
Chapter 2

Hardware Installation

This chapter gives you a step-by-step procedure on how to install your system. Follow each section accordingly.



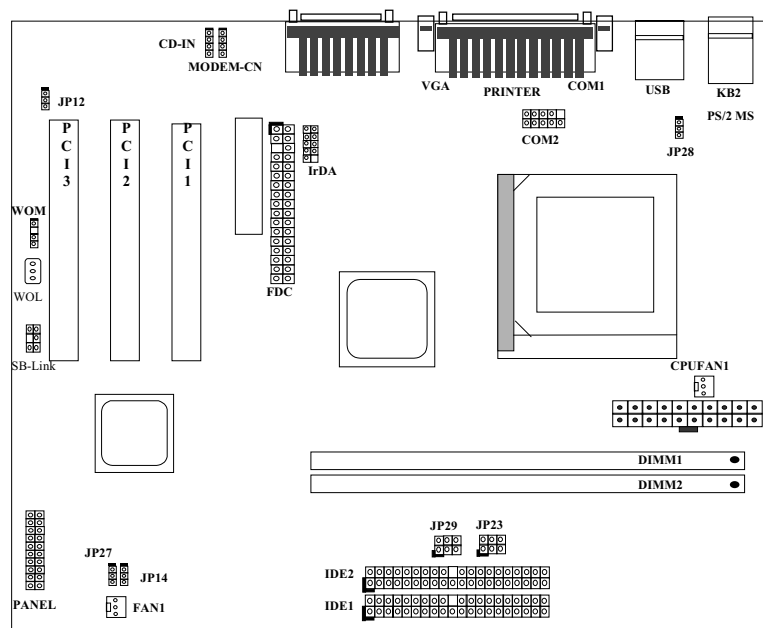
Caution: *Electrostatic discharge (ESD) can damage your processor, disk drives, expansion boards, and other components. Always observe the following precautions before you install a system component.*

1. *Do not remove a component from its protective packaging until you are ready to install it.*
2. *Wear a wrist ground strap and attach it to a metal part of the system unit before handling a component. If a wrist strap is not available, maintain contact with the system unit throughout any procedure requiring ESD protection.*

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2.1 Jumper and Connector Locations

The following figure shows the locations of the jumpers and connectors on the system board:



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Jumpers:

JP12:	Enable/Disable Onboard Audio
JP14:	Clear CMOS
JP23:	CPU TYPE Selection
JP27:	SPK Out
JP28:	Enable/Disable KB/MS Wake Up
JP29:	CPU TYPE Selection

Connectors:

PS2:	PS/2 mouse connector
KB:	PS/2 keyboard connector
COM1:	COM1 connector
COM2:	COM2 connector
PRINTER:	Printer connector
PWR2:	ATX power connector
USB:	USB connector
FDC:	Floppy drive connector
IDE1:	IDE1 primary channel
IDE2:	IDE2 secondary channel
CPUFAN1:	CPU fan connector
CPU1:	Housing fan connector
IrDA:	IrDA (Infrared) connector
PANEL:	Front panel (Multifunction) connector
CD-IN:	CD-audio connector
MODEM-CN:	Mono in (Pin 1-2) and Mic out (Pin 3-4)
WOM:	Wake On Modem connector
WOL:	Wake On LAN connector
SB-LINK:	Sound Blaster Link

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2.2 Jumpers

With the help of Celeron PPGA , Coppermine FC-PGA VID signal and SMBus, this motherboard is jumper-less design.

2.2.1 Selecting the CPU Frequency

Celeron PPGA and Coppermine FC-PGA VID signal and SMBus clock generator provide CPU voltage auto-detection and allow user to set CPU frequency through CMOS setup, no jumper or switch is needed. The correct CPU information is saved into EEPROM, with these technologies, the disadvantages of Pentium base jumper-less design are eliminated. There will be no worry of wrong CPU voltage detection and no need to re-open the housing if CMOS battery loss.

