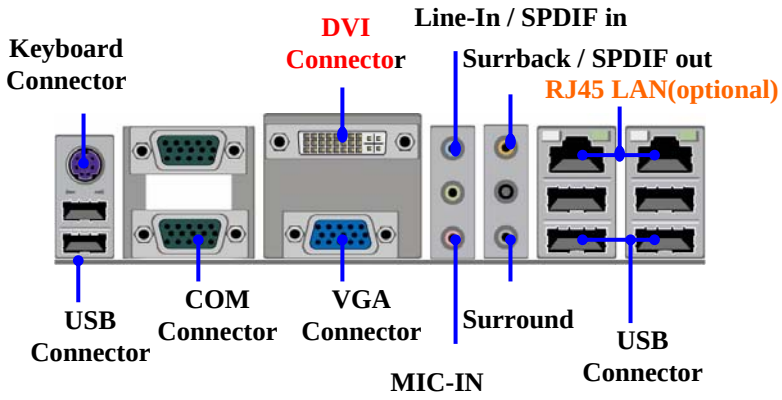
The working temperature is from 55 degrees Centigrade below zero to 125 degrees Centigrade, OC-CON capacitors possess superior physical characteristics that can be while reducing the working temperature between 20 degrees Centigrade each time, intact extension 10 times of effective product operation lives, at not rising degrees Centigrade of working temperatures each time a relative one, life of product decline 10% only too.