The CPU frequency selection is set by going into:

BOIS Setup → Frequency/Voltage Control → CPU FSB

(The possible setting is 66.6, 66.8, 68.3, 75.3, 78.0, 80.0, 95.0, 100.0, 100.2, 105.0, 110.0, 114.0, 117.0, 122.0, 122.0, 127.0, 129.0, 133.3, 133.6, 138.0, 140.0, 144.0, 146.6, 150.0, 150.0, 157.3, 160, 166 MHz.)

BOIS Setup → Frequency/Voltage Control → CPU Ratio

(The possible setting is 2x, 2.5x, 3.0x, 3.5x, 4x, 4.5x, 5x, 5.5x, 6x, 6.5x, 7x, 7.5x, and 8x)

Core frequency = CPU Ratio * CPU FSB

INTEL Celeron PPGA	CPU Core Frequency	CPU Ratio	CPU FSB
Celeron PPGA 300A	300MHz=	4.5x	66MHz
Celeron PPGA 333	333MHz=	5x	66MHz
Celeron PPGA 350	350MHz=	3.5x	100MHz
Celeron PPGA 366	366MHz=	5.5x	66MHz
Celeron PPGA 400	400MHz=	6x	66MHz
Celeron PPGA 433	433MHz=	6.5x	66MHz
Celeron PPGA 466	466MHz=	7x	66MHz
Coppermine FC-PGA 600	600MHz=	6x	100MHz

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Warning: INTEL 810/810DC-100 chipset supports a maximum of 100MHz CPU FSB, INTEL 810E-DC133 chipset supports a maximum of 133MHz CPU FSB the higher clock settings are for internal test only. **These settings exceed the specification of the chipset, which may cause serious system damage.**

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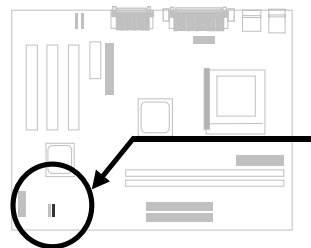
2.2.2 Setting the CPU Voltage

This motherboard supports Celeron PPGA and Coppermine FC-PGA VID function, the CPU core voltage is automatically detected, the range is from 1.3V to 2.05V.

2.2.3 Clearing the CMOS

JP14	Clear CMOS
1-2	Normal operation (default)
2-3	Clear CMOS

You need to clear the CMOS if you forget your system password. To clear the CMOS, follow the procedures as below:



JP14



Normal Operation
(default)

JP14



Clear CMOS

The procedure to clear CMOS:

1. Turn off the system and unplug the AC power.
2. Remove ATX power cable from connector PWR2.
3. Locate **JP14** and short pins 2-3 for a few seconds.
4. Return **JP14** to its normal setting by shorting pins 1-2.
5. Connect ATX power cable back to connector PWR2.
6. Turn on the system power.
7. Press **[DEL]** during bootup to enter the BIOS Setup Utility and specify a new password, if needed.



Tip: If your system hangs or fails to boot because of over-clocking, please clear CMOS and the system will go back to the default setting (233MHz or 350MHz).

Tip: If your system hangs or fails to boot because of over-clocking, simply use <Home> key to restore to the default setting. By this smart design, it would be more convenient to clear CPU frequency setting. For using this function, you just

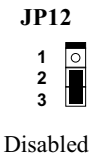
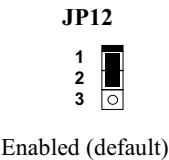
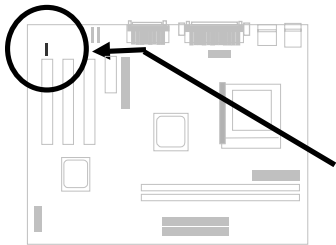
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need to press <Home> key first and then press Power button at the same time. Note that do not release <Home> key until POST screen appearing.

2.2.4 Sound

<u>JP12</u>	<u>Sound</u>
1-2	Enabled (default)
2-3	Disabled

If you want to install another sound card, you have to disable the onboard audio by setting this jumper to Disabled.