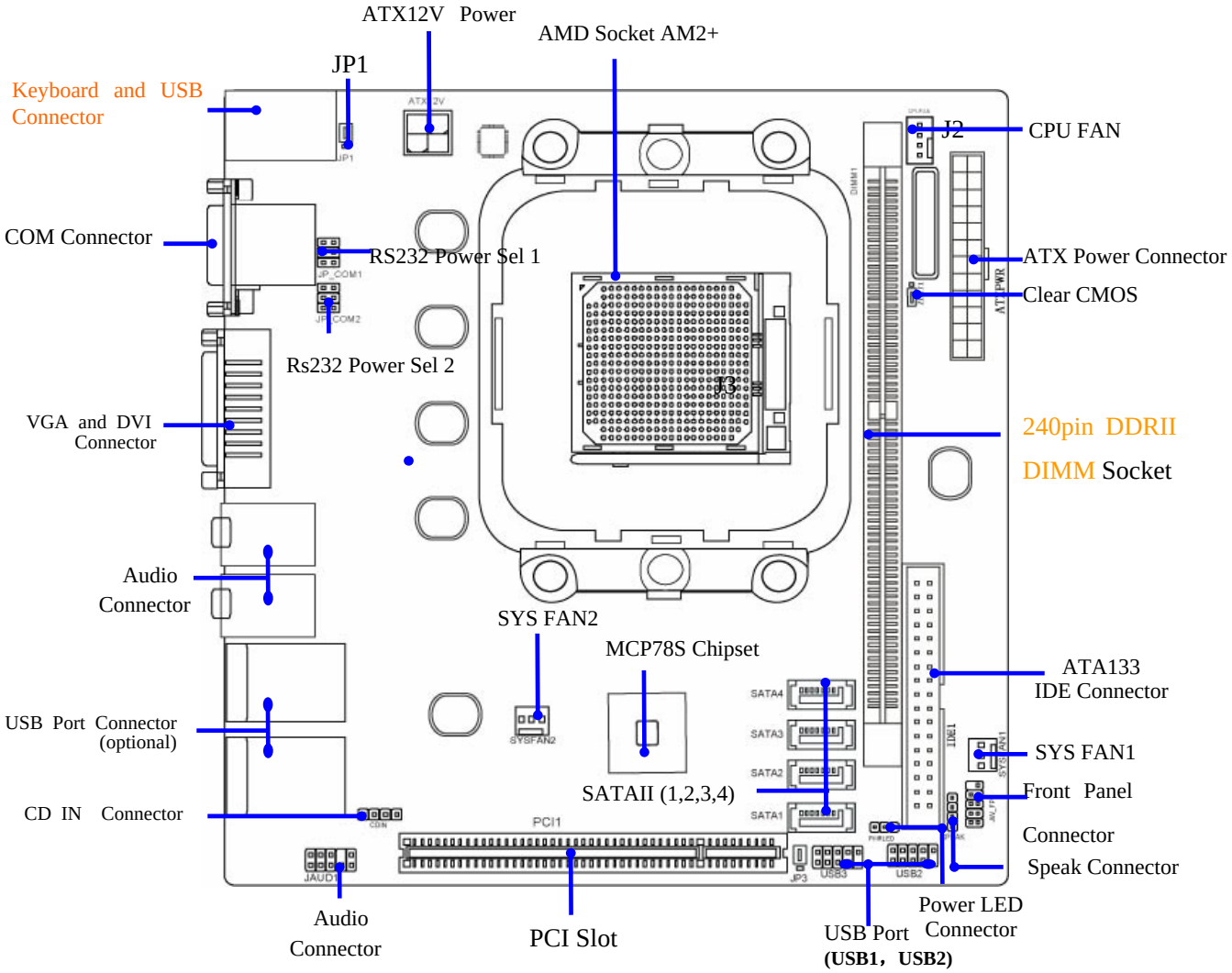
1-2 Specification

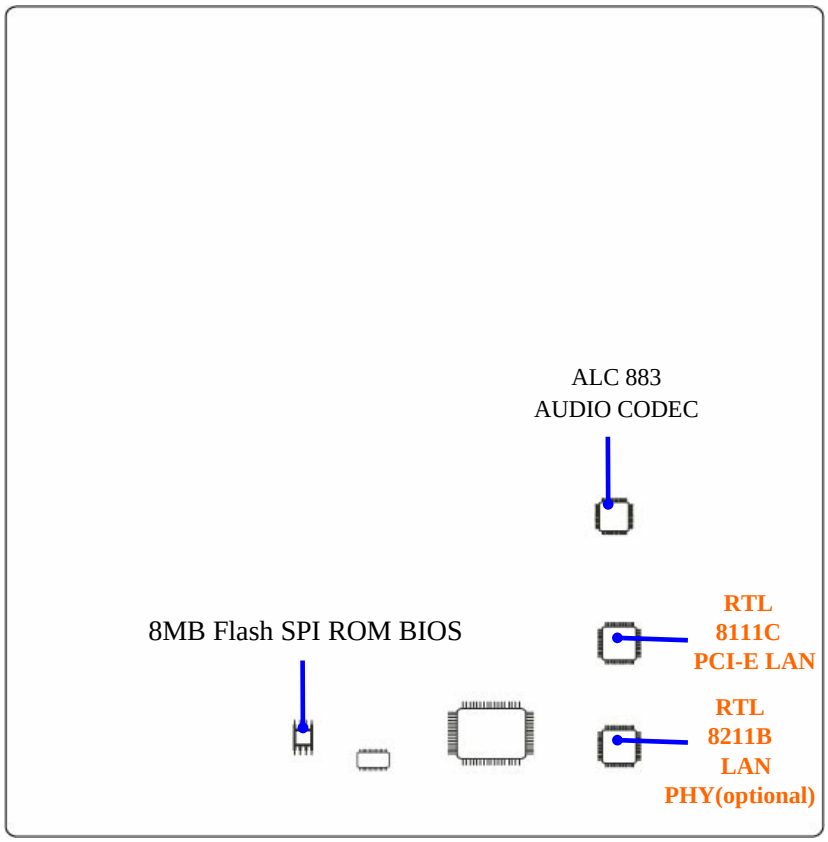
Spec	Description
Design	* Mini ITX form factor 6 layers PCB size: 17.0x17.0cm
Chipset	* NVIDIA MCP78S single chipset
Embedded CPU	* Support HT3.0 * Low Power Consumption * Socket AM2+ / AM2 AMD CPU
Memory Socket	* 240-pin DDRII DIMM socket x1 * Support DDRII 667MHz /DDRII 800MHz system Modules DDR memory * Expandable to 2GB.
Expansion Slots	* 32-bit PCI slot x 1pcs
Integrate IDE	* One PCI IDE controller that supports PCI Bus Mastering, ATA PIO/DMA and the ULTRA DMA 133/100/66 functions that deliver the data transfer rate up to 100 MB/s;
LAN	* Integrated Realtek RTL8111B/C PCI-E LAN. * Integrated Realtek RTL8211B LAN PHY LAN(optional). * Support Fast Ethernet LAN function of providing 10Mb/100Mb /Gigabit Ethernet data transfer rate
Audio	* Realtek ALC883 8 channel Audio Codec integrated * Audio driver and utility included * Support SPDIF IN/OUT

BIOS	* Award 8MB SPI Flash ROM
Multi I/O	* PS/2 keyboard&Mouse Connector * D-Sub 15-pin VGA Conn. * USB 2.0 connector x6, USB2.0 header x2 * Serial port D-Sub x2 * 8-channel Audio connector (Line-out, MIC and SPDIF in/out) * DVI Conn.