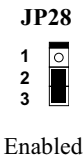
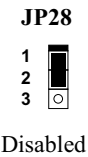
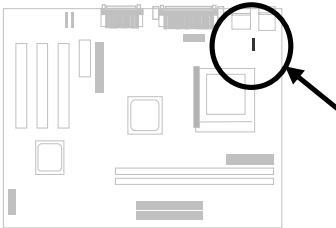


2.2.5 KB/MS Wakeup

<u>JP28</u>	<u>KB/MS Wakeup</u>
1-2	Disabled
2-3	Enabled

This jumper is used to enable or disable Keyboard/Mouse Power ON function. If you select Enabled, you may decide the wakeup mode from BIOS Setup. To implement this function, the 5V Stand By current must be greater than 800mA.

Note that only PS/2 mouse supports Wake On Mouse function.

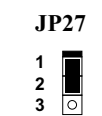
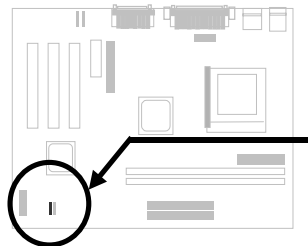


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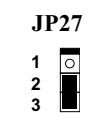
2.2.6 SPK Out

<u>JP27</u>	<u>SPK Out</u>
1-2	Disabled
2-3	Enabled

This jumper is used to enable or disable speaker out.



Disabled



Enabled

2.2.7 CPU TYPE Selection (need add JP29,JP23 TABLE)

There are "66/100","133/100" signals pin from CPU for the chipset to automatically identify AGP clock, this is important for jumperless design. The default setting is Auto.

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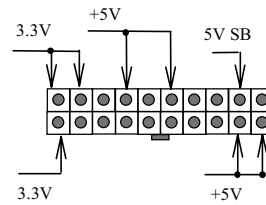
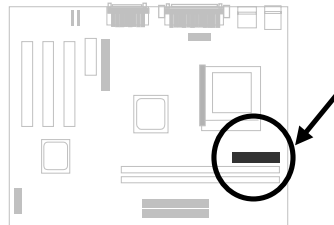
2.3 Connectors

2.3.1 Power Cable

The ATX power supply uses 20-pin connector shown below. Make sure you plug in the right direction.



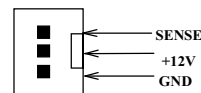
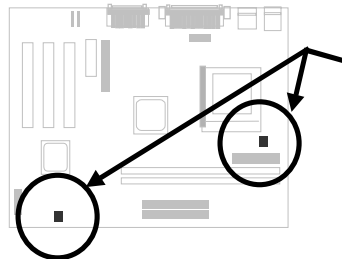
Caution: Make sure that the power supply is off before connecting or disconnecting the power cable.



PWR2

2.3.2 Fan

Plug in the fan cable to the 3-pin fan connector onboard. The fan connector is marked **CPUFAN1** and **FAN1** on the system board.

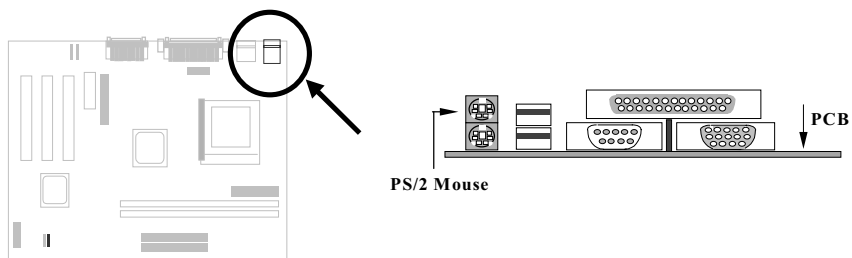


CPUFAN1
FAN1

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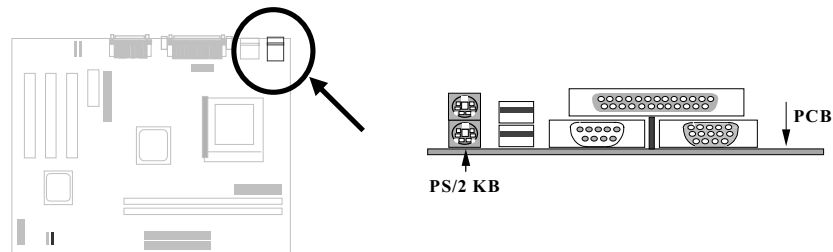
2.3.3 PS/2 Mouse

The onboard PS/2 mouse connector is a 6-pin Mini-Din connector marked **PS2**. The view angle of drawing shown here is from back panel of the housing.



2.3.4 Keyboard

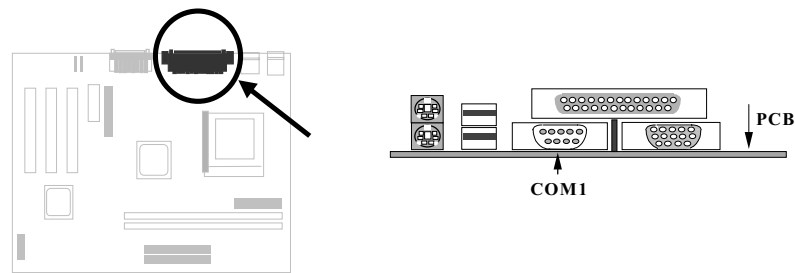
The onboard PS/2 keyboard connector is a 6-pin Mini-Din connector marked **KB2**. The view angle of drawing shown here is from back panel of the housing.



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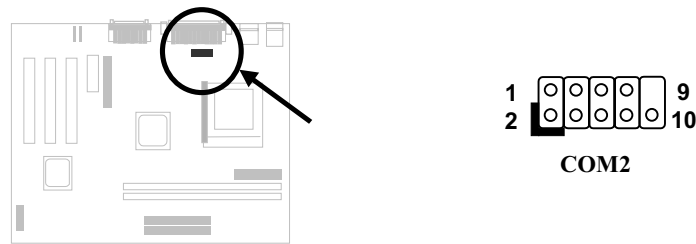
2.3.5 Serial Devices (COM1)

The onboard serial connectors **COM1** are 9-pin D-type connector on the back panel of mainboard.



2.3.6 Serial Devices (COM2)

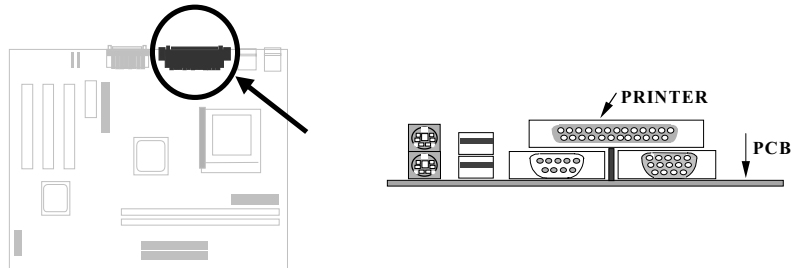
Plug in the IDE cable to the **COM2** connectors.



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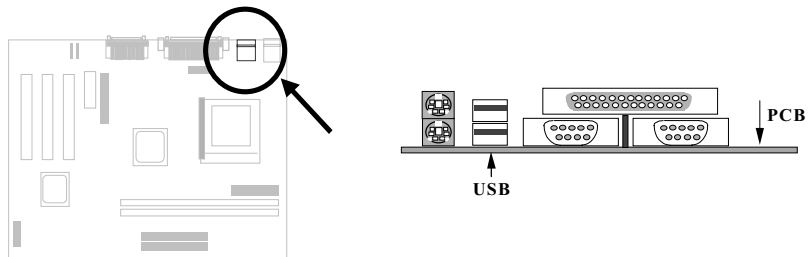
2.3.7 Printer

The onboard printer connector is a 25-pin D-type connector marked **PRINTER**. The view angle of drawing shown here is from back panel of the housing.