1-3 Layout Diagram & Jumper Setting




ATX12V Power
AMD Socket AM2+
JP1
Keyboard and USB Connector
J2
CPU FAN
COM Connector
RS232 Power Sel 1
ATX Power Connector
Clear CMOS
Rs232 Power Sel 2
VGA and DVI Connector
240pin DDRII DIMM Socket
Audio Connector
SYS FAN2
MCP78S Chipset
ATA133 IDE Connector
USB Port Connector (optional)
SYS FAN1
Front Panel Connector
SATAII (1,2,3,4)
CD IN Connector
Speak Connector
Power LED Connector
Audio Connector
PCI Slot
USB Port (USB1，USB2)


ALC 883
AUDIO CODEC
8MB Flash SPI ROM BIOS
RTL
8111C
PCI-E LAN
RTL
8211B
LAN
PHY(optional)

Jumper

Jumper	Name	Description	Page
JBAT	CMOS RAM Clear Function Setting	3-pin Block	p.9

Connectors

Connector	Name	Description	Page
12V CN	4-Pin 12V Power Connector	4-pin Block	p.12
USB1,USB2	USB Port Connector	4-pin Connector	p.13
UL3,UL4	RJ45 LAN Connector	4-pin Connector	p.14
VGA CN	VGA Port Connector	15-pin Female	p.12
CN4	Line-Out /MIC Audio Connector	2 Phone Jack	p.13
PS2 KB	PS2 Keyboard & Mouse Connector	5-PinConnector	p.14

Headers

Header	Name	Description	Page
USB1,USB2	USB2.0 Port Headers	9-pin Block	p.14
IDE	44-Pin IDE Connector	44-pin IDE Block	p.15
RESET	Reset switch lead	2-pin Connector	p.15
PWR BTN	Power Button Headers	2-pin Connector	p.15
SATAII1,2,3,4	Serial ATA Headers	7-pin Female Connector	p.16

Expansion Sockets

Socket/Slot	Name	Description	Page
DDRII	DDRIISDRAM Module Socket	240-pin DDR SODIMM Module Expansion Socket	p.10

Chapter 2
Hardware installation

2-1 Hardware installation Steps

Before using your computer, you had better complete the following steps:

1. Check motherboard jumper setting
2. Install System Memory (DIMM)
3. Install Expansion cards
4. Connect IDE, Front Panel /Back Panel cable
5. Connect Power connector
6. Install Operating System
7. Install Driver and Utility

2-2 Checking Motherboard's Jumper Setting

(1) Clear CMOS (3-pin): JBAT

A battery must be used to retain the motherboard configuration in CMOS RAM short 1-2 pins of JBAT to store the CMOS data.

To clear the CMOS, follow the procedure below:

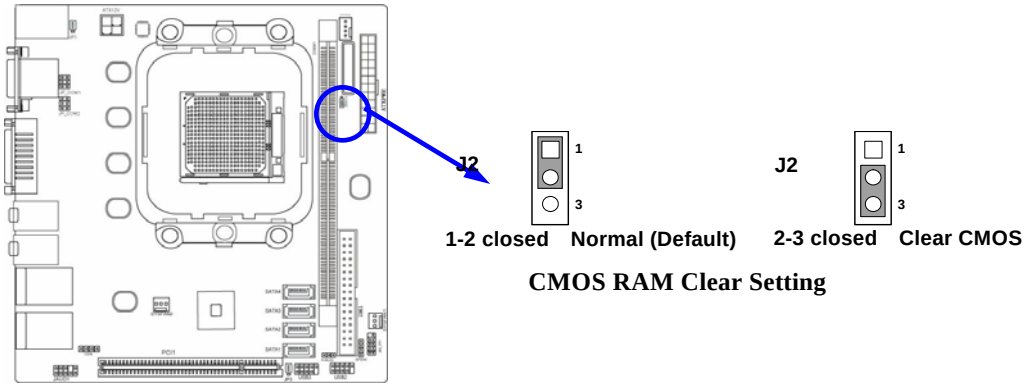
1. Turn off the system and unplug the AC power
2. Remove ATX power cable from ATX power connector
3. Locate JBAT and short pins 2-3 for a few seconds
4. Return JBAT to its normal setting by shorting pins 1-2
5. Connect ATX power cable back to ATX power connector