2.3.8 USB Device

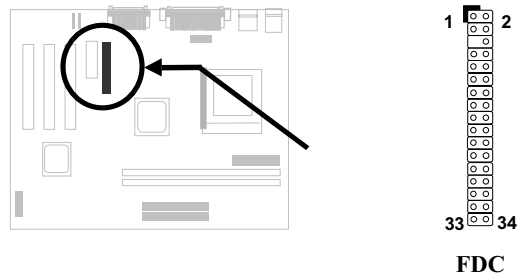
You can attach USB devices to the USB connector. The motherboard contains two USB connectors, which are marked as **USB**.



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2.3.9 Floppy Drive

Connect the 34-pin floppy drive cable to the floppy drive connector marked as **FDC** on the system board.

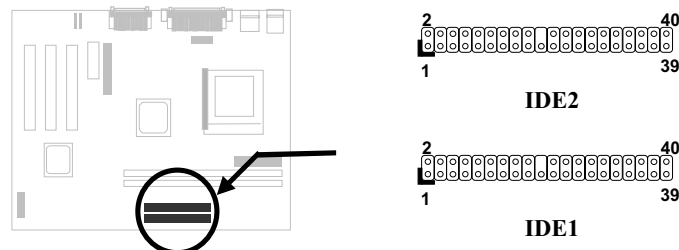


2.3.10 IDE Hard Disk and CD ROM

This mainboard supports two 40 pin IDE connectors marked as **IDE1** and **IDE2**. IDE1 is also known as primary channel and IDE2 as secondary channel, each channel supports two IDE devices that make total of four devices.

In order to work together, the two devices on each channel must be set differently to master and slave mode, either one can be hard disk or CDROM. The setting as master or slave mode depends on the jumper on your IDE device, please refer to your hard disk and CDROM manual accordingly.

Connect your first IDE hard disk to master mode of the primary channel. If you have second IDE device to install in your system, connect it as slave mode on the same channel, and the third and fourth device can be connected on secondary channel as master and slave mode respectively.

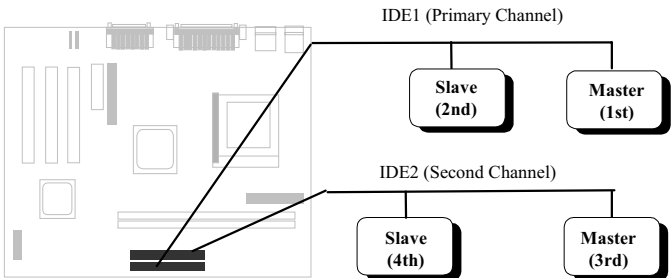


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Caution: The specification of IDE cable is maximum 46cm (18 inches), make sure your cable does not exceed this length.

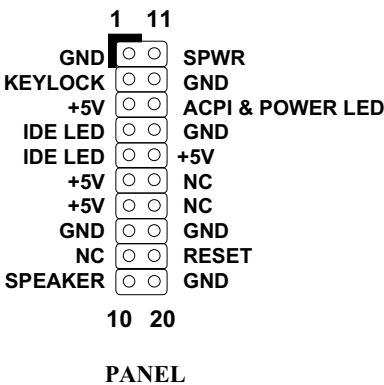
Caution: For better signal quality, it is recommended to set far end side device to master mode and follow the suggested sequence to install your new device. Please refer to the following figure.



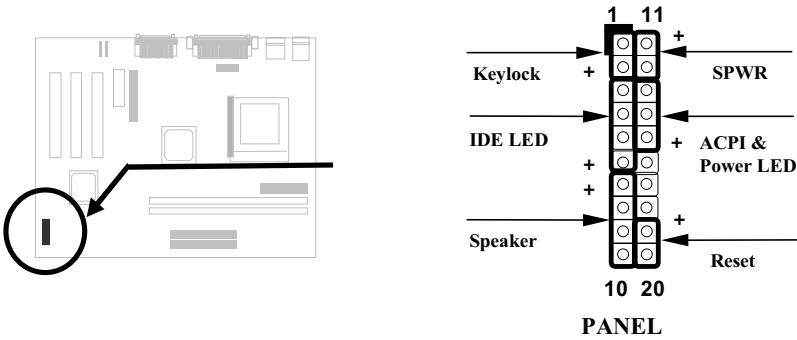
2.3.11 Panel Connector

The Panel (multifunction) connector is a 20-pin connector marked as **PANEL** on the board. Attach the power LED, keylock, speaker, SPWR, IDE LED and reset switch to the corresponding pins as shown in the figure.