Note: When should clear CMOS

1. Troubleshooting

2. Forget password

3. After over clocking system boot fail



CMOS RAM Clear Setting

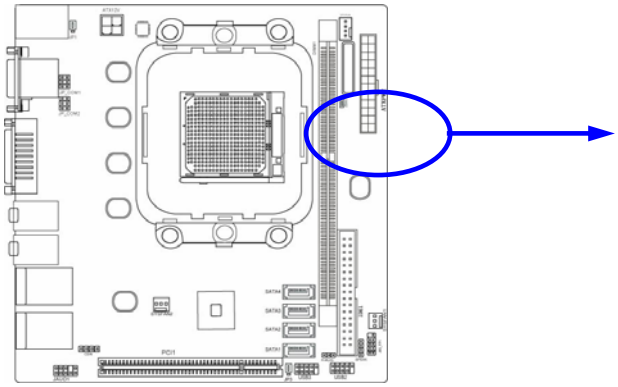
2-3 Install Memory

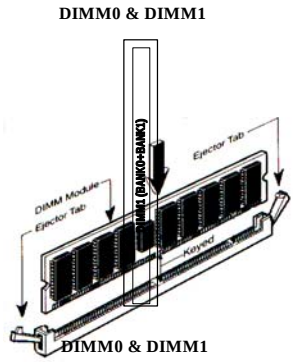
The motherboards provide one 240-pin DDRII MEMORY MODULE sites for memory expansion available from minimum memory size of 64MB to maximum memory size of 2.0GB DDRII SDRAM.

Valid Memory Configurations

Bank	240-Pin DIMM	PCS	Total Memory
Bank 0, 1 (DDRII)	DDRII 800 / DDRII667/ DDRII533 DDRII SDRAM Module	X1	64MB~2.0GB
Total	System Memory (Max. 2.0GB)	1	64MB~2.0GB

Generally, installing DDRII memory to your motherboard is very easy; you can refer to figure 2-4 to see what a 240-Pin DDR 800II / DDRII 667 DDR SDRAM module looks like.





NOTE!	When you install DIMM module fully into the DIMM socket the eject tab should be locked into the DIMM module very firmly and fit into its indention on both sides.
WARNING!	For the DDR SDRAM CLOCK is set at 166MHz, use only DDR333-compliant DDR Modules. When this motherboard operate at 133MHz, most system will not even boot if non-compliant modules are used because of the strict timing issues, if your SDR Modules are not DDR333-compliant, set the DDR SDRAM clock to 133MHz to ensure system stability.

2-4 Expansion Cards

WARNING!	Turn off your power when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards.

2-4-1 Procedure For Expansion Card Installation

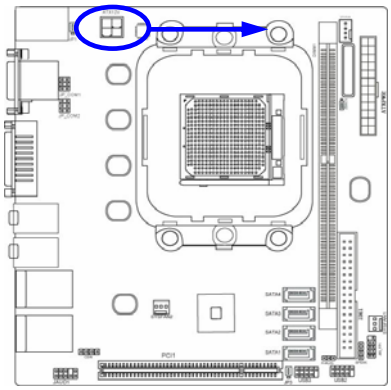
1. Read the documentation for your expansion card and make any necessary hardware or software setting for your expansion card such as jumpers.
2. Remove your computer's cover and the bracket plate on the slot you intend to use.
3. Align the card's connectors and press firmly.
4. Secure the card on the slot with the screen you remove above.
5. Replace the computer system's cover.
6. Set up the BIOS if necessary.
7. Install the necessary software driver for your expansion card.

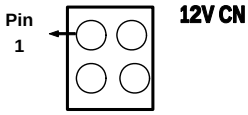
2-5 Connectors and Headers

2-5-1 Connectors

(1) 12V Power Connector (4-pin block):12V CN

This is a newly defined 4-pins connector support extra 12V voltage to maintain system power consumption in the case that an AD-Scalar daughter board is used. Without this connector might cause system unstable because the power supply can not provide sufficient current for system.





(2) USB Port connector: UL3,UL4

The connectors are 4-pins connector that connect USB devices to the system board, and standard RJ45 connector for Network supports 10/100/1000 BASE-T transfer rate.

(3)LAN Port connector: UL3,UL4(optional)

This connector is standard RJ45 over USB connectors for Network devices connection. LAN1supports 10M/100Mb/s data transfer rate.

(4) VGA Connector (15-pin female): VGA

VGA Connector is a 15-pin D-Subminiature Receptacle connector.
This connector is for connection Monitor and System to display.

(5) DVI Connector (24-pin female): DVI

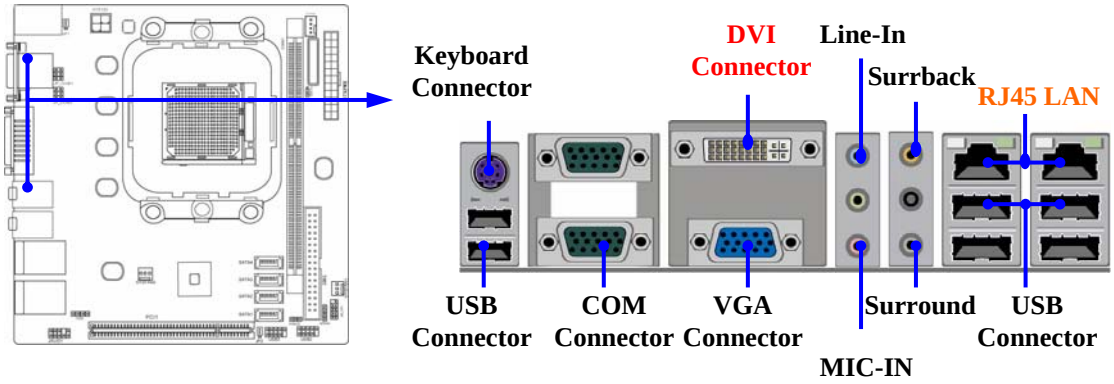
DVI Connector is a 24-pin D-Subminiature Receptacle connector.
This interface standard designed to maximize the visual quality of digital display devices such as flat panel LCD computer displays and digital projectors.

(6) Audio Connector (Line-Out/ MIC):

This Connector is 2 phone Jack for LINE-OUT/ MIC.

Line-in : (BLUE) Audio input to sound chip

Line-out : (GREEN) Audio output to speaker
MIC : (PINK) Microphone Connector
Surrback : (ORANGE) Audio output to speaker-Rear speaker out
CEN/BASS : (BLACKNESS) Audio output to speaker-Center/Subwoofer speaker out
Surround: (GRAY) Audio output to speaker-Side speaker out



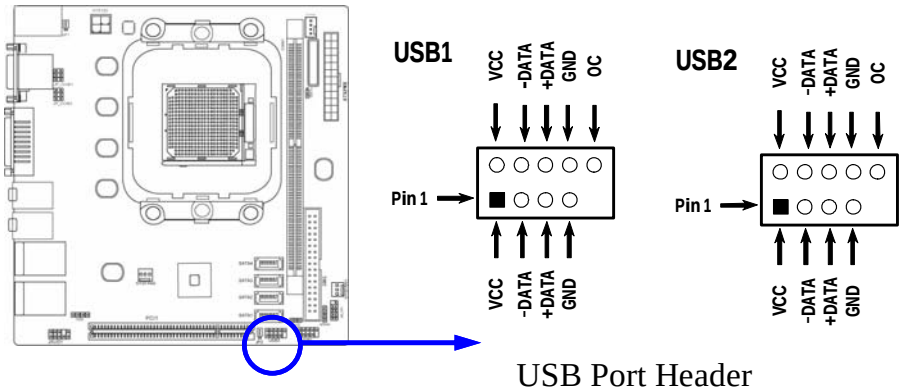
(7) PS/2 Keyboard/Mouse Connector: PS2KB

The **connectors** are for PS/2 keyboard/mouse device.

2-5-2 Headers

(1) USB Port Headers (9-pin): USB1,USB2

These headers are used for connecting the additional USB port plug. By attaching an option USB cable, your can be provided with two additional USB plugs affixed to the back panel.



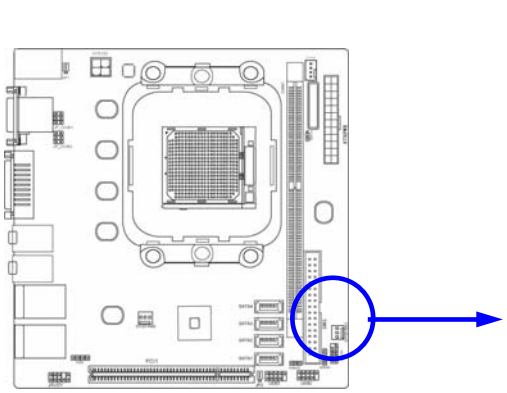
USB Port Header

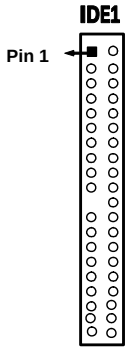
(2)IDE Connector：

This connector supports the provided IDE hard disk ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to your hard disk(s). You may also configure two hard disks to be both Masters using one ribbon cable on the primary IDE connector and another ribbon cable on the secondary IDE connector.