If your ATX housing supports ACPI specification, the ACPI & Power the LED will keep flashing if you have enabled "suspend mode" item in the BIOS Setup.



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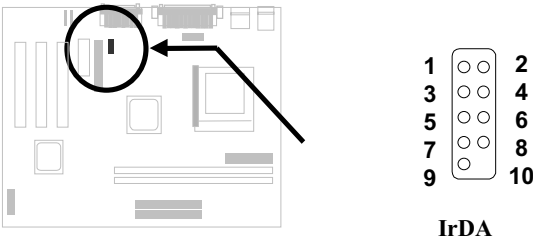


2.3.12 IrDA Connector

The IrDA connector can be configured to support wireless infrared module, with this module and application software such as Laplink or Win95 Direct Cable Connection, user can transfer files to or from laptops, notebooks, PDA and printers. This connector supports HPSIR (115.2Kbps, 2 meters), ASK-IR (56Kbps) and Fast IR (4Mbps, 2 meters).

Install infrared module onto **IrDA** connector and enable infrared function from BIOS setup, make sure to have correct orientation when you plug onto IrDA connector.

Pin	Description
1	+5V
3	FIRRX (FAST IR)
4	CIRRX (Consumer IR)
5	IRRX (STANDARD IR)
6	5VSB
7	GND
9	IRTX (STANDARD IR)

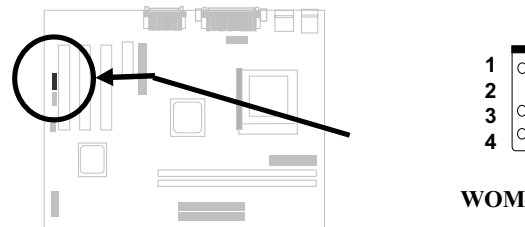


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2.3.13 Wake On Modem Connector

This motherboard implements special circuit to support Wake On Modem, both Internal Modem Card (AOpen MP56) and external box Modem are supported. Since Internal Modem card consumes no power when system power is off, it is recommended to use Internal Modem. To use AOpen MP56, connect 4-pin cable from **RING** connector of MP56 to **WOM** connector on the mainboard.

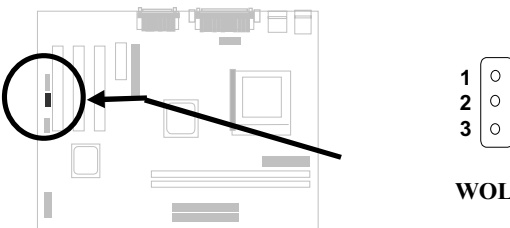
<u>Pin</u>	<u>Description</u>
1	+5V SB
2	NC
3	RING
4	GND



2.3.14 Wake On LAN Connector

This mainboard implements a **WOL** connector. To use Wake On LAN function, you need a network card that supports this feature. In addition, you also need to install a network management software, such as ADM.

<u>Pin</u>	<u>Description</u>
1	+5V SB
2	GND
3	LID

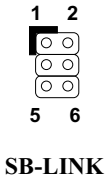
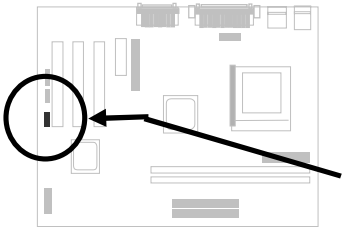


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2.3.15 Sound Blaster LINK

SB-LINK is used to connect Creative PCI sound card. If you have a Creative PCI sound card installed, it is necessary to link the card to this connector for compatibility issue under DOS environment.

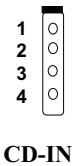
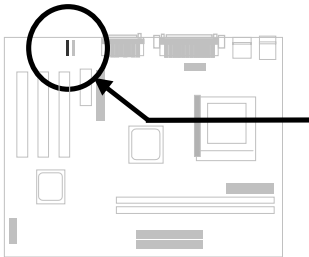
Pin	Description
1	GNT#
2	GND
3	NC
4	REQ#
5	GND
6	SIRQ#



2.3.16 CD Audio Connector

This connector is used to connect CD audio cable.