- Two hard disks can be connected to each connector. The first HDD is referred to as the "Master" and the second HDD is referred to as the "Slave".

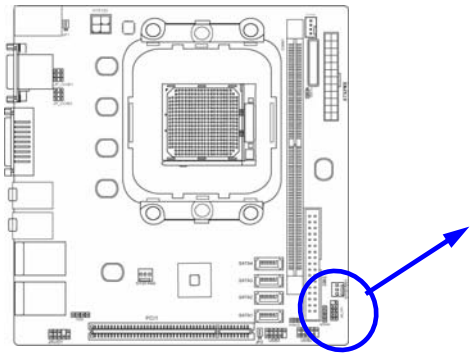
For performance issues, we strongly suggest you don't install a CD-ROM or DVD-ROM drive on the same IDE channel as a hard disk. Otherwise, the system performance on this channel may drop.

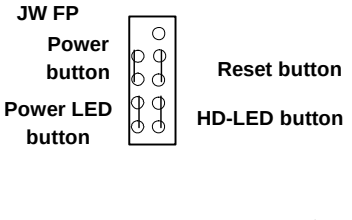




(3) Power switch: PWR BTN

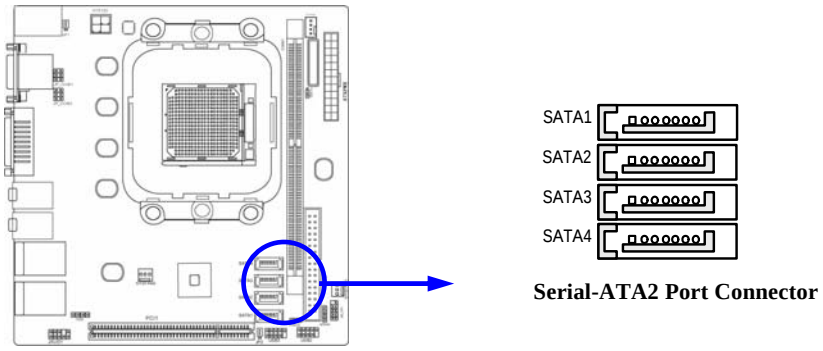
This 2-pin connector connects to the case-mounted power switch to power ON/OFF the system.





(4) Serial ATA Connector (7-pin female): SATAII1/SATAII2/SATAII3/SATAII4

This connector supports the provided Serial ATA2 IDE hard disk cable to connecting the motherboard and serial ATAII hard disk.



Serial-ATA2 Port Connector

2-6 Starting Up Your Computer

1. After all connections are made, close your computer case cover.
2. Be sure all the switch are off, and check that the power supply input voltage is set to proper position, usually in-put voltage is 220V~240V or 110V~120V depending on your country's voltage used.
3. Connect the power supply cord into the power supply located on the back of your system case according to your system user's manual.
4. Turn on your peripheral as following order:
   a. Your monitor.
   b. Other external peripheral (Printer, Scanner, External Modem etc…)
   c. Your system power. For ATX power supplies, you need to turn on the power supply and press the ATX power switch on the front side of the case.

5. The power LED on the front panel of the system case will light. The LED on the monitor may light up or switch between orange and green after the system is on. If it complies with green standards or if it is has a power standby feature. The system will then run power-on test. While the test is running, the BIOS will alarm beeps or additional message will appear on the screen.

   If you do not see any thing within 30 seconds from the time you turn on the power. The system may have failed on power-on test. Recheck your jumper settings and connections or call your retailer for assistance.

Beep	**Meaning**
One short beep when displaying logo	No error during POST
Long beeps in an endless loop	No DRAM install or detected
One long beep followed by three short beeps	Video card not found or video card memory bad
High frequency beeps when system is working	CPU overheated System running at a lower frequency

6. During power-on, press <Delete> key to enter BIOS setup. Follow the instructions in BIOS SETUP.

7. **Power off your computer:** You must first exit or shut down your operating system before switch off the power switch. For ATX power supply, you can press ATX power switching after exiting or shutting down your operating system. If you use Windows 9X, click **"Start"** button, click **"Shut down"** and then click **"Shut down the computer?"** The power supply should turn off after windows shut down.