Pin	Description
1	L
2	GND
3	GND
4	R



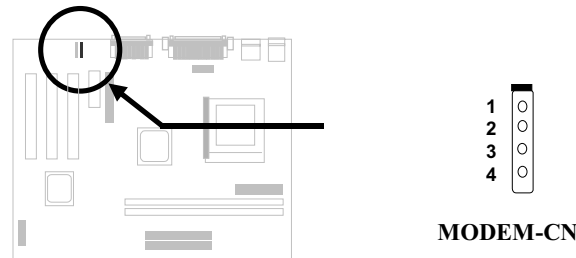
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2.3.16 Mono In/Mic Out Connector

This connector is used to connect Mono In/Mic Out connector of an internal modem card. The pin 1-2 is **Mono In**, and the pin 3-4 is **Mic Out**. Please note that there is no standard for this kind of connector yet, only some internal modem cards implement this connector.

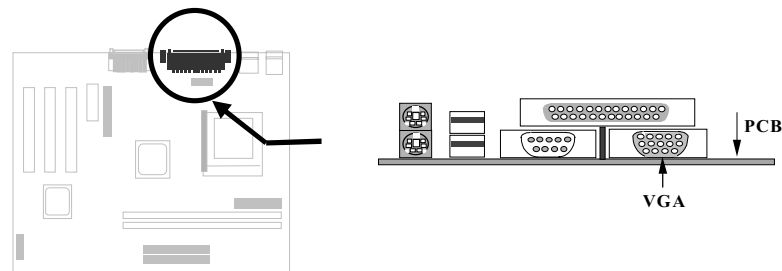
Please see the pin definitions to connect the cable.

Pin	Description
1	Mono In
2	GND
3	GND
4	Mic Out



2.3.17 VGA Connector

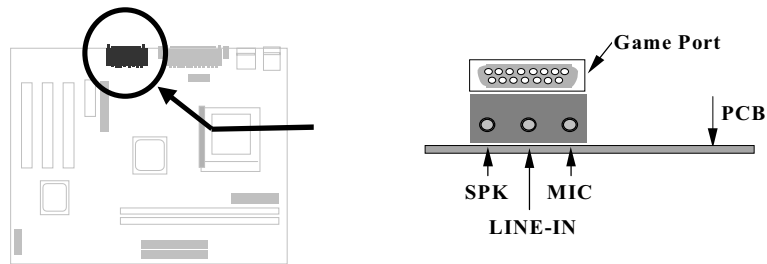
This motherboard comes with a high performance onchip graphics accelerator (I752) and onboard 4MB display cache.



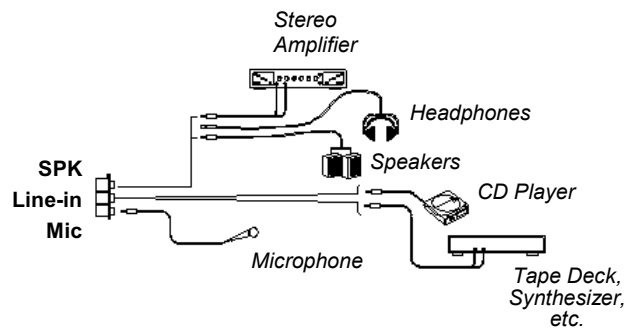
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2.3.18 Audio Connector

This motherboard comes with a 16-bit audio CODEC (AD1881) onboard.

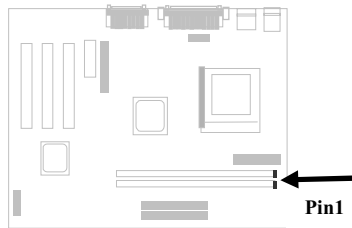


To fully utilize the audio functions, you may connect various peripheral devices that the audio chip supports. The following figure shows the different devices that you can connect.



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2.4 Configuring the System Memory



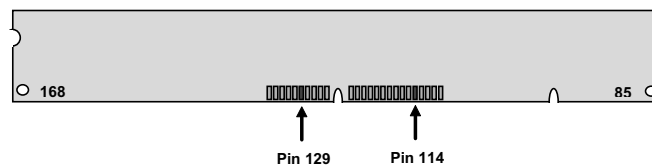
The DIMM type supported is PC100 SDRAM (Synchronous DRAM) only. This motherboard has two 168-pin DIMM (Dual-in-line Memory Module) sockets that allow you to install system memory up to **512MB**.

DIMM modules can be identified by the following factors:

- I. **Size:** single side, 1Mx64 (8MB), 2Mx64 (16MB), 4Mx64 (32MB), 8Mx64 (64MB), 16Mx64 (128MB), and double side, 1Mx64x2 (16MB), 2Mx64x2 (32MB), 4Mx64x2 (64MB), 8Mx64x2 (128MB).



Tip: Here is a trick to check if your DIMM is single-side or double-side -- if there are traces connected to golden finger pin 114 and pin 129 of the DIMM, the DIMM is probably double-side; otherwise, it is single-side. The following figure is for your reference.

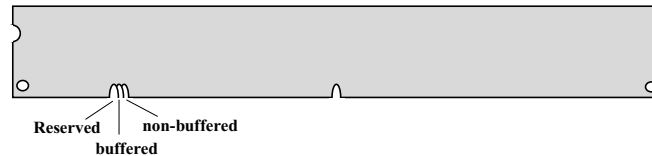


II. Speed:

normally marked as -12, which means the clock cycle time is 12ns and maximum clock of this SDRAM is 83MHz. Sometimes you can also find the SDRAM marked as -67, which means maximum clock is 67MHz.

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III. Buffered and non-buffered: This motherboard supports non-buffered DIMMs. You can identify non-buffered DIMMs and buffered DIMMs according to the position of the notch, following figure is for your reference:



Because the positions are different, only non-buffered DIMMs can be inserted into the DIMM sockets on this motherboard. Although most of DIMMs on current market are non-buffered, we still suggest you to ask your dealer for the correct type.

IV. 2-clock and 4-clock signals: Although both of 2-clock and 4-clock signals are supported by this motherboard, we strongly recommend choosing 4-clock SDRAM in consideration of reliability.



Tip: To identify 2-clock and 4-clock SDRAM, you may check if there are traces connected to golden finger pin 79 and pin 163 of the SDRAM. If there are traces, the SDRAM is probably 4-clock; Otherwise, it is 2-clock.

There is no jumper setting required for the memory size or type. It is automatically detected by the system BIOS, and the total memory size is to add them together. **The maximum is 512MB.**

Total Memory Size = Size of DIMM1 + Size of DIMM2

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The following table lists the recommended DRAM combinations of DIMM:

DIMM Data chip	Bit size per side	Single/Double side	Chip count	DIMM size	Recommended
1M by 16	1Mx64	x1	4	8MB	Yes
1M by 16	1Mx64	x2	8	16MB	Yes
2M by 8	2Mx64	x1	8	16MB	Yes
2M by 8	2Mx64	x2	16	32MB	Yes
4M by 16	4Mx64	x1	4	32MB	Yes
4M by 16	4Mx64	x2	8	64MB	Yes
8M by 8	8Mx64	x1	8	64MB	Yes
8M by 8	8Mx64	x2	16	128MB	Yes

The following table lists the possible DRAM combinations that is **NOT** recommended:

DIMM Data chip	Bit size per side	Single/Double side	Chip count	DIMM size	Recommended
4M by 4	4Mx64	x2	32	64MB	No
16M by 4	16Mx64	x1	16	128MB	No
16M by 4	16Mx64	x2	32	256MB	No



Tip: The parity mode uses 1 parity bit for each byte, normally it is even parity mode, that is, each time the memory data is updated, parity bit will be adjusted to have even count "1" for each byte. When next time, if memory is read with odd number of "1", the parity error is occurred and this is called single bit error detection.